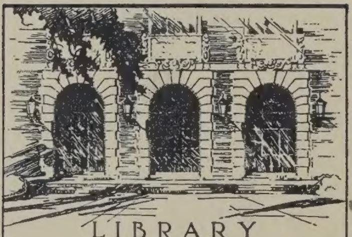


LIBRARY
OF THE
UNIVERSITY
OF ILLINOIS
720.5
BU
v.69

Supplement to the Building News, *January* 10, 1896.

E-457

THE BUILDING NEWS

AND

ENGINEERING JOURNAL.

UNIVERSITY OF ILLINOIS
LIBRARY
URBANA

VOLUME THE SIXTY-NINTH.

JULY TO DECEMBER, 1895.

PUBLISHED FOR THE STRAND NEWSPAPER CO., LIMITED, BY E. J. KIBBLEWHITE, MANAGING DIRECTOR,

AT THE OFFICE OF THE "BUILDING NEWS,"

332, STRAND, LONDON, W.C.

INDEX TO VOL. LXIX.

[For Index to Illustrations see page VI.]

ABANDONED plans, claim for, 432
Abattoir, St. Helen's, 870
Abbeys: Bath (organ) 31, 577; Kirkstall, 428; Little Missenden, 813; Mount Grace, 396; Waltham, 74; Westminster (organ) 469
Aberdeen: municipal buildings, 833; University extensions, 586
Abolition tests, smoke, 804
Abuses and mistakes, 877
Academy: French, 592; royal (designs) 846 (elevations or perspectives at) 433, 539
Accident, fatal girder, 287
Acquisition of London tramways, 909
"Adamantine" mortar, 248
Adam, Robert, and his style, 685
Admiralty offices: new, 390; old, screen, 432
Adornments, rustic, 850
Aesica, Roman wall at, 288
Ages: of man, Boyd Dawkins on, 110; of trees, 947
Agreement, building: appeal, 65; dispute, 688
Aids, building, 290
Ailment, new, from wood pavement, 140
Aldershot: artesian borings, 287; Camp sewage farm, 175
Alexandria, museum at, 543
Allen v. L.C.C., building line, 33, 64, 174, 179
Alley, skittle, 801, 835
Almanacs and diaries, 850
Alma-Tadema on art training, 143
Almshouses: Mile End-road (Trinity) 689, 776, 836; Wethersfield, 720; Woofinden, 324
Alterations to flats, restraints on, 908, 945
Alton sewage disposal, 764
Ambiguities: in the London Building Act, 330, 911; in the London Public Health Act, 688
American: barracks, 333; forests, waste in, 288; gasholder, largest, 324; Romanesque in Australia, 67; view of London architecture, 185
Amsterdam, architects and firemen at, 339, 505
Ancelet, G. A., the late, 208, 224
Ancient: English homes, some, 4; lights, 444, 472 (in Liverpool) 466 (in Plymouth) 763 (in the City) 212
Angers cathedral, royal tombs at, 468
Another competitions committee, 175, 177
Antiquaries of Scotland, society of, 833
Apartment house, hot-water heating in a Chicago, 136
Appeal: arbitration, 248; building agreement, 65; building line, 102, 139; successful, against district surveyor, 64
Apportionments, paving, 874
Appliances for girder erection, 392
Application of Classic details, 8, 39, 72, 135, 146, 184, 258, 294, 363, 403, 439, 475, 510, 554, 622, 733, 770, 807, 843, 879, 915
Applied: art school, Edinburgh, 846; arts and architecture at Liverpool, 427, 689, 946
Apprenticeship in London building trades, 581, 649
Apprentice system, the, 649
Approximate estimates, notes on, 773, 811, 847, 905, 919
Arbitration appeal, Cuningham v. Richards, 248
Arbitrations: Bangor, 688; Edinburgh, 874; heavy railway, 643; Leeds, 615, 945; Leicester, 835; Manchester (canal) 909 (Sheffield, Lincolnshire, and London extension) 504, 580, 615, 724, 874; Redhill, 724, 835; Sheffield, 945; Streatham, 945; Wardle, 724; Warwickshire, 724, 874
Arbroath water supply, 580, 802
Arc de Triomphe, the, 581
Archæologia Oxoniensis, 760
Archæological: associations (British) 284 (Cambrian) 246; societies (London and Middlesex) 79 (Somerset) 115
Arches: Classic, 146; striking centres of, 38; tests of, 804; thickness of, 286
Arching, concrete, 286, 322
Architect: and client, 802; the young, opportunities of the, 545
Architects: and firemen at Amsterdam, 369, 505; and surveyors, Sheffield society of, 172, 516, 722, 798, 871; British (national union of) 722, 762, 834, 914 (royal institute of) 175, 177, 178, 653, 657, 733, 878 (craftsman class) 172; claim for abandoned plans, 432; employment of, 691; fees, 615; institute (Glasgow) 576; poster, 733; provincial, 767; sanitary congress, Paris, 113; school board, remuneration of, 473; society of, 35, 357, 406, 576, 621, 731, 881 (at Waltham abbey) 74 (Bristol do.) 904 (Manchester do.) 476, 685; superintending (L.C.C.) power to fix building line, 33, 64, 174, 179; Three Towns, 334
Architectural: association, 357, 550, 693, 771, 844, 918 (brown book) 428 (conversazione) 653 (Gloucestershire excursion) 4, 37, 180, 217 (Birmingham) 140, 224, 576, 685, 761, 823 (Edinburgh) 833, 940 (Glasgow) 172, 332, 576, 904 (Northern) 77, 115, 444, 593, 833; classes (Glasgow) 333, 910 (King's College) 396, 516, 542 (University do.) 245, 542 (do. do., Liverpool) 689; engineering, 326; landscape, 104; profession in North of England, 101, 138, 172; societies (Leeds and Yorkshire) 722 (York) 648, 904
Architecture: and applied arts at Liverpool, 427, 689, 946; Australian Renaissance, 400; board school, 842, 911; classes in Glasgow, 333; coarse and refined, 730; Dundee institute of, 10; fashionable building or, 252; Græco-Phœnician, in Cyprus, 878; iron, end of, 729; London from an American view point, 185; the two sides of, 806
Are the building trades declining? 656
Arrangements, defects of modern house, 105
Art: for schools association, 775; galleries (Glasgow) 213, 946 (Newlyn) 613 (South London) 836; Mediæval, Payne collection of, 70, 114; putting science for, 397; scenic, 844; training (Alma Tadema on) 143; use of supernatural in, 803; woodcarving, school of, 505
Artificial: paving slabs, 875; stonework at Boston, Mass., 66
Artisans' dwellings: Kentish Town, 779; Liverpool, 298, 468; St. John's Wood, 578
Artists, British, royal society of, 621
Arts, society of, 765
Asbestos company's catalogue, 513
Ashmead, G. C., Bristol, the late, 518
Ashton-under-Lyne main drainage, 467
As others see us, 215
Asphalte, improved, 581
Assembly rooms and concert halls, 511, 624, 659, 692, 736, 774, 906
Assistant surveyors, War Office, 283, 321, 358, 393
Associations: archæological (British) 284 (Cambrian) 246; architectural, 357, 550, 653, 693, 771, 844, 918 (brown book) 428 (Gloucestershire excursion) 4, 37, 180, 217, 833 (Birmingham) 140, 224, 576, 685, 761, 833 (Edinburgh) 833, 940 (Glasgow) 172, 332, 576, 904 (Northern) 77, 115, 444, 593, 833; art for schools, 775; British, at Ipswich, 367, 399; master builders' (Birmingham) 871 (National) 150 (Northampton) 578; master plumbers' (London) 884; municipal engineers', 7, 513; sanitary inspectors, 576, 685; slate merchants, national, 512; waterworks engineers', proposed, 762
Asylums board, metropolitan, work of, 910
Asylums, lunatic: Cheddleton, Staffs, 720; Chichester, 613; county, 3, 93, 144, 183, 220, 255, 296, 331, 427, 551, 590, 660, 734, 776, 848, 941; Coxlodge, Newcastle, 170; East Riding, 761; Inverness, 282; St. Alban's, 684; Upton, Cheshire, 244, 423
Athens, British school at, 66, 213
Attendants' accommodation, asylum, 552
Auctioneers' institute, 653, 946
Audiences, theatre, safety of, 438
Australasian: Renaissance architecture, 400; timbers, 42
Australia, American Romanesque in, 67
Australian woods for paving, 102
Awards: A. A., 550; BUILDING NEWS club designs, 551; compensation, 394; on insanitary property, Liverpool, 394
Ayr, electric lighting at, 432

BACKHOUSE, F., in re, 580
Bad mortar, 248
Baildon reservoir, 249
Bakewell cross, 845
Bangor, arbitration at, 688
Bank, Halifax, 115
Banqueting house, Kensington-gardens, 874
Barker, Robert, the late, 556
Barcelona cathedral, 335
Barracks: American, 333; soldiers', design of, 625
Bates, Joseph, in re, 359
Bath: river purification at, 946; Roman duct at, 66
Baths: Brentford, 481; Chester, 210, 284; Dalry, Edinburgh, 45; Deptford, 557; Kennington-road, 885; Leeds, 318; Manchester (Constantine's) 500; Marylebone, 696; Shoreditch, 465, 556, 779, 805, 840, 851, 908, 921
Batsford's new publications, 505
Beerhouses, Building Act and, 802
Belfast: cathedral, 519, 545, 614, 685, 779; fire brigade station, 369; new reservoir, 66
Belgian architecture, 807
Belgium, junior engineers in, 249, 296
Benediction of a stone quarry, 543
Benevolent institutions: builders', 149, 697, 812; builders' clerks', 776
Beszant, G., junior, in re, 102
Bill of exchange case, 248
Bills, private, for next session, 803
Bilston waterworks, 34
Birmingham: architectural association, 576, 685, 761, 833 (at Ludlow) 140, 224; art exhibition, 360; master builders' association, 871; Milk-street improvement, 176; municipal school of art, 176; overhead traction for tramways in, 947; railway improvements, 539; Welsh water supply, 504, 802
Blackpool, great wheel, 653
Blackwall tunnel, 502
Blashill's retirement, L.C.C., 813
Blow-pipe work, 947
Blue lias lime—a caution, 285
Board school architecture, 842, 911
Board schools: Cumwhinton, 832; Farsley, 151; Lancaster, 32; London, 222, 509; Newcastle-on-Tyne, 701; Reading, 884; Salford, 648; Shirley, 426; Sowerby Bridge, 32, 63; Swindon, 870; Tunstall, 557; Watford, 151; York, 208
Bolt-court, lithographic school, 689
Bolton sewage treatment, 802
Bonâ fide contractors, what are? 463
Bookkeeping, builders', 850
Boston, Mass., artificial stonework at, 66
Boultham sewage disposal, 284
Bowness sewerage scheme, 323
Bradford: testing machine at, 726; waterworks arbitration, 287
Branches, siphoned, for street gullies, 922
Brass rubbings, 764
Breaches of covenant, 802, 946
Breach of electric lighting agreement, 835
Brewers' hall, 331
Bricks: oil for waterproofing, 432; treatise on manufacture of, 320
Brickwork at the A.A., 918
Bridge girders, transport of, 188
Bridges: Dee (Queensferry) 393; Edinburgh (North) 357; Kew, 798; paint as a protective of, 727; Sellack, 872; steel, designing of, 135, 254, 355, 443, 662; Tower, and City traffic, 468; Tchernavoda, 505; Winsford, raising of, 690
Bridlington, building scheme for, 653
Bristol: docks, 468; society of architects, 904; tramway reconstruction in, 176
British: archæological association, 284; architects (national union, proposed) 722, 762, 834, 873, 914; architects (royal institute) 175, 177, 178, 653, 657, 733, 878 (craftsman class) 172; artists', royal society, 621; association at Ipswich, 367, 399; museum (Egyptian antiquities) 581 (Malcolm collection) 66; school at Athens, 66, 213
Britton's-court, vaulted cell in, 726
Brock, E. P. Loftus, the late, 664
Brown book, A.A., 428
Browne, Chas., F.S.A., the late, 664
Buckingham sewage disposal, 689
Bucknall, Benjamin, the late, 884
Budleigh Salterton railway, 629
Builder: and client fight, 431; serious charge against, 394
Builders': benevolent institution, 149, 812 (dinner) 697; bookkeeping, 850; clerks' benevolent institution, 776; clerks' institution, 579; master, association of (Birmingham) 871 (national) 150 (Northampton) 578; work, cast iron in, 260, 291, 329, 436, 516, 661, 698, 759, 777, 913
Building: Act, London, 652, 653 (ambiguities in) 330, 911 (and beerhouses) 802 (conviction quashed) 211 (Glen and Bethune's handbook) 392 (new structure under) 64, 211 (party-walls and) 212 (year's working of) 881; agreement (appeal) 65 (dispute) 688; aids, 290; and engineering contracts, law of, 800; fashionable, or architecture, 252; law relating to, 760; line (appeal) 102, 139, 172 (L.C.C. architect's power to set) 33, 64, 174, 179; negotiants, professional charges and, 325; NEWS designing club, 42, 551, 809; new, what is a, 431; operations, London school board, 509; owner, man-of-straw, 909, 945; regulations, Stockholm, 654; societies, law relating to, 261; trades (are they declining?) 656 (exhibition) 738 (do. Manchester) 922 (apprenticeship in) 581, 649 (London) 44 (Scottish federation) 249, 396
Buildings: corner, height of, 322, 763; exempted, conversion of, 909; modern farm, 812; municipal control of, 771; statutory new, 326; town, light in, 142
Built-up bridge girders, transport of, 188
Bungalow, riverside, club designs, 42
Bungalows and country residences, 66
Burner, gas, self-lighting, 96
Business premises: Birmingham, 426, 832; Bishopsgate house, E.C., 263; Edinburgh, 663; Leeds, 921; Newcastle-on-Tyne, 613; Peterborough, 720; York, 335
By-laws, village, 839

CABINET: maker, Sheraton's, 6; national design, 921
Caissons, water jets for sinking, 249
Calculations, girder, 430
Callington church on fire, 35
Cambrian archæological association, 246
Canals: Bruges and Heyst, 505; Liverpool and Leeds, 429; Manchester, contract, 909; Nicaragua, 432; North Sea, 288; Philadelphia ship, 176; Seattle and Lake Washington, 505
Canary Isles, notes in the, 221, 256
Capitol, State, Minneapolis, 761
Care and skill, reasonable, 2
Caricatures, Venetian, 813
Carpenters' Co.'s: lectures, 617; school, 543, 726, 738; work, 213
Carpet and organs, 506
Cast iron in builders' work, 260, 291, 329, 402, 436, 516, 661, 698, 759, 777, 913
Castle steamship, *Tantallon*, 148
Casual wards, Beverley, 538
Cathedral, the style for a new, 103
Cathedrals: Angers, 468; Barcelona, 335; Belfast, 519, 545, 614, 685, 779; Carlisle, 431; Edinburgh (St. Mary, R.C.) 832; Grahamstown, 426; Lichfield, 244; Llandaff, 46, 115, 151; Milan, 921; New York (St. John) 257; Peterborough, 832; Rochester, 851; St. John's, Newfoundland, 244; St. Paul's (Freemasons and) 360; Salisbury, 151 (spire) 113, 141; Westminster (R.C.) 30, 45, 395; York (Thomson memorial) 213
Caution: as to blue lias lime, 286; to drain repairers, 580
Ceiling, varnished wood, 394, 430
Celtic ornament, 947
Cement: facing, 247; mortar tests, 698; size of grains of sand in, 917
Central: area designs, recent, 251; London railway, 468, 684, 764, 803, 909
Centres of arches, striking, 38
Ceramics, 760
Certificates, giving, 731
Chalfont, epileptics' home, 175, 189, 769
Chambers, ice, 247, 581
Chapels: Bebington (Wesln.) 45; Berkhampsted (school) 170; Cambridge (Selwyn college) 612; Capel Als, 940; Gray's Inn, 726; Leeds (Prim. Meth.) 513; Nottingham (U. Free Meth.) 32; Oxford (Manchester college) 726; Plymouth (hospital) 758; Portmadoc (Presbtn.) 720; Rolls (Chancery-lane) 140; Skelmanthorpe, 371; Stafford (Bapt.) 77; Tonbridge (school) 77; Wolstanton (Wesln.) 614
Chapman, J. H., Boston, Mass, the late, 721
Charges, professional, and building negotiants, 325
Chester: baths competition, 210, 284; dams the Dee, 542
Chester-le-street sewerage, 395
Chicago apartment house, hot-water heating in a, 136
Children's hospital, Rhyl, 505
Chimneys, Edinburgh: gas works, 468, 505, 543, 684; infirmary, 870
Chorley, Lancs., sewage purification, 689
Christian, Ewan, memorial, 467
Church: house, the, 30; screens, 358
Churches: Arbroath, 593; Bacup, 395; Balsall Heath (St. John, R.C.) 426; Bamber Bridge (St. Aidan) 758; Barnet, 870; Barton, Lancs (St. Lawrence) 557; Beguildy (St. Michael) 851; Belfast (All SS.) 665; Berlin (memorial) 34; Birmingham (St. Patrick, R.C.) 720; Bootle (Presbtn.) 208; Boscombe (Blessed Sacrament) 354 (St. John Evan.) 684, 720; Bromley, Kent (Presbtn.) 30; Burton-on-Trent (St. Modwen) 446; Callington (fire at) 35; Carlisle (Fisher-street, Presbtn.) 30; Charlottenburg, Berlin, 354; Clydebank (Union) 577; Colebrooke, 870; Crathie, 739; Dedham, 505; Dorking (St. Joseph, R.C.) 30; Douglas, I.M. (St. Matthew) 318; Eastbourne, near, 430; East Layton (mission) 464; Empingham, 45; Exminster (St. Martin) 720; Fairfield, Hebden bridge (R.C.) 299; Gateshead (St. George) 151, 904; Glasgow (Congl.) 354; Goathland (St. Mary) 170; Gogar, N.B. (parish) 11; Great Easton, 464; Greenhead, N.B., 287; Handsworth (St. James) 134; Harlem, New York (H. Trinity) 249; Hetton-le-Hole, 884; Highgate (St. Joseph, R.C.) 335; Hull (St. Wilfred, R.C.) 318; Ipswich (St. Matthew) 665; Jarrow (St. Mark) 464; Kelvinside (U.P.) 538; Kennerleigh (St. John) 30; King's Langley, 577; Landrake (St. Peter) 134; Landscove (St. Matthew) 940; Langside (Free) 464; Lincoln (St. Faith) 613; Liscard (Ref. Episcopal, Christ) 77; Liverpool (Welsh Presbtn.) 720; Llandudno (Clarence meml.) 44; Llanthony, 613; London Docks (St. Peter) 30, 885; Lundy Island, 873; Marsden, 577; Mayfield, N.B., 940; Merchiston (St. Michael) 580; Middlewich (St. Michael) 354; Millbrook, 684; Moleash, 870; Muthill (Free) 500; Norfolk-square, W. (All SS.) 684; Northampton (St. Matthew) 578; Northamptonshire, 63, 173; Norton-sub-Hamdon (St. Mary) 244; Ocle Prichard, 538; Paisley (Coats meml., Bapt.) 446; Port Elizabeth, S.A. (St. Mary) 318; Rainton (St. Mary) 940; Rangemore, 870; Rugeley (new) 318; St. Alban's (St. Peter's) 538; St. Mary-le-Bow, E.C., 318; Salford (St. Philip) 500; Shrewsbury (St. Giles) 921; Shropshire, architectural account of, 943; Southport (Emmanuel) 613; Sparkhill, Birmingham (St. John) 500; Stoke Priory (St. Michael) 318; Stratford, E., Dyot-road, 578; Tamerton Folliot, 426; Thrybergh (St. Leonard) 318; Tottenham (St. Francis de Sales, R.C.) 556; Tulse-hill (Presbtn.) 481; Waltham Abbey, 74; Wandsworth (St. Thomas of Canterbury) 208; Waskerley (mission) 170; Westminster (St. Margaret, pulpit) 321; Widnes (St. Mary) 578; Wistanstow, 354; Wrexham, 468
Circular sewer discharges, 700
Cisterns, flush of water in, 542, 689
City, the: ancient lights in, 212; and the engineer, 327, 364, 403; and Waterloo railway, 214, 245; continuous repairing in, 66; guilds, 151, 331, 335, 587, 686, 739, 813; road, building line appeal, 102, 139, 172; traffic, Tower bridge and, 468
City: hall, Philadelphia, 947; surveying and mapping a, 505
Civil: engineering, 394; engineers, institution of, 696
Civilisation, some perils of, 655
Claim, architect's, for abandoned plans, 432
Clare market insanitary area, 542
Clarke, T. Chatfeild, the late, 10, 324
Classic details and their application, 8, 39, 72, 135, 146, 184, 258, 294, 363, 403, 439, 475, 510, 554, 622, 733, 770, 807, 843, 879, 915
Clergymen and dilapidations, 724

720.5
B86
v.69

Clerkenwell, Northampton polytechnic, 354
Clerks', builders': benevolent institution, 776; institution, 579
Client and architect, 802
Clients' liability, 806, 872
Closets, water: Nyphos, 943; Scientia, 649, 687, 762
Club: Building News designing, 42, 551, 809; New English art, 696
Clubhouses: Bury, Lancs, 684; Edinburgh (Union) 940; Hong Kong, 851; New York (Century) 481; Scarborough (Liberal) 578; Washington (Metropolitan) 813; Woking (Conserv.) 801
Cluny museum, 71, 513, 547, 585
Clutton: Hy., Reigate, the late, 282; v. Clarke (commission) 945
Clyde: navigation, improvement of, 175; purification of the, 175
Coachroad, new, in Lake district, 288, 617, 727, 910
Coal, possibilities of, in Suffolk, 399, 468
Coarse and refined architecture, 730
Coast erosion, 400
Cobham, G. R., Gravesend, the late, 224
Coffee tavern, Burnham, Somerset, 170
Cold room for meat, 247, 581
Collar beam stresses, graphical determina- of, 700
Colleges (Selwyn) 612 (women's training) 613; Glasgow (St. Margaret's) 739 (technical) 910; King's, London (architectural classes) 393, 516, 542; Oxford (Manchester) 726; University (Aberystwith) 263 (Bangor) 538 (London, architectural classes) 245, 542; Winchester, 803; Worksop, 390
Colour on parchment, 801
Colours, water, 63, 138, 173
Colson, J., Winchester, the late, 320
Commission: architects', 32; estate agents', 945; house agents', 725
Committee, a new competitions', 175, 177
Committee's promises are binding, 211, 724, 763
Compensation: awards, 394; no, for setting back, 174
Competition particulars, half-crowns for, 465, 502, 539
Competitions: Academy, French, 592; art building (Fairmount-park, Philadelphia) 629; artisans' dwellings (Kentish Town) 779; bank (Halifax) 115; baths (and free library, Shoreditch) 465, 556, 779, 840, 851, 908, 921 (Chester) 210, 284; board schools (Farsley) 151 (Lancaster) 32 (Reading) 884 (Sowerby Bridge) 32, 63 (Watford) 151; Building News designing club, 42, 551, 809; capitol, state (Minneapolis) 761; cathedral (Belfast) 519, 545, 614, 685, 779; chapels (Nottingham, U. Meth. Free) 32 (Skelmanthorpe) 371; churches (Gateshead, St. George) 151 (Hetton-le-Hole) 884; club (Woking, Conserv.) 801; committee, new, 175, 177; convalescent home (Grange-over-Sands) 686; cottage homes (Aston) 46; cottage hospital (Accrington) 407; county council buildings (Durham) 151, 210, 225, 247, 285, 321, 629, 721; cour des comptes (Paris) 629; dairies, model, 324, 509, 739, 779; hospitals (Bowness, fever) 519 (Brownhills, fever) 884; hotel (Weymouth) 687; infirmaries (Scarborough, workhouse) 519 (Tendring, workhouse) 245; laying-out estate, Kirkstall, 721; lunatic asylum (East Riding) 761; market stall (York) 519; municipal buildings (Aberdeen) 833 (Coventry) 110, 872, 884 (Lynn) 321; museums (Liverpool extension) 356 (Philadelphia) 943; National prize drawings, 108; pavilion, Eisteddfod, 210; Penrose, F. C., on, 657, 686; rigid restrictions in, 912; Soane (art galley) 701; schools (Bangor, Carnarvonshire girls) 721 (Derby, St. Thomas) 519 (Derry, Presbtn,) 739 (Guernsey) 284 (Horsham, Christ Church) 884 (Pembroke Dock intermediate) 687 (Welshpool, intermediate) 465, 502, 539, 884; Settlement buildings (Tavistock-place) 189; sewerage schemes (Great Ayton) 371 (Linslade) 721 (Northallerton) 651; shop front (Warrington) 356; statue (Siddons, Paddington) 833; technical institute (West Ham) 134, 407, 434, 465, 481, 629; technical schools (Hyde) 872; town hall (Thurles) 481; Turners' Co., 102, 590; water supply (Machynlleth) 465; workhouses (Bridgend) 556 (Ipswich) 46, 210 (Newport, Mon.) 481; Y.M.C.A. (Newcastle-on-Tyne) 299
Compulsory sales, 322
Concert halls and assembly rooms, 511, 624, 659, 692, 736, 774, 906
Concrete: arching, 286, 322; floor, 466, 579, 652, 763
Conditions: new schedule of, 175, 178; of contract, some, 920
Conductor, lightning, Toxteth infirmary, 246
Congresses: health (Hull) 223; house painters (Newcastle) 548; hygienic (Parkes museum) 140, 175; sanitary (Paris) 113, 147, 182
Consoles, Classic, 135
Conspiracy, sub-contractor charged with, 580
Construction of tarred footways, 698
Continent, old masters on the, 253, 263, 371, 557, 629, 779, 885
Continuous repaving in the City, 66
Contract, some conditions of, 929
Contractor, is he desirable, 290, 358
Contractors: pricebook, 262, 503; what are bonâ fide? 466
Contracts: and committees, 763; and penalties, 287; Government (fair wages in) 765 (firemen in) 690; law of building and engineering, 800; single and separate, 435; sub, 446; v. day labour in Canada, 140
Control, municipal, of building, 771
Convalescent homes: Broadstairs (Yarrow) 171; Grange, 686; Limpsfield (Passmore Edwards) 396, 500; Llanfairfechan, 170
Convalescents in asylum, 331
Conversion of exempted buildings, 909
Conviction quashed, building act, 211
Cool roof, 430
Co-operative: stores, Peterborough, 720; Sunday houses, 360
Co-operators, tenant, at East Ham, 690
Corinthian details, 39
Corner buildings, height of, 322, 763
Corn exchange, Glasgow, 151, 940
Corrosion of underground pipes, 146
Cottage: American double, 284; homes, Aston, 46; hospitals (Accrington) 407 (Porth) 223 (Swanage) 578 (Tilbury) 593
Counsellors, the multitude of, 619
Country: house, club designs, 809; residences, bungalows and, 66
County: council buildings (Durham) 151, 210, 225, 247, 285, 321, 629, 721 (Staffordshire) 758; lunatic asylums, 3, 96, 144, 186, 220, 255, 296, 331, 427, 552, 590, 660, 734, 776, 848, 941
Court house, Scunthorpe, 613
Courtyard or street? 247
Covenant, breaches of, 802
Covenants to repsir, 139
Coventry: municipal buildings, 110, 445, 872, 884; waterworks, 616
Craftsman, R.I.B.A., 172
Crooked v. shapely plans, 472
Crosses: Bakewell, 815; Tennyson, Freshwater, I.W., 34
Crow v. Redhouse, 64, 211
Cundy, Thos., the late, 721, 812
Cuninghame v. Richards, arbitration, 248
Customs, foreman joiners', 139
Cycling tour through Normandy, 697
Cyprus, Græco-Phœnician architecture in, 878

DAIRY: institute, Ipswich, 208; plans competition, 324, 509, 739, 779
Damages: against a surveyor, 322; for sewage farm, flooding, 139
Darenth, builders' foremen at, 288
Darlington, architectural lectures at, 910
Daventry and Marton railway, 245
Davis v. Hawkins, libel, 725
Day labour v. contracts in Canada, 140
Debenham v. Chambers, commission 725
Decline of the building trades, alleged, 656
Decorated tiles, glazed and, 334
Decoration of open timbered roofs, 362
Decorations, mural: 810; royal exchange, 836
Dee, damming the, 542
Defective drains, 836
Defects of modern house arrangements, 105
Deil el Bahari antiquities at Burlington house, 66
Delabole quarry, tunnel at, 690
Denbigh, drainage of, 616
Denny, Dr. P., Dumbarton, the late, 320
Department, science and art, report, 323
Design of soldiers' barracks, 625
Designing: club, Building News, 42, 551, 809; of steel bridges, 135, 254, 355, 443, 662
Designs: baths and free library (Shoreditch) 805, 840; Building News designing club, 42, 551, 809; dairies, 509; National competition, 108; recent central area, 251; registered, 835; royal academy; 846; Soane (art gallery) 701; Turners' competition, 590; West Ham technical institute, 434
Desk patent, infringement of, 139
Detail, misuse of, 397
Details: Classic, and their application, 8, 39, 72, 135, 146, 184, 258, 294, 363, 403, 439, 475, 510, 554, 622, 733, 770, 807, 843, 879, 915; structural, neglect of, 655
Deterioration of town dwellings, 251
Determination of stresses, graphical, 700
Diaries and almanacs, 850
Dilapidations, clergymen and, 724
Dinner, builders' benevolent institution, 697
Disaster on board ss. *Iona*, 465
Discharge of pipe, 652
Discharges, circular sewer, 700
Disconnecting gas meters, 101
Disputed street repairs, 287
Disqualifications from parish councils, 579
Distress for rent, 211
District: asylums, 734, 776, 848, 941; surveyor, successful appeal against, 64
Docks: Bristol (improvements) 468; Southampton (graving) 170
Dormitories, 873
Douglas, I.M., drainage of, 802
Dover harbour extension, 31
Drain: or sewer, 724; repairing, 580, 615
Drains: defective, 836; house, 286, 358
Drawings: geometrical, 394 (plane) 700; London board school, 140; National competition, 108; tricky, 398
Dreamy mental states, 760
Drinking fountain, Hammersmith, 34
Drinkwater, Harry, the late, 592
Dry rot, 763
Duckett v. Whitehead, separator patent, 65
Duct, Roman, at Bath, 66
Duke's self-lighting gas-burner, 96
Dundee: art exhibition, 689, 764; institute of architecture, 10
Durability of iron, 942
Durham county council buildings, 151, 210, 225, 247, 285, 321, 629, 721
Dwellings: artisans' (Kentish Town) 779 (Liverpool) 298, 468 (St. John's Wood) 578; labourers' (Manchester) 851; London, water supply to, 689; town, deterioration of, 251
Dynamos, management of, 262

EARL'S Court great wheel, 66
Earthworks of Stonehenge, 140, 478
Eastbourne, churches near, 430
East: Ham, tenant co-operators at, 690 London water supply, 175, 504, 539, 541 580
Eccles sewage purification works, 518
Edinburgh: and Corstorphine railway doubling, 45; arbitration, 874; archi. assocn., 833, 940; city chambers extension, 134; covering in Broughton-burn, 359; forestry classes, 324; gasworks chimney, 468, 505, 543, 684; greater, 542; notes from, 39, 553; school of applied art, 846; Talla water supply, 323, 504, 541
Edwards, Passmore, and West Ham, 549
Egyptian antiquities, British Museum, 581
Electricity in the household, 875
Electric: lighting (agreement, breach of) 835 (Ayr) 432 (regulations) 837 (Salford) 249; meter testing in the City, 175; tramways, 727
Elevations or perspectives at the Academy? 433, 539
Embroidery: Cluny museum, 71; mediæval, 581
Employment of architects, 691
End of iron architecture, 729
Engineering: architectural, 326; civic, 394; Crystal Palace school of, 947; tools from Pompeii, 554
Engineers: civil, institution, 696; junior, institution, 249, 296, 519; municipal, association, 7, 513; sanitary congress, Paris, 113; society of, 31, 871; water works, proposed association, 762
Engineer, the City and the, 327, 364, 403
England, North of: architectural profession in, 101, 138, 172; how they do it in, 686
English: Gothic, 149; homes, some ancient, 4; photographic survey, 874; Renaissance, 879, 915
Epileptics' home, Chalfont, 175, 189, 769
Eraser, Wy-ling, 804
Estate: agents' commission, 945; charge for laying out, 466; management, 358, 394
Estimates, approximate, notes on, 773, 811, 847, 905, 919
Eve, temptation of, 701
Ewell sewerage competition, 77
Examinations, plumbers', 690
Exchange: corn, Glasgow, 151, 940; royal (E.C., decorations) 836 (Manchester) 282
Excursions: A.A. (Gloucester) 4, 37, 180, 217; Birmingham archi. assocn. (Ludlow) 140, 224; junior engineers' (Belgium) 249, 296
Exempted buildings, conversion of, 909
Exeter, sewage disposal, 689
Exhibitions: Birmingham art gallery, 360; Bradford art, 837; building trades (handicrafts awards) 738 (Manchester) 922; Deir el Bahari antiquities (Burlington house) 66; Dundee (art) 689, 764; health (Paris) 112, 147, 182; institute of oil colour painters, 620; London board school drawings, 140; Manchester art gallery, 360; National competition drawings, 108; New English art club, 696; New Gallery, 546; Payre collection, mediæval art (South Kensington) 70; People's Palace, 875; photographic society, 473; royal society, British artists, 621; Turners' Co., 588; Vienna, historical, 654; Walker art gallery, Liverpool, 360; Westminster aquarium (china) 323
Experiments in sewage purification, 946
External or party wall, 725
Extras: 801; promised payment for, 878
Eyre estate arbitration, 504, 580, 615

FACING, cement, 247
Factories: Bristol (bacon) 665; Southall (margarine) 299
Fair contracts, the Government and, 755
Farm: buildings, modern, 812; Waxwell, Pinner, 407
Fashionable building or architecture? 252
Fees, architects', 615
Fences, railings, and gates, 141
Field for the sketcher, a, 1
Fire: brigade stations (Belfast) 369 (Birkenhead) 904 (London) 480; protection (of ironwork from) 295 (of theatres from) 838
Firemen and architects at Amsterdam, 369, 505
Fireproofing tests, proposed, in New York, 356
Fittings, gas, 444, 663
Fixtures: law of, 653; tenants', 32
Flats, restraints on alterations to, 908, 945
Flooding: sewage farm, damages from, 139; Thames, report of, 874
Floor: damp to cellar, 173; concrete, 466, 579, 652, 763; ward, width of, 173; warehouse, 322
Florence v. Paddington vestry, 724
Flush of water, in cisterns, 542, 689
Footways, tarred, construction of, 698
Force of the wind, 664
Ford, E. Onslow, R.A., 175
Foremen: in Government contracts, 690; joiners' customs, 139
Forests: American, waste in, 288; of France, three months in, 700; Spruce timber, 664
Forestry classes, Edinburgh, 324
Foundations in quicksands, 9
Fountain, drinking, Hammersmith, 34
Fowler, C., and board of examiners, 726
Foyers Falls, destruction of, 617
France: forests of, three months in, 700; sewage disposal in, 298
Frascati restaurant, 727
Free, gratis, for nothing, 801
Free libraries: Cardiff, 390; Edmonton, 665; Hammersmith, 11; Newcastle-on-Tyne (Elswick-park) 354, 578; Shoreditch, 465, 556, 779, 805, 840, 851, 908, 921; West Ham, 134, 407, 434, 465, 481, 519, 629; West Hartlepool, 614
Freemasons and St. Paul's cathedral, 360
French: Academy prizes, 592; Renaissance, 554, 622, 733, 770
Fretwell, J., in re, 616
From vice-chairman to sanitary inspector, 432
Front hall, papering, 173
Fumigated oak, 944
Fungus in dry rot, 652
Furnished: house, sanitary state of, 33; lodgings, do. do., 65
Furniture, French, 263

GALLERIES: Glasgow art, 213, 946 National, 35, 140, 323, 395; National portrait, 324; New, 546; Newlyn (art) 613; Scottish National, 249; South London, 836; Tate, Millbank, 213
Gas: burner, self-lighting, 96; fittings, handbooks on, 444, 663; holder, largest in America, 324; light, incandescent improvements in, 334; meters, disconnecting, 101
Gates, fences and railings, 141
Gauges, percolation, relative value of, 541
General building lines, 179
Geometrical drawings: 394; plane, 700
German Renaissance, 843
Getting away from ourselves, 361
Girder: accident, fatal, 287; calculations, 430; erection, appliances for, 392
Girders, built-up bridge, transport of, 188
Giving certificates, 731
Glasgow: and Clyde purification, 323; architectural (association) 172, 332, 570, 904 (classes in) 333, 910; art gallery, 213, 946; harbour tunnel, 31; institute of architects, 576; paving experiments, 804; poor, housing the, 850; school of art, 176; year's (building operations in) 542 (corporation works) 910
Glossary of technical terms, 261
Glossop sewage disposal, 323
Gloucestershire excursion, architectural association, 4, 37, 180, 217
Gold, oil, 687
Gorton sewage works, 725
Gothic: and Roman, a mixture of, 942; English, 149
Government contracts: fair wages in, 765; foremen in, 690
Græco-Phœnician architecture in Cyprus, 878
Graham v. Huddersfield corporation, 211, 724, 763
Grains of sand in cement, size of, 917
Grammar schools: Oldham (Hulme) 11; Wakefield, 614
Granite merchant v. builder, 248
Graphical determination of stresses, 700
Grates, registered, 501
Gravel on roads, 687
Graving dock, Southampton, 170
Great: Ayton main sewerage, 371; wheel at Earl's Court, 66
Greater: Edinburgh, 542; Liverpool, 501
Grocers' Co.'s hall, 151
Growth of Harwich and Rotterdam, 400
Guild, City, 151, 331, 335, 587, 686, 739, 813
Gullies, street, siphoned branches for, 920

HABERDASHERS' hall, 335
Half-crowns for competition particulars, 465, 502, 539
Halifax: municipal engineers at, 7; sewage treatment, 836
Hall front, papering of, 173
Halls: Brewers' Co., 331; concert, 511, 624, 659, 692, 736, 774, 906; Edinburgh (Nelson) 244; Grocers' Co., 151; Haberdashers' Co., 335; Mercers', 665; Merchant Taylors', 587, 686, 739, 813; Newcastle-on-Tyne (Burt meml.) 464; Park, Oswestry, 11; Selkirk (public) 648; Vintners', 335; Westminster, tablets in, 946
Hamworthy pottery, 617
Handbooks of gas-fitting, 444, 663
Handicrafts awards, building trades exhibition, 738
Harbour, Dover, 31, 940
Hardening of steel, 804
Hardships of owners of insanitary property, 396
Harrison, H. G., New York, the late, 429
Harwich, growth of, 400
Hatherleigh drainage and water supply, 725
Hawes Water as a London water supply, 617
Hayward and Son, Bournemouth, in *re*, 33
Health congresses: Hull, 223; Paris, 112, 147, 182; Parkes museum, 140, 175
Heating, hot-water, in a Chicago apartment house, 136
Height of corner buildings, 322, 763
Hemming, Samuel, the late, 114
Hems' Christmas feast, 947
Highways, management of, 261
Hill's new ventilator, 76
Hill v. Kapham, 802
Holborn to Strand, proposed street, 478, 507, 542
Holdsworth, E., in *re*, 580
Homes: convalescent (Broadstairs, Yarrow) 171 (Grange) 686 (Limpsfield) 396, 500 (Llanfairfechan) 170; cottage (Aston) 46; epileptics' (Chalfont) 175, 189, 769; our, 98, 105, 812; some ancient English, 4
Hospitals: Accrington (cottage) 407; Agra (Thomason) 214; Bowness (fever) 519;

357850

Brownhills (fever) 884; Dudley (Guest) 940; Gray's Inn-road (Royal Free) 134; Plymouth (chapel) 758; Porth (cottage) 223; Rhyl (children's) 505; Swanage (cottage) 578; Tilbury (cottage) 593
Hotels: Birmingham (Grand) 464; Fort William (station) 629; Newcastle, Co. Down, 813; Weymouth, 687
Hot-water heating in a Chicago apartment house, 136
House: agents' commission, 725; arrangements, defects of modern, 105; country, club designs, 809; drains, 286, 358; furnished, sanitary state of, 33; of Lords, old, 263; painters in conference, 548; sanitation, 297; the Church, 30; warranty, 173 (implied) 688
Household, electricity in the, 875
Houses: Bedford, country near, 299; Bowdon, 335; Bristol, 720; Camberley, 701; Charterhouse-square (head masters') 885; Chelsea Embankment Court, 445; Chicago, hot-water heating in, 136; Christchurch-park, Ipswich, 360; Co-operative Sunday, 360; Duncombe-park, 779; East Grinstead, 851; Ghent, 371; Goddington, Chelsfield, 371; Hind Head, 921; interesting, 583; Kensington-square, 851; Newcastle-on-Tyne (Mansion) 542; New Mar lodge, 578; of Parliament, ventilation of, 395; Pew hill, Chippenham, 665; Precincts, Hampton Court, 481; Tewkesbury, 263; Woodford, 77; Worcester (old) 299; Workmen's, 247; Wych-street (old) 324
Housing the Glasgow poor, 850
How: they do it (in the North of England) 686 (in the West Indies) 430; to write the history of a parish, 812
Huddersfield, sewage precipitation at, 214
Hudson v. Cripps, alterations to flats, 908, 945
Hull, health congress, 223
Hunt, R. Morris, New York, the late, 224
Hygienic: aspect of wood pavements, 324; congress, Parkes museum, 140, 175; ventilation, 501

ICE chambers, 247, 581
Ilett, G. H., Warsop, in *re*, 835
Implied warranty, 688
Improvements, incandescent gas-light, 334
Improvement: Parliament-street, 765, 803; street, 584
Inadequate quantities, 841
Incandescent gas-light improvements, 334
Indeterminate structures, statically, 760
Indian railways, 288
Industry, a promising, 43
Inertia, moment of, 466
Infirmaries: Burnley (workhouse) 798; Manchester (royal) 577; Scarborough (workhouse) 519; Southport, 500; Tendring (workhouse) 245; Toxteth (workhouse) 246
Infringement of school desk patent, 139
Insanitary property: hardship of owners of, 396; Liverpool, award as to, 394
Insch and Garthy railway, 245
Inspectors, sanitary, association, 576, 685
Institutes: architects (Glasgow) 576; architecture (Dundee) 10; auctioneers, 653, 946; British architects, royal, 175, 653, 657, 733, 878 (competitions committee) 175, 177 (craftsman class) 172 (schedule of conditions) 175, 178; painters in oil colours, 620; polytechnic (Clerkenwell, Northampton) 354 (Norwood) 175; technical (Campden) 77 (Richmond) 134, 151 (West Ham) 134, 407, 434, 465, 481, 519, 629
Institutions: builders' benevolent, 149, 697, 812; builders' clerks', 579 (benevolent do.) 776; civil engineers', 696; junior engineers, 519 (in Belgium) 249, 296; royal, 875; surveyors', 695, 769, 848
Interesting houses, 583
Interest in land, what is an ? 540
Iona, s.s., disaster on, 465
Ionic: details, 8; volute, origin of, 878
Ipswich: British Association at, 367, 399; Christchurch mansion, 360; Stoke sewerage, 249; workhouse competition, 46, 210, 538
Ireland, landlord and tenant in, 769
Irish Ordnance Survey, 287
Iron: architecture, end of, 729; cast, in builders' work, 260, 291, 329, 402, 436, 516, 661, 698, 759, 777, 913; durability of, 942; skeletons in New York, 727
Ironwork, protection of from fire, 295
Is a contractor desirable ? 290, 358
Italian Renaissance, 184, 258, 294, 363, 403, 439, 475, 510
Ivy on walls, 763

JACQUES v. Edwards, covenants to repair, 139
Japanese leather paper, 334
Jerry buildings in New York, 35, 360, 396
Jets, water, for sinking caissons, 249
Jobbins, W. H., Calcutta, the late, 628
Johannesburg, building progress in, 654
Johnson, A. E., Melbourne, the late, 208
Joiners: foremen, customs, 139; strike, sequal to, 835
Joists, rolled, 286, 322, 358
Junior engineers, institution of, 519; in Belgium, 249, 296

KENSINGTON: court corner buildings, 322, 763; gardens, banqueting house, 874
Kettering, river pollution at, 616
Kings; College architectural classes, 396, 516, 542; Heath, builing operations at, 468
Kirkstall: abbey, 428; laying-out of Victoria-park, 721
Knowles, Geo., Bradford, the late, 150

LABOURERS' dwellings, Manchester, 851
Lainston v. M'Lachlan, appeal, 64
Lake district, new coach road in, 288, 617, 727, 910
Lancashire: Derbyshire and East Coast railway, 285, 539; police buildings, 726
Land: an interest in, 540; vacant, nuisance of, 873
Landing stage, Morecambe, fall of, 395, 428, 440
Landscape, architectural, 104
Lands, railway superfluous, 908
Lane, E., Wokingham, the late, 664
Langridge, R. J., the late, 721
Largest gas-holder in America, 324
Laundries, asylum, 3, 96
Lavender-hill theatre, 940
Lavy v. London County Council, 102, 139, 172
Law: courts, the battle of sites, 542; of building and engineering contracts, 800; of fixtures, 653; of light, 173; relating to building, 760 (do. societies) 261; sanitary, layman's notes on, 102
Lawrence, Philip H., the late, 556
Layman's notes on sanitary law, 102
Lead: lettering, 652; poisoning, prevention of, 909
Leather paper, Japanese, 334
Leeds: and Yorkshire archi. society, 722; arbitrations, 615, 945; insanitary area in, 504
Leek sewage disposal, 874
Legal, 32, 64, 101, 139, 173, 211, 247, 287, 322, 359, 394, 431, 466, 503, 540, 579, 615, 652, 688, 724, 763, 802, 835, 873, 908, 945
Leggotts, Limited, 43
Leicester: railway arbitration, 835; waterworks extension, 467
Lettering, lead, 652
Leyton, sewage nuisance at, 139
Liability: no, for sanitary state of furnished lodgings, 65; of clients, 806, 872
Libel actions: against surveyor, 725; plasterers' trade union, 174
Libraries, free: Cardiff, 390; Hammersmith, 11; Lower Edmonton, 665; Newcastle-on-Tyne, 354, 578; Shoreditch, 465, 556, 779, 805, 840, 851, 908, 921; West Ham, 134, 407, 434, 465, 481, 519, 629; West Hartlepool, 614
Lichfield cathedral, 244
Life tenants' power 466
Lifting trees, 324
Light: electric (agreement, breach of) 835 (Ayr) 432 (regulations) 837 (Safford) 249; in town buildings, 142; law of, 173; railways, 400
Lighthouses: Rattray Head, 539; Spurn Point, 445
Lightning conductor, Toxteth infirmary, 246
Lights, ancient: 444, 472 (Liverpool) 466 (Plymouth) 763; in the City, 212
Lime, blue lias, a caution, 285
Line, building: appeal, 102, 139, 172; L.C.C., architect's power to fix, 33, 64, 174, 179
Linslade, sewerage and water supply, 721
Lithographic school, Bolt-court, 689
Liverpool: ancient lights in, 466; and Leeds canal, 429; architecture and applied arts at, 427, 689, 946; artisans' dwellings in, 298, 468; award as to insanitary property, 394; building leases, 617; greater, 501; museum extension, 356; Walker art gallery exhibition, 360
Llandaff cathedral, 46
Lock, National design, 921
Locomotive service of London, 333
Lodge, New Mar, 578
Lodgings, furnished, sanitary state of, 65
Loftus Brock, E. P., the late, 664
London: and Middlesex archæol. society, 798; and South Wales railway, 910; architecture from American view point, 185; board school buildings, 222; building act, 392, 652 (ambiguities in) 330, 911 (and beerhouses) 802 (conviction quashed) 211 (new structure under) 64, 211 (party walls and) 212 (year's working of) 881; building trades, 44 (apprenticeship in) 581, 649; county council, 30, 500, 577, 617, 758, 803, 843 (a year's work) 109 (bills) 942; dwellings, water supply to, 689; East, water supply, 175, 504, 539, 541, 580; fire station, 480; locomotive service in, 333; master plumbers' association, 884; new main line to, 320; main sewers, 946 (compensation cases) 504; new water supply for (from Hawes Water) 617 (Welsh) 213, 479; public health act, ambiguities in, 688; school board, building operations of, 509; statues, 289; survey, 505; tramways, acquisition of, 909
Lords, the old house of, 263
Lower Thames navigation, 837
Loxton, S., Cannock, the late, 208
Lucas, Chas. T., the late, 812, 871
Ludlow, Birmingham architects at, 140, 224
Lunatic asylums: Cheddleton, 720; Chichester, 613; county, 396, 144, 186, 220, 255, 296, 331, 427, 552, 590, 690, 734, 776, 848, 941; Coxlodge, Newcastle, 170; East Riding, 761; Inverness, 282; St. Albans, 684; Upton, Cheshire, 244, 426
Lych gate, Shanklin, 263
Lynn municipal buildings, 321, 357
Lynton and Barnstaple railway, 429

MACADAM paving, tar, 432
McClymont, Alex., in re, 945
Machine, testing, at Bradford, 726
Machinery, modern wood working, 392
Machynlleth water supply, 465
Main: roads, Surrey, 803; road, what is a, 763; sewers, new, metropolitan, 946
Malcolm collection of drawings, 66
Management: estate, 358, 394; of dynamos, 262; of highways, 261
Manchester: art gallery exhibition, 360; building trades exhibition, 922; canal contract arbitration, 909; sewage disposal, 580; Sheffield and Lincolnshire railway extension to London, 320; society of architects, 476, 685
Man: ages of, Boyd Dawkins on, 110; of straw building owner, 909, 945; the workman as a, 67
Mansion house: E.C., subways, 764, 803, 909; Newcastle-on-Tyne, 542
Manufacture of bricks, practical treatise on, 320
Mapping and surveying a city, 505
Margarine works, Southall, 299
Market: Lisburn, 577; stall competition, York, 519
Marsh, J. B., Dudley, the late, 320
Masked rottenness, 767
Masonry, practical, 800
Master: builders' associations (Birmingham) 871 (National) 150 (Northampton) 578; plumbers' assocn. (London) 884
Masters, old, on the Continent, 253, 263, 371, 557, 629, 779, 885
Materials, misused, 778
Mayfair Property Co. v. L.C.C., 174
Mediæval: art, Payre collection of, 70, 114; embroidery, 581
Meeson v. Shurmur, 287
Memorials: Bury, Lancs (Booth cross) 213; Carlisle cathedral (Bp. Goodwin) 431; Fochabers (Alan Wilson) 616; Freshwater, I. W. (Tennyson cross) 34; Hammersmith (Passmore Edwards fountain) 34; York minster (Thomson) 213
Mental states, dreamy, 760
Mercers' hall, 665
Merchants, slate, association, 512
Merchant Taylors' hall, 587, 686, 739, 813
Messenger's works, Loughborough, 432
Meter: electric, testing of, 175; gas, disconnecting, 101
Metropolitan asylums board, work of, 910
Metropolis, new water supply for, 213
Mining under springs, 174
Mission churches: East Leyton, 464; Waskerley, 170
Mistakes and abuses, 877
Misused materials, 768
Misuse of detail, 397
Mitchell, Dr. Chas., Newcastle, the late, 320
Mixture of Roman and Gothic, a, 942
Model dairies, 324, 609, 739
Models, 430
Modern: farm buildings, 812; house arrangements, defects of, 105; wood-working machinery, 392
Moment of inertia, 466
Monastery, Mount Grace, 396
Monuments: Berlin (Emperor William) 288; Hampstead cemetery (Ewan Christian) 467; Kensal-green cemetery (J. Gibson) 779
Morgan, Isted, and Morgan, in re, 616
Morden college v. Lethbridge, 359
Morecambe landing stage, 395, 428, 440
Morley waterworks, 359
Mortar: 322; and "mortar," 431; bad, 248; cement, tests of, 698
Motor, new tramway, 804
Mount Grace monastery, 396
Multitude of counsellors, 619
Municipal: buildings (Aberdeen) 833 (Coventry) 110, 445, 872, 834 (Lynn) 321, 357; control of buildings, 771; engineers' assocn., 513 (at Halifax) 7
Mural decorations, 810
Museums: Alexandria, 543; British (fresh antiquities) 581 (Malcolm collection) 66; Cluny, 71, 513, 547, 585; Exeter, 134; Liverpool, 356; New York (Metropolitan art) 468 (Renwick collection) 140; Philadelphia, 943; Solothurn, 368
Mycenæ, excavations at, 213

NATIONAL: associations (master builders) 150 (slate merchants) 512; competition drawings, 108; Gallery (new pictures) 35, 140, 323, 395; Portrait gallery, 324; Scottish do., 249; Union of British architects, 722, 762, 834, 873, 944
Navigation, Lower Thames, 837
Neglect: of structural details, 655; to give notice, 102, 212
Negotiants, building, professional charges and, 325
New: Brighton, development of, 947; building, what is a, 431; buildings, statutory, 326; cathedral, the style for a, 103; competitions committee, 175, 177; English art club, 696; gallery exhibition, 546; main line to London, 320; pictures at National Gallery, 35, 140, 323, 395; portrait of Shakespeare, 909; sewers, 101; South Wales, public works in, 262; structure under London building act, 64, 211; ventilator, 76; York (art museum) 468 (iron skeletons in) 727 (jerry buildings) 35, 360, 396 (proposed fire-proofing tests) 356 (St. John's cathedral) 257
Newark waterworks, 504
Newcastle-on-Tyne: Mansion house, 542; Y.M.C.A., 299
Newport, Mon., water supply, 764
Nichols, D. Cubitt, the late, 592
Nicholson, T., Hereford, the late, 429
Nickel steel for building, 288
No: compensation for setting back, 174; liability for sanitary state of furnished lodgings, 65
Non-conductor, slag wool as a, 581
Normandy, cycling tour through, 697
Northallerton sewerage, 651
Northampton: master builders' association, 578; polytechnic, Clerkenwell, 354
Northamptonshire churches, 63, 173
North: British railway extensions, 445; of England (architectural profession in) 101, 138, 172 (how they do it in) 686; sea canal, 288
Northern architectural association, 77, 115, 444, 593, 833
Norwood institute, 175
Notes: from Edinburgh, 39, 553; from Paris, 99, 292, 441, 650, 799; in the Canary Isles, 221, 256; layman's, on sanitary law, 102; on approximate estimates, 773, 811, 847, 905, 919; on building prices, 6; on shippo, 262; parliamentary, 287
Notice, neglect to give, 102, 212
Nottingham, railway claim at, 724
Nuisance: on vacant land, 873; sewage, at Leyton, 139
Nyphos closet, 943

OAK, fumigated, 944
Obituary: Ancelet, G. A., 208, 224; Ashmead, G. C., Bristol, 518; Barker, R., 556; Brock, E. P. Loftus, 664; Browne, Chas., 664; Bucknall, B., 884; Chapman, J. H., Boston, 721; Clarke, T. Chatfeild, 10, 324; Clutton, Henry, Reigate, 282; Cobham, G. R., Gravesend, 224; Colson, J., Winchester, 320; Cundy, T., 721, 812; Denny, Peter, 320; Drinkwater, H. G. W., Oxford, 592; Harrison, H. G., New York, 429; Hemming, Saml., 114; Hunt, R. Morris, New York, 224; Jobbins, W. H., 628; Johnson, A. E., Melbourne, 208; Knowles, Geo., 150; Lane, E., Wokingham, 664; Langridge, R. J., 721; Lawrence, P. H., 556; Loxton, S., Cannock, 208; Lucas, Chas. T., 812, 871; Marsh, J. B., Dudley, 320; Mitchell, Dr. Chas., Newcastle, 320; Nichols, D. Cubitt, 592; Nicholson, T., Hereford, 429; Paul, W. L., 224; Renwick, Jas., New York, 43, 140; Smith, Henry, 502, 540; Storey, W. W., 518; Sutton, J., Southport, 592; Swansborough, E., 208; Trew, J. W., Bristol, 592; Trounson, J. W., Penzance, 721; Tyrwhitt, R. St. John, 871; Vaux, Calvert, 871; Wallis, S. A., 943; Watberston, W., Edinburgh, 800; Young, J., Perth, 812
Observatory, Calton hill, Edinburgh, 832
Offices: Admiralty (new) 390 (old, screen) 432; county council (Stafford) 758; police (Aberdeen) 538; post (Glasgow) 798
Oil: colour painters' institute, 620; gold, 687
Oils for water-proofing brick, 432
Old: house of lords, 263; houses in Wych-street, 324; masters on the Continent, 253, 263, 371, 557, 629, 779, 885
Open-timbered roofs, plea for decorating, 362
Opera house, Haymarket, 875
Operations, building, London school board, 509
Opportunities of the young architect, 545
Ordnance survey, Irish, 287
Organs: and carpets, 506; Bath abbey, 31, 577; Westminster abbey, 469
Ornament, Celtic, 947
Our homes, 98, 105, 812
Ourselves, getting away from, 361
Owner, building, man-of-straw, 909, 945
Owners of insanitary property, hardships of, 396

PAINTERS: house, in conference, 548; in oil colours, institute, 620
Paint: as protective of buildings, 727; tar, 432
Palace, Wolvesey, 581
Palestine exploration fund, 140
Papering front hall, 173
Paper, Japanese leather, 334
Parchment, colour on, 801
Paris: completion of Boulevard Haussmann, 176; engineers and architects' sanitary congress, 113; health exhibition, 112, 147, 182; notes from, 99, 292, 441, 650, 799
Parish: councils, disqualifications from, 579; how to write the history of a, 812
Parks, rating of, 503
Parliamentary notes, 287
Parliament: houses of, ventilation of, 395; street improvement, 765, 803
Particulars, competition, half-crowns for, 465, 502, 539
Party walls: above roofs, 216; building act and, 212; or external walls, 725; timber in, 102
Passmore Edwards and West Ham, 549
Patent cases: school-desk, 139; separator, 65
Patients' workrooms, asylum, 220, 255
Paul, Wm. L., the late, 224
Pavements, wood: 102; hygienic aspects of, 324; new ailment from, 140
Pavilions: Eisteddfod, 210; Ryde pier, 45
Paving: apportionments, 874; Australian woods for, 102; experiments, Glasgow, 804; slabs, artificial, 875; tar macadam, 432
Payment, promised, for extras, 878
Payre collection of mediæval art, 70, 114
Penalties, contracts and, 287
Penryhn slate steamer, 360
Penrose, F. C.: on competitions, 657, 686; some points from, 691
Percolation gauges, relative value of, 541
Perils of civilisation, some, 655
Perspectives or elevations at the R.A., 433, 539
Petersham meadows, 288, 765
Philadelphia: city hall, 947; ship canal, 176
Photographic: exhibition, Pall Mall, 473; survey, English, 874
Photography, its materials and appliances, 761

Piers: Morecambe (fall of) 395, 428, 440; Ryde, 45; Southport, 65
Pipes, underground, corrosion of, 146
Plane geometrical drawings, 700
Plans: abandoned, architect's claim for, 432; crooked v. shapely, 472
Plasterers' union libel action, 174
Plate, discovery of at Reading, 837
Plea for decorating open-timber roofs, 362
Plumbers: examination, 690; master, London association, 884; registration, 803
Plymouth: architects, 334; light and air case, 763
Points, some, from F. C. Penrose, 691
Poisoning, lead, prevention of, 909
Police: buildings, Lancashire, 726; offices, Aberdeen, 538; station (Newcastle-on-Tyne) 832
Polling booths, improvement in, 360
Polytechnics: Clerkenwell (Northampton) 354; Norwood, 175; Woolwich, 176
Pompeii: engineering tools from, 554; Talfourd Ely on, 694
Poor, housing the Glasgow, 850
Portrait: gallery, national, 324; of Shakespeare, new, 909
Post office, Glasgow, 798
Poster, an architect's, 733
Potable, water, to make, 947
Pottery, Hamworthy, 617.
Powers of: tenants for life, 466; vestries over sewers, 64
Power: running to waste, 471; to fix building line, L.C.C. architect's, 33, 64, 174, 179
Practical: masonry, 800; riveting, 260; trigonometry, 760
Premium, a princely, 651
Preservation of timber, 405
Preston and the Ribble works, 576
Prevention of lead poisoning, 909
Price: and Walker v. Webb, 248; book, contractors', 262, 503
Prices: brickwork, 801; building, notes on, 6
Princely premium, 651
Private bills for next session, 803
Professional charges and building negotiants, 325
Profession, architectural, in North of England, 101, 138, 172, 686
Promises, committee's, 211, 724, 878
Promising industry, a, 43
Proposed: association, waterworks engineers, 762; fire-proofing tests in New York, 356; National Union of British architects, 722, 762, 834, 873, 944; new street, Holborn to Strand, 478, 507, 542; new water supplies for London, 213, 479, 617
Protection of: ironwork (by paint) 727 (from fire) 295; theatres from fire, 438
Provincial architects, 767
Public: health act, London, ambiguities in, 688; libraries (Cardiff) 390 (Hammersmith) 11 (Lower Edmonton) 665 (Newcastle-on-Tyne) 354 (Shoreditch) 465, 556, 779, 805, 840, 851, 908, 921 (West Ham) 134, 407, 434, 465, 481, 519, 629 (West Hartlepool) 614; works in New South Wales, 262
Pulpit, St. Margaret's, Westminster, 321
Purification, sewage, experiments in, 946
Putting science for art, 397

QUANTITIES, inadequate, 841
Quarries, stone, benediction of, 543
Quashed, building act conviction, 211
Quatuor Coronati at Winchester, 35
Quest, the, 943
Quicksands, foundations in, 9

RACE, new, in Egypt, 140
Railings, fences, and gates, 141
Railway: improvements in Birmingham, 539; station (Knott Mill) 798; superfluous lands, 908
Railways: Budleigh Salterton, 648; Central London, 468, 684, 764, 769, 803, 909; City and Waterloo, 214, 245; Daventry and Marton, 245; Edinburgh and Corstorphine (doubling) 45; Galway and Clifden, 445; Insch and Gartly, 245; Lancashire, Derbyshire, and East Coast, 285, 539; London and South Wales, 910; Lostwithiel and Milltown (doubling) 45; Lynton and Barnstaple, 429; new main line (M.S. and L.) to London, 320 (compensation cases) 504; North British (extensions) 445; of India, 288; St. Helen's and Lowton, 31; Snowdon, 393; Weardale (extension) 612; Wirral and Wrexham, 445
Rating of parks, 503
Ratner safe in a fire, 543
Reading, discovery of old plate, 837
Reasonable skill and care, 2
Recent "central area" designs, 251
Record office, new, 140
Redhill arbitration, 724, 835
Refined and coarse architecture, 730
Registered: designs, 835; grates and tile stoves, 501
Registration: plumbers', 803; surveyors', in Victoria, 360
Regulations: building, in Stockholm, 654; electric lighting, 837
Relative value of percolation gauges, 541
Reliquary, the, 10, 760
Removable weirs for preventing floods, 400
Remuneration, school board architects', 473
Renaissance: Australian, 400; Belgian, 807; English, 879, 915; French, 554, 622, 733, 770; German, 843; Italian, 184, 258, 294, 363, 403, 439, 475, 510
Rent, distress for, 211
Renwick, Jas., New York, the late, 43, 140
Repair, covenants to, 139
Repairing, drain, 580, 615
Repairs, disputed street, 287
Repaving, continuous, in the City, 66
Reports: science and art department, 323; society of architects, 695; Thames floods, 874
Restaurant, Frascati, 727
Restraints on alterations to flats, 908, 945
Restrictions, rigid, 912
Retirement of Thos. Blashill, 843
Reviews: A.A. Brown Book, 428; Almanacks and Diaries, 850; Ancient Lights, 444; Antiquary, the, 10, 760; Archæologia Oxoniensis, 760; Architectural Account of Churches of Shropshire, 943; Batsford's new publications, 505; Building News Designing Club, 42, 551, 809; Bungalows and Country Residences, 66; Ceramics, National Art Library, 760; Circular Sewer Discharges, 700; Contractors' Price-book, 262, 502; Diphtheria and its Associates, 261; Dreamy Mental States, Cavendish Lecture on, 760; Essex Review, 812; Gas Fittings, Handbook to, 444; G.E.R. Tourist Guide, 10; Glossary of Technical Terms, 261; How to Write the History of a Parish, 812; Indian Engineering, 760; Kalendar, R.I.B.A., 653; Law of Building and Engineering Contracts, 800, Law Relating to Building, 760; Law Relating to Building Societies, 261; Life and Labours of the People in London, 44; London Building Act (Glen and Bethune) 392; Management of Dynamos, 262; Management of Highways, 261; Modern Farm Buildings, 812; Modern Wood-Working Machinery, 392; Notes on Shippo, 262; Our Homes, 812; Photography, its Materials and Appliances, 761; Plane Geometrical Drawings, 700; Portraits from the Plymouth Comet, 760; Practical Masonry, 800; Practical Treatise on Bricks and Tiles, 320; Practical Trigonometry, 760; Proceedings of Engineers' Club of Philadelphia, 262, 943; Quest, the, 943; Reliquary, the, 10, 760; Rustic Adornments for Homes of Taste, 850; Saker's Perfected System of Builders' Bookkeeping, 850; Sheraton's Cabinet Maker and Drawing Book, 6; Some Ancient English Homes, 4; Statically Indeterminate Structures, 760; Steel Sections, 501; Stonehenge and its Earthworks, 140, 478; Stott's Handbook of Gas Fitting, 663; Tallerman-Sheffield Localised Air Bath, 760; Three Months in Forests of France, 700; Transactions of American Society of Civil Engineers, 261
Rhyl water supply, 580, 616
R.I.B.A., craftsman, 172
Richardson, H., *in re*, 724
Richmond: hill, view from, 288, 765; Prof. W. B., R.A., 175
Right: of support, 63; to mine under springs, 174
Rigid restrictions, 912
Rival schools, 584
Road, main, what is a? 763
Roads: main, in Surrey, 803; gravel on, 687
Rolled joist, 286, 322, 358
Roman: and Gothic, a mixture of, 942; remains, Silchester, 505; wall (at Aesila) 288 (in Cumberland) 360
Romanesque, American, in Australia, 67
Roof: cool, 430; station, a wide-span, 555; truss, stresses in, 700, 873
Roofs: open-timber, plea for decorating, 362; party walls above, 216
Rooms: assembly, and concert halls, 511, 624, 659, 692, 736, 774, 906; ventilation of, 286
Rottenness, masked, 767
Royal: Academy (designs) 846 (elevations or perspectives at) 433, 539; exchanges (E.C., decorations) 836 (Manchester) 282; institute British architects, 175, 653, 657, 733, 878 (competitions committee) 175, 177 (craftsman class) 172 (schedule of conditions) 175, 178; institution, 875
Rubbings, brass, 764

SAFE, Ratner, in a fire, 543
Safety of theatre audiences, 838
Saint: Aidan (Bamber Bridge) 758; David (Llanthony) 613; Faith (Lincoln) 613; Francis de Sales (Tottenham, R.C.) 556; George (Gateshead) 151, 904; James (Handsworth) 134; John (Boscombe) 684, 720 (Kennerleigh) 30 (Newfoundland, cathedral) 244; John the Divine (New York, cathedral) 257; Louis, sky scrapers at, 324; Margaret (Westminster, pulpit) 321; Mark (Jarrow) 464; Martin (Exminster) 720; Mary (Edinburgh, R.C. cathedral) 832 (Port Elizabeth) 318; Mary-le-Bow (Cheapside) 318; Matthew (Douglas, I.M.) 318 (Landscove) 940 (Northampton) 578; Michael (Beguildy) 851 (Middlewich) 354 (Stoke Prior) 318; Patrick (Birmingham) 720; Paul's cathedral (Freemasons and) 360; Peter (Landrake) 134 (London Docks) 30, 885 (St. Alban's) 538; Philip (Salford) 500
Sales, compulsory, 322
Salford: borough engineer's department, 654; electric light works, 249
Salisbury cathedral: 151; spire, 113, 141
Sanitary: adjuncts to asylums, 144, 186; appliances (Crapper's) 102 (Morrison and Ingram's) 283; congress, Paris, 112, 147, 182; inspectors' association, 576, 685; law, layman's notes on, 102; specialities, 800; state of furnished (house) 33 (lodgings) 65
Sanitation, house, 297
Savoy sky-sign, 33, 212
Schedule, R.I.B.A., reconsidered, 175, 178
School: board (architects and their remuneration) 473 (architecture) 842, 911 (building operations, London) 509; British, at Athens, 66; chapel (Bebington, Wesln.) 45; desk patent, infringement of, 139; of art woodcarving, 505
Schools: art for, 775; Ashton-on-Mersey, 684; Ashton-on-Ribble, 613; Bangor (Carnarvonshire, girls) 721; Berkhampsted (chapel) 170; Birmingham (art) 176; Bolt-court (lithographic) 689; Bootle (industrial) 832; Brackley (Magdalen coll.) 870; Bromsgrove (art) 500; Carpenters' Co., 543, 726, 738; Darlington (Church) 77; Derby (St. Thomas) 519; Derry (Presbtn.) 739; Edinburgh (applied art) 846; Glasgow (art) 176; Grimsby (higher grade) 648: Guernsey, 284; Hackney (parochial) 134; Horsham (Christ) 884; Hull (Wesln.) 151; Leeds (Wesln.) 832; Pembroke Dock (intermediate) 687; Pontefract (National) 208; Pyrton, 283; rival, 584; Rydal, North Wales, 335; Scarborough (Wesln.) 390; Stepney (Foundation) 245; Tonbridge (chapel) 77; Totterdown, Bristol (Free Metn.) 282; Wakefield (grammar) 614; Welshpool (intermediate) 465, 502, 539, 884. (See also under Board, Grammar, and Technical Schools.)
Scenic art, 844
Science: and art department report, 323; in place of art, 397
Scientia water closet, 649, 687, 762
Scottish: building trades federation, 249, 396; national gallery, 249
Screens: church, 358; old Admiralty, 432
Separate and single contracts, 435
Separator patent case, 65
Sequel to a joiners' strike, 835
Sewage: disposal in France, 298; farm flooding, damages for, 139; nuisance at Leyton, 139; purification, experiments in, 916
Sewer: discharges, circular, 700; or drain, 724; ventilation, 150; vestry and, 724
Sewers: new, 101; powers of vestries over, 64
Shakespeare, new portrait of, 909
Shapely v. crooked plans, 472
Sheffield: central streets, 538, 945; society of architects and surveyors, 172, 516, 722, 798, 871; town hall, 77, 432, 617, 758
Shippo, notes on, 262
Shop: front competition, Warrington, 356; wooden, on wheels, 359
Shoreditch baths and free library competition, 465, 556, 779, 805, 840, 851, 908, 921
Shrewsbury water supply, 213, 359
Sides, the two, of architecture, 806
Silchester, Roman remains at, 505
Single and separate contracts, 435
Sinking caissons by water jets, 249
Size of grains of sand in cement, 917
Sketcher, field for the, 1
Skill and care, reasonable, 2
Skittle alley, 801, 835
Sky: scrapers at St. Louis, 324; sign, what is a? 33, 212
Slabs, artificial paving, 875
Slag wool as a non-conductor, 581
Slate: merchants, national association, 512; steamer *Penrhyn*, 360
Smith: Henry, F.S.I., the late, 502, 540; v. Meeks, 946
Smoke abolition, 804
Societies: antiquarian (Cambridge) 249; antiquaries (Scotland) 833; archæological (London and Middlesex) 798 (Somerset) 115; architects, 35, 357, 405, 576, 621, 695, 731, 881 (at Waltham Abbey) 74 (Bristol do.) 904 (Manchester do.) 476, 685; architects and surveyors (Sheffield) 172, 516, 722, 798, 871; architectural (Leeds and Yorkshire) 722 (York) 648, 904; arts, 765; British artists, royal, 621; building, law relating to, 261; engineers, 871 (at Dover) 31
Soldiers' barracks, 625
Some: ancient English homes, 4; conditions of contracts, 922; perils of civilisation, 655; points from F. C. Penrose, 691
Southend water regulations, 946
South London art gallery, 835
Southport: foremen joiners' customs in, 139; pier action, 65
Spanning spaces, 216
Specialities, sanitary, 800
Specifications, vague, 507
Speculative, but not high-class, 139
Spelling of technical terms, 723, 801, 834
Spire, Salisbury, 113, 141
Spruce timber forests, 664
Stained glass, 34, 287, 395, 468, 580, 726
Statically indeterminate structures, 760
Station roof, a wide span, 555
Stations: fire brigade (Belfast) 369 (Birkenhead) 904 (London) 480; police (Newcastle-on-Tyne) 832; railway (Knott Mill) 798
Statues: Bristol (Colston) 541; Irvine (Burns) 726; London, 259; Paddington (Siddons) 833
Statutory "new" buildings, 326
Steel: bridges, designing of, 135, 254, 355, 443, 662; hardening of, 804; nickel, for buildings, 288; sections, 501
Stockholm building regulations, 654
Stone: jerry worked, 908; quarries, benediction of, 543
Stonehenge and its earthworks, 140, 478
Stonework, artificial, at Boston, Mass., 66
Story, W. W., the late, 518
Strand to Holborn, proposed street, 478, 507, 542
Stratford-on-Avon, artesian well, 802
Street: gullies, siphoned branches, 920; improvement, 584; or courtyard? 247; repairs, disputed, 287; tramways, electric, 727; we are to wait for (Holborn to Strand) 478, 507, 542
Stresses: graphical determination of, 700; in roof trusses, 873
Strike, joiners, sequel to a, 835
Striking centres of arches, 38
Structural details, neglect of, 655
Structure, new, under London Building Act, 64, 211
Structures, statically indeterminate, 760
Style for a new cathedral, 103
Sub-contractor charged with conspiracy, 580
Sub-contracts, 466
Subterranean water, 359
Subways, Mansion House, 764, 803, 909
Suffolk, possibilities of coal in, 399, 468
Sunday houses, co-operative, 360
Superfluous lands, railway, 908
Superintending architects' power to fix building line, 33, 64, 174, 179
Supernatural in art, use of, 803
Support, right of, 63
Survey: London, 505; Ordnance, Irish, 287; photographic, of England, 874
Surveying and mapping a city, 505
Surveyor: damages against, 322; district, successful appeal against, 64; libel action against, 725
Surveyors: assistant, War Office, 286, 321, 358, 393; institution, 695, 769, 848; registration in Victoria, 360; work, 361
Sutton, John, Southport, the late, 592
Swansborough, John, the late, 208

TAR: Macadam paving, 432; paint, 432
Tarred footways, construction of, 698
Technical: institutes (N. Kensington, Campden) 77 (Richmond, Surrey) 134, 151 (West Ham) 134, 407, 434, 465, 481, 519, 629; schools (Birmingham) 870 (Hyde) 872; school, trades (Gt. Titchfield-street) 543, 726, 738, 836, 909; terms (glossary of) 261 (spelling of) 723, 801, 834
Tenant co-operators at East Ham, 690
Tenants: fixtures, 32; for life, powers of, 466
Terms, technical: glossary of, 261; spelling of, 723, 801, 834
Testing: electric meter, 175; machine, Bradford technical college, 726
Tests: arch 804; cement mortar, 698; proposed fireproofing, New York, 356; timber, 506
Thames: floods, report on, 874; Lower, navigation, 837
Theatre audiences, safety of, 438
Theatres: Glasgow, 391; Lavender-hill, 940; Opera Comique, 758; Royalty, 318; protection of from fire, 438
Thickness: of arches, 286; of walls, 688
Three: months in forests of France, 700; towns architects, 334
Tile: roofing, trade in America, 288; stoves, 501
Tiles, glazed and decorated, 334
Timber: forests, spruce, 664; in party walls, 102; preservation of, 405; tests, 506
Timbers, Australasian, 42
Tools, engineering, from Pompeii, 554
Toronto city buildings, litigation, 35
Touraine, sketches in the, 11
Tour, cycling, through Normandy, 697
Tower: bridge and City traffic, 468; Wembley, 390
Town: buildings, light in, 142; dwellings, deterioration of, 251
Town halls: Morley, 577; Rotherhithe, 407; Sheffield, 77, 432, 617, 758; Thurles, 481
Toxteth: infirmary lighting conductor, 246; park, year's progress at, 176
Trades: London building, 44; technical school (Gt. Titchfield-st.) 543, 726, 738, 836, 909
Tramway: cable, Streatham, 875; electric, 727; motor, new, 804; reconstruction, Bristol, 176; traction, overhead, in Birmingham, 947
Tramways, London, acquisition of, 909
Transport of built-up bridge girders, 188
Trees: ages of, 947; lifting, 324
Trevail, Silvanus, as Mayor of Truro, 543
Trew, J. W., Bristol, the late, 592
Tricky drawings, 398
Trigonometry, practical, 760
Trinity almshouses, Mile End-road, 689, 776, 836
Trounson, J. W., Penzance, the late, 721
Truss, roof, stresses in, 700, 873
Tunnels: Blackwall, 502; Delabole quarry, 690; Glasgow harbour, 31; long, 581
Turners' Co. competition, 102, 590
Two sides of architecture, 806

UNDERGROUND: pipes, corrosion of, 146; workshops, 150
Unhealthy area in Birmingham, 176
Union, National, of British architects, 722, 762, 834, 873, 944
University colleges: Aberdeen, 586; Aberystwith, 263; Bangor, 538; London, 245, 542
Urinals, underground. Shoreditch. 613
Use: of nickel steel, 288; of supernatural in art, 803

VACANT land, nuisance on, 873
Vague specifications, 507
Varnished wood ceiling, 394, 430
Vaux, Cornelius, the late, 871
Ventilation: and warming, 846; hygienic, 501; of houses of Parliament, 395; of rooms, 286; sewer, 150
Ventilator, Hill's new, 76
Vestries and sewers, 64, 724
Vice-Chairman to sanitary inspector, from, 432

Victoria, surveyors' registration in, 360
View from Richmond hill, 288, 765
Village by-laws, 839
Vintners' Co. hall, 335
Vulliamy, Henry, *in re*, 248

WAITING for the new street, 478, 507, 542
Wall: external or party, 725; Roman (in Aesica) 288
Wallis, G. A., Eastbourne, the late, 943
Walls: ivy on, 763; party (above roofs) 216 (building act and) 212 (timber in) 102; thickness of, 688; York city, 66
Waltham Abbey, society of architects at, 74
Ward floor, width of, 173
Wardle, arbitration at, 724
Wards, students' training, at asylums, 293
Warehouse floors, 322
Warehouses: Belfast, 46; Liverpool (railway) 282
Warming and ventilation, 846
War Office, assistant surveyors, 286, 321, 358, 393
Warranty, house: 173; implied, 688
Warwickshire railway arbitration, 724, 874
Waste: in American forests, 288; power, 471
Water: closets (Nyphos) 943 (Scientia) 649, 687, 762; colours, 63, 138, 173; flush of, in cisterns, 542, 689; jets for sinking caissons, 249; potable, new mode of making, 947; subterranean, 359; works engineer,s proposed, association, 762
Waterproofing brick with oils, 432
Watherston, W., Edinburgh, the late, 800
Wednesbury sewerage works, 323
Weirs, removable, 400
Wellingtonia wood, 581
Welshpool intermediate schools, 465, 502, 539, 884
Welsh water supply for London, proposed, 479
West: Ham (Passmore Edwards and) 549 (technical institute) 134, 407, 434, 465, 481, 519, 629; Indies, how they do it in the, 430
Westminster: abbey organ, 469; bridge from York buildings, 612; hall, tablets in, 946; improvements, 765, 803; R.C. cathedral, 30, 45, 395
What: are bonâ fide contractors? 466; is a main road? 763; is a new building? 431; is an interest in land? 540; is a sky-sign? 33, 212
Wheels: great (Blackpool) 653 (Earl's Court) 66; wooden shop on, 359
Why the Morecambe landing stage fell, 395, 428, 440
Wide-span station roof, 555
Width of ward floor, 173
Winchester, the Quatuor Coronati at, 35
Wind, force of the, 664
Winton, Hants, water supply, 395
Wolverhampton, water carriage system for, 467
Wolvesey palace, excavations at, 581
Wood: Australian, for paving, 102; carving, school of, 505; ceiling, varnished, 394, 430; pavement, 102 (hygienic aspect of) 324 (new ailment from) 140; v. L.C.C., 247; working machinery, modern, 392
Wooden shop on wheels, 259
Woofindin almshouses, 324
Woolwich polytechnic, 176
Work, a year's: London county council, 109; metropolitan asylums board, 910
Workhouses: casual wards (Beverley) 538 (Bridgend) 556; infirmaries (Burnley) 798 (Scarborough) 519 (Tendring) 245 (Toxteth) 246
Workhouses: Ipswich, 46, 210, 538; Newport, Mon., 481
Working, a year's, of new building act, 881
Workman, the, as a man, 67
Workmen's houses, 247
Workrooms, asylum patients', 220, 255
Workshops, underground, 150
Wych-street, old houses in, 324
Wy-ling eraser, 804

YEAR'S: working, London building act, 881; work, London county council, 109
Y.M.C.A., Newcastle-on-Tyne, 299
York: architectural society, 648, 904; city walls, 66; improvements, 335; sewer ventilation, 580
Young: architect, opportunities of the, 545; John, Perth, the late, 812

INDEX TO ILLUSTRATIONS.

***** The Lithographic Illustrations will be found immediately following the Pages indicated.**

ABBEYS: Little Missenden, 814; Tewkesbury, sketches in, 226
Aberystwith, University college, hall of residence, 264
Addle-street, E.C., Brewers' hall, 330, 331
Altars: Dol cathedral, 771; from Sta Chiara, Florence (South Kensington museum) 476
Amboise, St. Hubert's chapel, 12
Ambulatories: Gloucester cathedral, 226; Tewkesbury abbey, 226
American: barracks (Prestido, Cal.) 333; double cottage, 264; furniture, 683
Angels, rebel, Bosche's fall of, 558
Antefix, Etruscan, S. Kensington museum, 72
Antwerp: cathedral, reredos, 809; St. Charles' church, 808
Apartment house, Chicago, heating of, 137
Application of Classic details, 8, 9, 40, 41, 72, 73, 135, 146, 147, 184, 185, 258, 259, 260, 294, 295, 363, 364, 365, 404, 405, 439, 440, 441, 474, 475, 476, 477, 510, 511, 554, 555, 622, 623, 734, 770, 771, 807, 808, 809, 842, 843, 844, 879, 880, 881, 915, 916, 917
Arbroath parish church, 594
Arcades, Classic, 294, 295, 364, 365, 404, 405, 455
Arches: palace, Spalatro, 147; striking centres of, 38; theatre of Marcellus, Rome, 146; Titus, Rome, Composite capital at, 40
Architect's poster, 733
Architectural association's excursion to Gloucestershire, 180, 181, 190, 218, 219, 226, 264
Arlington's tomb, Rolls Chapel, 881
Arm-chairs, French, 114, 281
Artisan's living-room, 107
Assembly rooms and concert halls, 624, 625, 693, 736, 737, 738, 775, 906, 907
Association, architectural, Gloucestershire excursion, 180, 181, 190, 218, 219, 226, 264
Assurance offices: Sydney (Equitable, U.S.A.) 78 (Mutual, New York) 408
Asylums, lunatic: county, 3, 144, 145, 297, 552, 553, 591, 735, 777, 848, 849, 941; Callan-park, Sydney, 777; Colney Hatch, 849; Hanwell, 848; Rossiville, N.S.W., 849; St. Lawrence, Ogdensburg, 735
Attendants, asylum, accommodation for, 552, 553
Audenarde, council chamber door, hotel-de-ville, 807

BACON factory, Bristol, 666
Bakewell, churchyard cross, 845
Baldaquin and mantle of St. Esprit, Cluny museum, 78
Bank, Halifax (Union) 116
Banqueting hall, Whitehall, 916
Barbara van Vlaenderbergh, by Memlinc, 630
Barcelona cathedral, portal and towers, 336
Barracks, soldiers': American, Prestidio, Cal., 333; designs for, 626, 627
Barton, Preston, St. Lawrence ch., 558
Baths, factory, Rushden, 537
Baths, public: Brentford, 482; Deptford, 558; Kennington-road, Lambeth, 886; Marylebone, 702; Shoreditch (selected, H. T. Hare) 852 (second, A. H. Tiltman) 886 (third, Groll and Todd) 922 (F. J. Smith) 922 (Spalding and Cross) 922
Baudets, porte de, Bruges, 372
Bedford, country house near, 300
Bed-sitting room (by R. Barry Parker) 106
Beguildy, St. Michael's church, 852
Belfast: All Saints' church, 666; fire brigade station, 372; warehouse, Library-street, 46
Belgian Renaissance, 807, 808, 809
Berberini palace, Rome: doorway, 440; staircase, 475
Bevilacqua palace, Verona, 295
Bishopsgate house, E.C., 264
Bishops' tombs: Rochester cathedral (Bradfield's) 852; Salisbury cathedral (Bridport's) 152
Blackpool, hydro and hotel (Woodhouse and Willoughby's design) 408
Blois: chateau, 12; St. Nicholas' church, 12
Board schools: Newcastle-on-Tyne, Todd's Nook, 702; Tunstall, High-street, 558
Bosche's fall of rebel angels, 558
Boston, Mass., staircase hall in house, 647
Boullay Mivoye, church at, 702
Bourse, old, Caen, 734
Bowdon, Cheshire, house at, 336
Brackets: gas, Coats ch., Paisley, 446; sword, Vintners' hall, 336
Bradfield's tomb, Rochester cathedral, 852
Bradley court, 5
Brentford public baths, 482
Brewers' hall, E.C., 330, 331
Bridge girders, transport of, 188
Bridges, steel, designing of, 136, 254, 355, 443, 663
Bridport's tomb (Bishop) Salisbury cathedral, 152
Brigade station, fire, Belfast, 372
Bristol: bacon factory, 666; E. Gabriel's design for church near, 630
British: museum (Classic details from) 72, 73 (frieze from Erechtheium) 73 (Nereid monument, Xanthos) 41; paintings, 702
Brittany fireplace, 16th century, 408
Broadstairs, Yarrow convalescent children's home, 171
Broadway, sketches at, 226
Bronze, cast, lock, 920
Bruges, porte de Baudets, 372
Brünn, casino, plan, 907
Brussels royal gallery, paintings at, 372, 558, 630, 780, 886
Builders' work, cast iron in, 402, 403, 437, 517, 661, 662, 699, 759, 778, 914, 915
Building News club designs: country house, 814; riverside bungalows, 46
Bungalow, riverside, club designs, 46
Burgundy, Duke of, portrait of, 780
Burner, gas, self-lighting, 96
Business premises: Belfast (warehouse) 46; Bishopsgate house, E.C., 264; Bristol (bacon factory) 666; Edinburgh, 666; Fort William (hotel) 630; Halifax (bank) 116; Leeds, 920; Newcastle-on-Tyne (telephone offices) 408; Rushden (warehouse) 537; Southall (margarine works) 300, 319; Southampton (restaurant) 886; Sydney (assurance) 78, 408; York, 336
Bussey-Rabutin, chateau, 622, 770
Buxton, Moorlands, living room, 116

CABINET, National design for (F. W. C. Gregory) 920
Caen: St. Pierre, 554; hotel d'Ecoville, details, 734; old houses, 702
Caffarelli palace, Rome, 258, 259
Callan-park asylum, Sydney, 777
Camberley, house at, 702
Canaletto's York steps, Westminster, 594
Cancelleria palace, Rome, arcade, 405
Canopy, font, St. Peter's, London Docks, 886, 903
Capitals: Composite (Arch of Titus) 40 (Pantheon, Rome) 40; Corinthian (Colosseum, Rome) 40 (Conservatori, Rome) 260 (Ephesus, Diana) 41 (Epidauros) 40; Ionic (Ephesus, temple of Diana) 8 (Halicarnassus, Mausoleum) 9; pseudo-Ionic (British museum) 73; Renaissance (Caen) 734 (chateaux de Joigny and Maisons) 770
Caricatures, Venetian, in alabaster, 814
Carnossa palace, Verona, 295
Casinos: Brünn, 907; Clontarf, 558; Pola, 906, 907
Casket: freedom of West Ham, 549; marriage, Cluny museum, 594
Casting, malleable iron, bearing power of, 801
Cast: bronze locks, 922; iron in builders' work, 402, 403, 437, 517, 661, 662, 699, 759, 778, 914, 915
Castles: Heidelberg, 842, 843, 844; Sudeley, 226
Cathedrals: Antwerp (reredos) 809; Barcelona (portal and towers) 336; Dol (altar) 771; Gloucester, 190, 226; Guincamp (west door) 555; Llandaff, 46, 116, 152; Milan (interior) 922; Rochester, 630, 852; Rome (St. Peter, details) 404, 405; St. Paul's (north-west tower) 917; Salisbury (Bp. Bridport's tomb) 152; York, 336
Cemetery, Kensal Green, John Gibson's tomb, 780
Century club, New York, dining-room, 499
Cerences, church at, 702
Cesena palace, column in, 511
Chairs: arm, French, 114, 281; master's, Vintners' hall, 336
Chalfont St. Peter's, epileptics' home, 190
Chambers's temple, Clontarf, 558
Chapels: Amboise (St. Hubert) 12; Hull (Wesleyan) 152; Leeds (Prim. Meth.) 513; Paisley (Coats meml., organ screen and wrought ironwork) 446; Rolls (Arlington tomb) 881; Tonbridge (school) 78; Warwick, at Tewkesbury abbey, 226
Charmyleion Pyli, Kos, door console, 135
Charterhouse-square, headmaster's house, Merchant Taylors' school, 886
Chartres, S. Aignan and S. Andre, 702
Chastleton: church, 190; hall, 190, 219
Chateaux: Blois, 12; Bussy-Rabutin, 622, 770; Fontaine Henri, 623, 711; Fortes, 77; Grateau, 702; Joigny (capital) 770; Maisons-sur-Seine (details) 770; Mesnil Guillaume, 623
Cheapside, Mercers' hall staircase, 666
Chelsea embankment court, 446, 463
Chelsfield, Goddington, the staircase, 372
Chests, carved, Cluny museum, 515
Chicago apartment house, heating of, 137
Children's convalescent home, Broadstairs (Yarrow) 171
Chimney, chateau de la Ferté, 771
Chimneypiece: from Lime-street, S. K. museum, 879; Milanese, panel from, 511
Chippenham, house at, 666
Christ at the house of Simon, 372
Churches: Antwerp (St. Charles) 808; Arbroath, N.B. (parish) 594; Bakewell (cross) 845; Barton, Preston (St. Lawrence) 558; Beguildy (St. Michael) 852; Belfast (All SS.) 666; Blois (St. Nicholas) 12; Boulay Mivoye, 702; Bristol, country, near, 630; Caen (St. Pierre) 554; Campden (lectern) 226; Cerences, 702; Chartres (S. André) 702 (S. Aignan) 702; Chastleton, 190; Cliffe, near Higham, 630; Covent-garden (St. Paul) 915; Crathie, N.B. (new) 740; Fairfield, Hebden Bridge (R.C.) 300; Florence (Sta Chiara, altar from, S. K. M.) 476; Gloucester (St. Michael) 226; Gogar, Midlothian (parish) 29; Highgate (St. Joseph, R.C., sanctuary decoration) 336; London Docks (St. Peter, font canopy) 886, 903; Mortain, 702; Namur (St. Loup) 808, 809; Paisley (Coats meml., organ screen and wrought ironwork) 446; Rome (Sta Maria della Pace) 295; Shanklin (old, lych gate) 264; Stanway, 190; Tewkesbury (abbey) 226; Tottenham (St. Francis de Sales, R.C.) 556; Tulse Hill (Presbtn.) 482; Tynemouth (priory) 243; Wickhamford (details from Sandys' tomb) 190
City guilds: Brewers' hall, 330, 331; Grocers' Co. hall (drawing-room) 152; Haberdashers' hall (sketches at) 336; Mercers' hall (staircase) 666; Merchant Taylors' hall, 594, 630, 740 (fireplace) 814 (plan) 587 (screen) 588, 589; Vintners' hall (sketches at) 336
City, the: Bishopsgate house, 264; Charterhouse-square (headmaster's house, Merchant Taylors' school) 886; Rolls chapel, Arlington tomb, 881. See City Guilds, *supra*.
Classic details and their application, 8, 9, 40, 41, 72, 73, 135, 146, 147, 184, 185, 258, 259, 260, 294, 295, 363, 364, 365, 404, 405, 439, 440, 441, 474, 475, 476, 477, 510, 511, 554, 555, 622, 623, 734, 770, 771, 807, 808, 809, 842, 843, 844, 879, 880, 881, 915, 916, 917
Cliffe church, near Higham, 630
Cloisters: Florence, S. Spirito, 405; Gloucester cathedral, 226
Clontarf, Dublin, temple at, 558
Club, Building News designing: country house, 814; riverside bungalow, 46
Clubhouses: Hong Kong (golf) 852; New York (Century, dining-room) 499; Washington (Metropolitan, loggia) 831
Cluny museum: carved chests, 515; figuring mould, trivet and gridiron, 578; mantle and baldaquin of St. Espirit, 78; comb and mirror box, 594; crowns, 611; marriage casket, 594; tithe pot, 558
Coats church, Paisley, organ screen and wrought ironwork, 446
Coffers, mediæval, French, 114, 281
Colleges: Aberystwith (University, hall of residence) 264; Glasgow (Queen Margaret's, medical department) 740
Colney Hatch lunatic asylum, plan, 849
Cologne, portico of rathhaus, 842
Colosseum, Rome, Corinthian order at, 40
Column: cast iron, 437; from Cesena palace, 511
Comb, 14th century, Cluny museum, 594
Competition designs: Academy (water-gate, G. Lacy) 300; baths and free library (Shoreditch, selected. H. T. Hare) 852 (2nd, A. H. Tiltman) 886 (3rd, Groll and Todd) 922 (F. J. Smith) 922; Building News designing club (country house) 814 (riverside bungalow) 46; cabinet, National medal (F. Gregory) 922; county council buildings (Durham, selected, Barnes and Coates) 226; dairies (1st and 2nd, C. A. Callon) 740 (commended, C. A. Battie) 740 (do., A. and H. Fenning) 780; hospital (cottage, Porth, 1st, W. F. Edwards) 223; hotel (Newcastle, Co. Down, prem., Tulloch and Littlewood) 814; hydro and hotel (Blackpool, Woodhouse and Willoughby) 408; lock, cast bronze, National medal (L. V. Solon) 922; municipal buildings (Coventry, selected, Quick, Brewill, Bailey and Mallows) 110, 111, 116, 336, 446; National drawing (old houses, Worcester, H. P. Weaver) 300; National silver medal (sideboard, H. D. Richter) 780, 797; schools (Derry Presbtn., selected, W. E. Pinkerton) 740; settlement buildings (Passmore Edwards, Tavistock-place, selected, Brewer and Dunbar Smith) 189, 190; Soane medallion (picture gallery, H. Jefferis) 702; technical institute and library (West Ham, selected, Gibson and Russell) 482, 520 (2nd, Clark and Hutchinson) 520 (3rd, T. Davidson) 520 (S. Beale) 594
Concert halls: and assembly rooms, 624, 625, 693, 736, 737, 738, 775, 906, 907; Solothurn, 369, 372
Conservatori palace, Rome, 259, 260
Consoles: Charmyleion Pyli, Kos, 135; Coats ch., Paisley (organ) 446; Maison Carrée, Nîmes, 135; temple, Jupiter Stator, Rome, 135
Continent, old masters on the, 264, 372, 558, 630, 780, 886
Convalescent home, Broadstairs (Yarrow, children's) 171
Corinthian capitals: Colosseum, Rome, 40; Conservatori palace, Rome, 260; Epidauros, 40; temple of Diana, Ephesus, 41
Corn exchange, Glasgow, 152
Cottage: American double, 264; hospitals (Porth) 223 (Tilbury) 594
Council chamber: Audenarde (door) 807; Coventry, selected design, 446
Country house: club designs, 814; near Bedford, 300; stair-hall and gallery, W. H. Ashford's design, 372
County: council buildings, Durham, 226; lunatic asylums, 3, 144, 145, 297, 552, 553, 591, 735, 777, 848, 849, 941
Covent-garden, St. Paul's church, 915
Coventry municipal buildings, selected design (Quick, Brewill, Bailey, and Mallows) 110, 111, 116, 336, 446
Crathie, N.B., new parish church, 740
Crosses: Bakewell churchyard, 845; Stanton village, 190
Crowns of Gothic kings, Cluny, 611
Crucifix, French, S. K. museum, 520, 555
Cupboard: livery, 683; wall, Haberdashers' hall, 336

DAIRIES competition: 1st and 2nd designs, C. A. Callon, 740; commended, C. A. Battie, 740; do., A. and H. Fenning, 780
Decoration, sanctuary, St. Joseph's, Highgate, 336

Deptford, public baths and municipal offices, 5
Derry Presbyterian schools, 740
Designing club, Building News: country house, 814; riverside bungalow, 46
Designing of steel bridges, 136, 254, 355, 443, 663
Designs: Building News club, 46, 814; cabinet (F. Gregory) 922; church (near Bristol, E. Gabriel) 630; country house, hall, staircase, and gallery (W. H. Ashford) 372; hydro and hotel, Blackpool (Woodhouse and Willoughby) 408; lock (L. V. Solon) 922; our homes (R. Barry Parker) 78, 95, 97, 98, 99, 106, 107, 116, 133; picture gallery (Soane med., H. Jefferis) 702; precincts, Hampton Court (M. B. Adams) 482; sideboard (Nat. silv. med., H. D. Richter) 780, 797; soldiers' barracks (Major Scott-Moncrieff) 626, 627; water gate (academy, G. Lacy) 300
Details: cabinet, 922; cast-iron work, 402, 403, 437, 517, 661, 662, 699, 759, 778, 914, 915; cathedrals (Llandaff) 116 (Salisbury, Bridport tomb) 152; Classic, 8, 9, 40, 41, 72, 73, 135, 146, 147, 184, 185, 258, 259, 260, 294, 295, 363, 364, 365, 404, 405, 430, 440, 441, 474, 475, 476, 477, 510, 511, 554, 555, 622, 623, 734, 770, 771, 807, 808, 809, 842, 843, 844, 879, 880, 881, 915, 916, 917; county council buildings (Durham) 226; fireplaces (Brittany) 408 (Hutton court) 12; fittings (settlement buildings, Tavistock-place) 209; font canopy (London Dock, St. Peter) 886, 903; gateway (Stanway) 190; house (Tewkesbury) 264; municipal buildings (Coventry, selected design) 336; sideboard design (H. D. Richter) 780, 797; water gate, 300
Diana's temple, Ephesus, details from, 8, 41, 72
Dîme (tithe pot) Cluny museum, 558
Dining hall: margarine works, Southall, 300; Southampton, 886
Dining rooms: American cottage, 264; Century club, New York, 499; country house near Bedford, 300; Old House of Lords, 264
Dol: house, 702; cathedral, altar, 771
Domfront, 702
Doorways: Caen, 734; from Genoa and Gubbio (S. K. museum) 476, 477; Guincamp cathedral, 555; Ifs chateau, 770; Oudenarde council chamber, 807; Renaissance, 440, 441, 734; Stanton, 190
Double cottage, American, 264
Drawing-room: fireplace, settlement buildings, Tavistock-place. 209; Grocers' Co., 152; Waxwell Farm, Pinner, 408
Drawings: measured (cathedral, Llandaff, J. H. James) 46, 116, 152 (do., Salisbury, Bridport tomb, D. F. Smith) 152 (fireplace, Hutton court, K. Gammell) 12 (temple, Clontarf, F. H. Jermyn) 558; Nash's (dining-room, Old House of Lords) 264; National (old houses, Worcester, H. P. Weaver), 300; Pugin (cathedral, Gloucester, A. J. Dunn) 190
Dresden royal gallery, paintings at, 264
Duke's self-lighting gas burner, 96
Dublin, temple at Clontarf, 558
Duncombe-park, 780
Duomo, Milan, 922
Durham, county council buildings, 226
Dutch paintings, 46, 558
Dwellings, labourers', Manchester, 852

EARLY French furniture, S. Kensington museum, 114
East Grinstead, villas at, 869
Ecoville, hotel d', Caen, 734
Edinburgh, Jenner's premises, 666
Edmonton, Lower, free library, 666
Edwards, Passmore: cottage hospital (Tilbury) 597; free libraries (Hammersmith) 12 (Lower Edmonton) 666 (Shoreditch, 1st design, H. T. Hare) 852 (2nd, A. H. Tiltman) 886 (3rd, Groll and Todd) 922 (G. F. Smith) 922 (Spalding and Cross) 922; portrait of Milton, 592; presentation casket to, 549; settlement buildings, Tavistock-place, 189, 190, 209
Elizabethan Classic, 879, 880, 881
English: homes, some ancient, 4, 5; Renaissance, 879, 880, 881
Ephesus, details from temple of Diana, 8, 41, 72
Epidauros, Corinthian capital at the Tholos, 40
Epileptics' home, Chalfont St. Peter, 190
Equitable, U.S.A., assurance offices, Sydney, 78
Erechtheium: Caryatid at, 9; frieze from, 73
Etruscan antefix, S. Kensington museum, 72
Eventyde house, St. John's, Woking, 336
Evesham, half-timbered house at, 190
Eve, temptation of, by Bell Scott, 702
Exchange, corn, Glasgow, 152
Excursion, architectural association, to Gloucestershire, 180, 181, 190, 218, 219, 226, 264

FACTORY, Bristol (bacon) 666
Fairfield, Hebden Bridge, R.C. church at, 300
Fall of the Rebel Angels, by Bosche, 558
Family, Holy, by Memlinc, 886
Farmhouse, Waxwell, Pinner, drawing-room, 408
Farnese palace, Rome, details, 294, 363, 364, 365, 439
Ferté, chateau de la, 771
Fire brigade station, Belfast, 372
Fireplaces: American cottage, 264; Brittany, 408; Hutton Court, 12; Merchant Taylors' hall, 814; St. Philip Neri oratory, Rome, 474; settlement buildings, Tavistock-place, 209
Flemish paintings, 372, 630, 780, 886
Florence: altar from Sta Chiara (S. K. museum) 476; cloister, S. Spirito, 405; Gondi, Pandolfini, and Strozzi palaces, 184; Riccardi do., 185
Florentine wall fountain, S. K. museum, 510
Fontaine Henri, maison, 623, 771
Font canopy, St. Peter's, London Docks, 886, 903
Fort William, N.B., Station hotel, 630
Fountain, wall, Florentine, 510
Free libraries: Hammersmith (Passmore Edwards') 12; Lower Edmonton (Passmore Edwards') 666; Shoreditch (Passmore Edwards', 1st, H. T. Hare) 852 (2nd, A. H. Tiltman) 886 (3rd, Groll and Todd) 922 (F. J. Smith) 922 (Spalding and Cross) 922; West Ham (selected, Gibson and Russell) 482, 520 (2nd, Clark and Hutchinson) 520 (3rd, T. Davidson) 520 (S. Beale) 594
French: furniture (Early, S. K. museum) 114, 520 (Mediæval and Renaissance) 281; Renaissance, 622, 623, 734, 770, 771
Friezes: Brittany fireplace (S. K. museum) 408; Erechtheium (British Museum) 73
Frying-mould, Cluny museum, 575
Fulham, St. Andrew's parish room, 736, 737, 738
Furniture: American, 683; Early French (S. Kensington museum) 114; French, 281

GALLERIES, public, pictures from: Brussels royal, 372, 558, 630, 780, 886; Dresden royal, 264; S. K. museum, 702
Gallery: in country house, 372; picture, Soane design (H. Jefferis) 702
Gas: brackets and lanterns, Coats church, Paisley, 446; burner, self-lighting, 96
Gatehouse, proposed, Hampton Court, 482
Gate: lych, Shanklin, 264; water (Bruges) 372 (G. Lacy's design) 300
Gateways: Stanway hall, Gloucestershire, 190; Vire (l'Horloge) 702
Genoa palace doorway at S. K. M., 476
German: paintings, 264; Renaissance, 842, 843, 844
Ghent, the Weaver's house, 372
Gibson, John, monument to, Kensal Green cemetery, 780
Girders: cast iron, 402, 403, 437; transport of built-up bridge, 188
Glasgow: corn exchange, 152; theatre royal, 391; university, medical department, 740
Gloucester: cathedral (cloisters) 226 (from N.E.) 190 (plan) 226 (recess for towels) 226 (screen, south transept) 226 (south ambulatory in choir) 226 (triforium) 226; pastoral staff at museum, 226; tower of St Michael's church, 226
Gloucestershire excursion, architectural association, 180, 181, 190, 218, 219, 226, 264
Goddington, Chelsfield, the staircase, 372
Gogar church, Midlothian, 29
Goldsmith, portrait of Henry VIII.'s, 264
Golf club, Hong Kong, 852
Gondi palace, Florence, 184
Gossart's Christ at the Pharisee's house, 372
Grammar schools: Oldham, Hulme, 12; Tonbridge (chapel) 78
Graphical determination of stresses, 700
Grateau, chateau de, 702
Gridiron, Cluny museum, 575
Grinstead, East, villas at, 869
Grocers' Co. hall, drawing room, 152
Grosvenor gully, the, 592
Gubbio, doorway from, at S. K. M., 477
Guilds, City: Brewers' hall, 330, 331; Grocers' Co. hall, 152; Haberdashers' hall, sketches at, 336; Mercers' hall staircase, 666; Merchant Taylors' hall, 587, 588, 589, 594, 630, 740, 814; Vintners' hall, sketches at, 336
Guincamp cathedral, west door, 555
Gully: Grosvenor patent, 592; siphoned branch for, 920
Gymnasium, Rydal Mount school, 353

HABERDASHERS' hall, coat of arms and wall cupboard, 336
Halicarnassus, capital from Mausoleum, 9
Halifax, Union bank, 116
Hall of residence, University college, Aberystwith, 264
Halls: Brewers', 330, 331; Chastleton, 190, 219; concert, 624, 625, 693, 736, 737, 738, 775, 906, 907; country house (W. H. Ashford's design) 372; dining (Southall) 300 (do., Southampton) 886; Grocers', 152; in our homes, 78, 95; Kensington-square, 852; Mercers', 666; Merchant Taylors', 587, 588, 589, 594, 630, 740, 814; Oswestry (Park, new wing) 12; Solothurn (concert) 369, 372; Stanway, Glos. (gateway) 190 (plan of courtyard) 181; Trut, Helston, 630; Whitehall (Banqueting) 916
Hammersmith free library, 12
Hampton Court, precincts gatehouse, proposed, 482
Ham, West: casket of freedom of, 549; technical institute (selected design, Gibson and Russell) 482, 520 (2nd, Clark and Hutchinson) 520 (3rd, T. Davidson) 520 (S. Beale) 594
Hankar, Paul, his poster, 733
Hanwell lunatic asylum, plan, 848
Headmaster's house, Merchant Taylors' schools, Charterhouse-square, 886
Heating a Chicago apartment house, 137
Hebden Bridge, R.C. church at Fairfield, 300
Heidelberg castle, 842, 843, 844
Helston, Trut hall, near, 630
Hesseltine collection, Canaletto's, Westminster Bridge, 594
High altar, Florentine, South Kensington museum, 476
Highgate, St. Joseph's, R.C., sanctuary decoration, 336
Hill's new ventilator, 76
Hind Head, house on, 939
Holbein's portrait of Hubert Morette, 264
Holy Family, by Memlinc, Brussels, 886
Homes: convalescent (Broadstairs, children's) 171; epileptics (Chalfont St. Peter) 190; our, 78, 95, 97, 98, 99, 106, 107, 116, 133; some ancient English, 4, 5
Hong Kong golf club, 852
Hospitals, cottage: Porth, 223; Tilbury, 594
Hotel de Ville, Audenarde (door) 807
Hotels: Blackpool (Woodhouse and Willoughby's design) 408; Fort William (station) 630; Newcastle, Co. Down (Tulloch and Littlewood's design) 814
Hour glass, Cliffe church, 630
House of Lords, Old, dining-room, 264
Houses: American double cottage, 264; Bedford (country, near) 300; Bishopsgate, E.C., 264; Boston, Mass. (staircase) 647; Bowdon, 336; Bradley-court, 5; Broadway, 226; Caen, 702, 734; Camberley, 702; Chalfont St. Peter (epileptics') 190; Charterhouse-square (head master's) 886; Chastleton (hall) 190, 219; Chelsea Embankment-court, 446, 463; Chippenham, 666; country (club designs) 814 (hall-staircase and gallery) 372; Dol, 702; Duncombe-park, 780; East Grinstead (villas) 869; Eventyde, St. John's, Woking, 336; Evesham (old) 190; Ghent (Weaver's) 372; Goddington (staircase) 372; Hind Head, 939; Hutton Court (fireplace) 12; Kensington-square (hall) 852; Knowle, 880; Little Missenden abbey, 814; Little Sodbury (manor) 5; Mayence, 843; Moorlands, Buxton (living-room) 116; Orleans (doorway) 734; our homes (R. Barry Parker) 78, 95, 97, 98, 99, 106, 107, 116, 133; Park hall, Oswestry, 12; precincts, Hampton Court (proposed) 482; Restoration, Rochester, 881; Rodway (manor, staircase) 4; Stanton (village) 190; Stanway (hall) 181, 190; Sudeley castle, 226; Tewkesbury (timber) 218, 264; Trut (hall) Helston, 630; Tuffnell-park (pair) 425; Waxwell (farm) Pinner (drawing-room) 408; Winchcombe, 226; Woodford, Essex, 78; Worcester (timbered) 300
Hull, Wesleyan schools and chapel, 152
Hulme grammar school, Oldham, 12
Hutton-court, fireplace at, 12
Hydro and hotel, Blackpool (Woodhouse and Willoughby's design) 408

IFS, chateau des, 622, 770
Institute, architects', silv. med. measured designs (J. H. James) 46, 116, 152
Institutes, technical: Richmond, Surrey, 152; West Ham (selected, Gibson and Russell) 482, 520 (2nd, Clark and Hutchinson) 520 (3rd, T. Davidson) 520 (S. Beale) 594
Iron, cast: bearing power of, 801; in builders' work, 402, 403, 437, 517, 661, 662, 699, 759, 778, 914, 915
Isle of Wight, lych gate, Shanklin, 264
Italian Renaissance detail, 184, 185, 258, 259, 260, 294, 295, 363, 364, 365, 404, 405, 439, 440, 441, 474, 475, 476, 477, 510, 511

JANSSENS'S portrait of John Milton, 46
Jenner's premises, Edinburgh, 666
Joigny, chateau de, capital at, 770
Jupiter Stator, temple of, Rome, cornice console, 135

KENNINGTON-ROAD public baths S.E., 886
Kensal-green cemetery, John Gibson's tomb, 780
Kensington-square, hall at No. 45, 852
Kensington, South, museum: altar (from Florence, Sta Chiara) 476; antefix, Etruscan, 72; chimneypiece and panel (from Lime-street) 879, 880; doorways, palace (Genoa) 476 (Gubbio) 477; fireplace, Brittany, 408; furniture, early French, 114; rood loft and crucifix, 520, 555; "Temptation of Eve" (by Bell Scott) 702; wall fountain, Florentine, 510
Knowle house, Kent, 880
Kos, console from Charmyleion Pyli, 135

LABOURERS' dwellings, Manchester, 852
Ladies' gallery, Merchant Taylors' hall, 814
Lambeth public baths, Kennington-road, 886
Lamb memorial free library, Lower Edmonton, 666
Lanterns, gas, Coats ch., Paisley, 446
Laundries, asylum (plan) 3
Leather chest, Cluny museum, 515
Lectern, eagle, Campden church, 226
Leeds: premises in Briggate, 922; Prim. Meth. chapel, Cardigan-road, 513
Libraries, free: Hammersmith, Passmore Edwards, 12; Lower Edmonton, Passmore Edwards, 666; Shoreditch, Passmore Edwards (1st, H. T. Hare) 852 (2nd, A. H. Tiltman) 886 (3rd, Groll and Todd) 922 (F. J. Smith) 922 (Spalding and Cross) 922; West Ham (selected, Gibson and Russell) 482, 520 (2nd, Clark and Hutchinson) 520 (3rd, T. Davidson) 520 (S. Beale) 594
Library, Sansovino's, Venice, 295
Lime-street, chimneypiece and porch from, S. K. museum, 879, 880
Little: Missenden abbey, 814; Sodbury manor house, 5
Living rooms: by R. Barry Parker, 97, 116, 133; artisans', 107; Moorlands, Buxton, 116
Llandaff cathedral, measured drawings, 46, 116, 152
Lock, cast bronze, 920
Loft, rood, French, S. K. museum, 520, 555
Loggia, Metropolitan club, Washington, 831
Loire valley sketches, 12
Londonderry Presbyterian schools, 740
London: Docks, font canopy, St. Peter's, 886, 903; looking to Westminster, Canaletto's, 594
Lordship-lane, concert hall, 775
Lords, old house of, dining room in, 264
Lower Edmonton, free library, 666
Louvain, panel at St. Gertrude's, 808
Lunatic asylums: Banstead, 941; Callan-park, Sydney, 777; Cane Hill, 941; county, 3, 144, 145, 297, 552, 553, 591, 735, 777, 848, 849, 941; Colney Hatch, 849; Hanwell, 848; Rossiville, N.S.W., 849; St. Lawrence, Ogdensburg, 735
Lych gate, Shanklin old church, 264

MADONNA and Child, by Memlinc, 886
Maisons: Carrée, Nîmes, scroll and console, 135; Fontaine Henri, 623, 771; sur-Seine (details) 770
Manchester, labourers' dwellings, Oldham-street, 852
Manor houses: Little Sodbury, 5; Rodway, 4
Mansions, Chelsea Embankment Court, 446, 463
Mantle and baldaquin of St. Esprit, Cluny museum, 78
Map, A.A. excursion to Gloucestershire, 180
Marcellus, theatre of, Rome, arches, 146
Margarine works, Southall, 300, 319
Marriage casket, Cluny museum, 594
Marylebone public baths, 702
Masters, old: 46 594; on the Continent, 264, 372, 558, 630, 780, 886
Mausoleum, Halicarnassus, capital at, 9
Mayence, street corner in, 843
Measured drawings: cathedral (Llandaff, J. H. James) 46, 116, 152 (Salisbury, Bridport tomb, D. F. Smith) 152; fireplace, Hatton-court (K. F. Gammell) 12; temple, Clontarf (F. H. Jermyn) 558
Medical: department, Glasgow University, 740; students' training wards, in asylum, 297
Memlinc: Holy Family, 886; portrait of Barbara van Vlaenderbergh, 630
Mercers' hall, staircase, 666
Merchant Taylors' hall: 594, 630, 740 (fireplace) 814 (plan) 587 (screen) 588, 589; schools, head master's house, 886
Mesnil Guillaume, chateau de, 623
Metropolitan club, Washington, loggia, 831
Milan cathedral (interior) 920
Milton, John, æt. ten, by Janssens, 46
Mirror box lid, Cluny museum, 594
Missenden abbey, Little, 814
Model dairy designs: 1st and 2nd, C. A. Callon, 740; commended, C. A. Battie, 740; do., A. and H. Fenning, 780
Money changers' table, 281
Monuments: Kensal-green cemetery (John Gibson, F.R.I.B.A.) 780; Rolls chapel (Arlington) 881; Salisbury cathedral (Bp. Bridport) 152; Xanthos (Nereid, at British Museum) 41
Moorlands, Buxton, living-room at, 116
Morette, Hubert, Holbein's portrait of, 264
Moreel's wife, Barbara, by Memlinc, 630
Mortain, church at, 702
Mouldings: Llandaff cathedral, 116; Rome, Caffarelli palace, 259; Salisbury cathedral (Bridport tomb) 152
Municipal buildings: Coventry (selected design, Quick, Brewill, Baily, and Mallows) 110, 111, 116, 336, 446; Deptford, 558; Rotherhithe, 408
Museums: British (frieze from the Erechtheium) 473 (Nereid monument from Xanthos) 41; Cluny, Paris (carved chests) 515 (comb and mirror box) 594 (crowns) 611 (frying mould, trivet, and gridiron) 575 (mantle and baldaquin) 78 (marriage casket) 594 (tithe pot) 558; Solothurn, 368, 372; South Kensington (altar from Sta Chiara, Florence) 476 (chimneypiece and panel, from Lime-street, E.C.) 879, 880 (doorways from Genoa and Gubbio) 476, 477 (Early French furniture) 114 (Etruscan antifix) 72 (fireplace from Brittany) 408 (W. Bell Scott's "Temptation of Eve") 702 (wall fountain) 510
Music-room, *Tantallon Castle*, 148, 149
Mutual New York insurance offices, Sydney, 408

NAMUR, church of St. Loup, 808. 809
Nash's drawing of dining-room, Old House of Lords, 264
National: competition designs (cabinet, F. Gregory) 922 (lock, L. V. Solon) 922; prize drawing, old house, Worcester (H. P. Weaver) 300; silver medal design, sideboard (H. D. Richter) 780, 798; Telephone Co.'s offices, Newcastle, 408
Nereid monument from Xanthos, 41
New: ventilator, Hill's, 76; York (dining room, Century club) 499
Newcastle: Co. Down, hotel (Tulloch and Littlewood's design) 814; on-Tyne, (telephone offices) 408 (Todd's Nook bd. school) 702
Nîmes, console and scroll, Maison Carrée, 135

INDEX TO ILLUSTRATIONS.

Normandy, sketches in, 702
Norwood, West, Presbyterian church, 482

OFFICES: Bishopsgate house, E.C., 264; Deptford (municipal) 558; Newcastle-on-Tyne (telephone) 408; Sydney (Equitable, U.S.A. assurance) 78 (New York Mutual insurance) 408; York, 336
Ogdensburg, St. Lawrence state asylum, 735
Old: House of Lords, dining room, 264; houses (Evesham) 190 (Tewkesbury) 218, 264 (Worcester) 300; masters, 46, 594 (on the Continent) 264, 372, 558, 630, 780, 886
Oldham, Hulme grammar schools, 12
Oratory, St. Philip Neri, Rome, fireplace in, 474
Organ screen, Coats church, Paisley, 446
Orleans, Renaissance doorway, 734
Osnabrück, Steelworkers' hall, plan, 737
Oswestry, new wing, Park hall, 12
Oudenarde hotel de ville, door, 807
Our homes, 78, 95, 97, 98, 99, 106, 107, 116, 133

PADUA university, arcade, 404
Paintings: British, 702; Dutch, 46, 558; Flemish, 372, 630, 780, 886; German, 264; Venetian, 594
Paisley, Coats church, organ screen and wrought ironwork, 446
Palaces: Cesena (drum and column) 511; Florence (Gondi) 184 (Pandolfini) 184 (Riccardi) 185 (Strozzi) 184; Genoa (doorway from) 476; Gubbio (doorway from) 477; Rome (Berberini) 440, 475 (Caffarelli) 258, 259 (Cancelleria) 405 (Conservatori) 259, 260 (Farnese) 294, 363, 364, 365, 439; Siena (Spannocchi) 184; Spalaltro (arches of) 147; Verona (Bevilacqua) 293 (Cannossa) 295; Vicenza (Valmarana) 258
Pandolfini palace, Florence, 184
Panels: Cliffe church, 630; French, Eucharistic symbols in, 281; from Lime-street (S. K. M.) 880; Italian Renaissance, 510, 511; Louvain (St. Gertrude) 808
Pantheon, Rome, Composite capital, 40
Paris, Cluny museum: carved chests, 515; comb and mirror box, 594; crowns, 611; frying mould, trivet and gridiron, 575; mantle and baldaquin, 78; marriage casket, 594; tithe pot, 558
Parish halls: 693; St. Andrew's, Fulham, 736, 737, 738
Park hall, Oswestry, new wing, 12
Passmore Edwards: cottage hospital, Tilbury, 594; free libraries (Hammersmith) 12 (Lower Edmonton) 666 (Shoreditch, 1st design, H. T. Hare) 852 (2nd, A. H. Tiltman) 886 (3rd, Groll and Todd) 922 (F. J. Smith) 922 (Spalding and Cross) 922; portrait of Milton, 46; presentation casket to, 549; Settlement buildings, Tavistock-place, 189, 190, 209
Pastoral staff at Gloucester museum, 226
Payre collection of furniture, 114
Pew-hill house, Chippenham, 666
Pharisee's house, Christ in the, 372
Picture gallery, Soane design (H. Jefferis) 702
Pictures: Brussels royal gallery, 372, 558, 630, 780, 886; Dresden royal gallery, 264; Hesseltine collection, 594; Passmore Edwards collection, 46; South Kensington museum, 702
Pinner, Waxwell farm, drawing-room, 408
Pisa, anthemion from tomb at, 511
Plans: asylums, county lunatic (attendants' rooms) 552, 553 (Banstead) 941 (Callan-park, Sydney) 777 (Cane-hill) 941 (Colney Hatch) 849 (Hanwell) 848 (laundries) 3 (medical students' training wards) 297 (Rossiville, N.S.W.) 849 (sanitary buildings) 144, 145 (special buildings) 591 (St. Lawrence, Ogdensburg) 735; bank (Halifax, Union) 116; barracks, soldiers' (designs for) 626, 627; baths (Brentford) 482 (Deptford) 558 (Kennington-road, S.E.) 886 (Marylebone) 702 (Shoreditch, 1st, H. T. Hare) 852 (2nd, A. H. Tiltman) 886 (3rd, Groll and Todd) 922 (F. J. Smith) 922 (Spalding and Cross) 922; board schools (Newcastle-on-Tyne) 702 (Tunstall) 558; bungalow, riverside (club) 46; cathedrals (Gloucester) 226 (Llandaff) 46; chapels (Hull, Wesleyan) 152 (Tonbridge, school) 78; churches (Barton, St Lawrence) 558 (Beguildy, St. Michael) 852 (Belfast, All SS.) 666 (Bristol, near, proposed) 630 (Crathie, new) 740 (Fairfield, Hebden Bridge, R.C.) 300 (Tulse Hill, Presbtn) 482; club houses (Hong Kong) 852 (Washington, Metropolitan) 831; concert halls (and assembly rooms) 624, 625, 693, 736, 737, 738, 775, 906, 907 (Solothurn) 369; corn exchange (Glasgow) 152; cottage (American double) 264; county council buildings (Durham) 226; dairies (1st and 2nd designs, C. A. Callon) 740 (commended, C. A. Battie) 740 (do., A. and H. Fenning) 780; dwellings, labourers' (Manchester) 852; fireplace (Rome, St. Philip Neri, oratory) 474; font canopy (London Docks, St. Peter's) 886; gymnasium (Royal Mount school) 353; grammar school (Oldham, Hulme) 12; hall of residence (Aberystwith, Univ. coll.) 264; halls (Brewers) 330 (Chastleton) 219 (Merchant Taylors') 587 (Stanway, Glos.) 181 (Trut, Helston) 630; homes (convalescent, Broadstairs, Yarrow) 171 (epileptics, Chalfont St Peter) 190; hospitals, cottage (Porth) 223 (Tilbury) 594; hotels (Fort William, Station) 610 (Newcastle, Co. Down, Tulloch and Littlewood's design) 814; houses (by R. Barry Parker) 98 (Camberley) 702 (Charterhouse-square, head master's) 886 (Chelsea Embankment court) 446, 463 (Chicago apartment, heating of) 137 (Century club) 814 (Chippenham) 666 (Duncombe-park) 780 (Hind Head) 939 (Precincts, Hampton Court) 482 (Woking, Eventyde) 336 (Woodford) 78; library, free (Lower Edmonton, Passmore Edwards) 666; medical department (Glasgow University) 740; monument (Kensal-green cemetery, J. Gibson) 780; municipal buildings (Coventry, selected, Quick, Brewill, and Mallows) 110, 111 (Deptford) 558; museum (Solothurn) 338; offices (Newcastle-on-Tyne, telephone) 408; picture gallery (Soane, H. Jefferis) 702; restaurant (Southampton) 886; schools (Hull, Wesln.) 152 (Pyrton, mixed) 283 (Richmond, secondary and technical) 152; Settlement buildings (Tavistock-place) 189, 190; sideboard, 780; staircase, circular (Rome, Berberini palace) 475; station, fire brigade (Belfast) 372; technical institute (West Ham, selected, Gibson and Russell) 482 (2nd. Clark and Hutchinson) 520 (3rd, T. Davidson) 520 (S. Beale) 594; temple (Clontarf) 558; town hall (Rotherhithe) 408; villas (East Grinstead) 869; warehouse (and baths, Rushden) 537 (Belfast) 46; water-gate (G. Lacey) 300; works (Southall, margarine) 300
Pola, casino at, 906, 907
Porth cottage hospital, 223
Porticoes: Cologne rathhaus, 842; St. Paul's, Covent Garden, 915
Portraits: Burgundy, Duke of (Brussels gallery) 780; Milton, æt. ten (Janssens) 46; Morette, Hubert (Holbein) 264; Vlaenderbergh, Barbara van (Memlinc) 630
Poster, an architect's, 733
Precincts gatehouse, Hampton Court (proposed) 482
Premises: Belfast (warehouse) 46; Bishopsgate house, E.C., 264; Bristol, 666; Edinburgh, 666; Fort William (hotel) 630; Halifax (bank) 116; Leeds, 922; Newcastle-on-Tyne (telephone offices) 408; Rushden (warehouse) 537; Southall (margarine works) 300, 319; Southampton (restaurant) 886; Sydney (assurance) 78, 408; York, 336
Presbytery, R.C., Fairfield, Hebden Bridge, 300
Prestidio, Cal., barracks, 333
Preston, St. Lawrence church, Barton, near, 558
Priory, Tynemouth, 226
Propaganda college, Rome, 440
Pseudo-Ionic capitals, British Museum, 73
Public: baths and free library (Shoreditch, 1st design, H. T. Hare) 852 (2nd, A. H Tiltman) 886 (3rd, Groll and Todd) 922 F. J. Smith) 922 (Spalding and Cross) 922; baths (Brentford) 482 (Kennington-road, S.E) 886 (Marylebone) 702; libraries (Hammersmith, Passmore Edwards) 12 (Lower Edmonton, Passmore Edwards) 666 (West Ham, selected design, Gibson and Russell) 482, 520 (2nd, Clark and Hutchinson) 520 (3rd, F. Davidson) 520
Pugin studentship drawing, Gloucester cathedral (A. J. Dunn) 190
Pulpit, Cliffe church, 630
Pyrton, Oxon, elementary mixed school, 283

QUEEN Margaret college, Glasgow, medical department, 740
Queen's pew and porch, Crathie church, 740

RATHHAUS, Cologne, portico of, 842
Rebel angels, fall of the (Bosche) 558
Renaissance: Belgian, 807, 808, 809; English, 879, 880, 881, 915, 916, 917; French, 622, 623, 734, 770, 771 (furniture) 281; German, 842, 843, 844; Italian, detail, 184, 185, 258, 259, 260, 294, 295, 363, 364, 365, 404, 405, 439, 440, 441, 474, 475, 476, 477, 510, 511
Residence: hall of, University college, Aberystwith, 264; headmaster's, Merchant Taylors' schools, 886
Restaurant, Southampton, dining-hall, 886
Restoration house, Rochester, 881
R.I.B.A.: measured drawings, Llandaff cathedral (J. H. James) 46, 116, 152; Pugin drawings, Gloucester cathedral (A. J. Dunn) 190
Riccardi palace, Florence, 185
Richmond, secondary schools and technical institute, 152
Riverside bungalow, club designs, 46
Rochester: cathedral, sketches at, 630, 852; Restoration house, 881
Rodway manor, staircase, 4
Rolls chapel, Arlington tomb, 831
Rome: Berberini palace (doorway) 440 (staircase) 475; Caffarelli palace, 258, 259; Cancelleria palace, 405; Composite capitals, arch of Titus, and Pantheon, 40; cloister Sta Maria della Pace, 295; Colosseum (capitals) 40; Conservatori palace, 259, 260; Farnese palace, 294, 363, 364, 365, 439; Propaganda college, 440; St. Peter's, details, 404, 405; St. Philip Neri oratory (fireplace) 474; temple (Jupiter Stator, cornice) 135 (Mars Ultor, enrichments) 72; theatre of Marcellus, 146
Rood loft, French, S. K. museum, 520, 555
Roof: of St. Loup, Namur, 808; ogee, wind pressure on, 835; truss, stress in, 873
Rooms, interior of: American cottage, 264; bed-sitting, 106; Century club, New York, 499; dining (old House of Lords) 264; drawing (Grocers' Co.) 152 (Waxwell farm, Pinner) 408; halls, 78, 95; living, 97, 133 (artisans') 107 (Moorlands, Buxton) 116; music (*Tantallon Castle*) 148, 149; study, 99
Rossiville asylum, N.S.W., plan, 849
Rotherhithe town hall, 408
Royal: galleries, pictures in (Brussels) 372, 558, 630, 780, 883 (Dresden) 264; institute, British architects, silver medal drawings (J. H. James) 46, 116, 152
Rushden, warehouse and baths, 537
Rydal Mount schools, N. Wales, gymnasium, 353

SAINT: Aignan (Chartres) 702; Andrew (Chartres) 702 (Fulham, parish room) 736, 737, 738; Charles (Antwerp) 808; Chiara (Florence, altar from, S. K. M.) 476; Esprit, mantle and baldaquin of, order of, 78; Francis de Sales (Tottenham, R.C.) 556; Hubert (Amboise, chapel) 12; John's, Woking (Eventyde house) 336; Joseph (Highgate, R.C., sanctuary decoration) 336; Lawrence (Barton) 558 (Ogdensburg, state asylum) 735; Loup (Namur) 808, 809; Maria della Pace (Rome) 295; Marylebone (public baths) 702; Michael (Beguildy) 852 (Gloucester) 226; Nicholas (Blois) 12; Paul (Covent Garden) 915; Paul's cathedral, north-west tower) 917; Peter and Paul (Llandaff cathedral) 46; Peter (London Docks, font canopy) 885, 903 (Rome, details) 404, 405; Philip Neri (Rome, oratory, fireplace) 474; Pierre (Caen, details) 554; Spirito (Florence, cloister) 405
Salisbury cathedral, Bishop Bridport's tomb, 152
Sanctuary decoration, St. Joseph's, Highgate, 336
Schools: Hull (Wesleyan) 152; Londonderry (Pesbtn.) 740; Newcastle-on-Tyne (board) 702; Oldham (Hulme grammar) 12; Pyrton (mixed) 283; Richmond, Surrey (secondary) 152; Rydal Mount, N. Wales, 353; Tonbridge (chapel of) 78; Tulse Hill (Presbtn.) 482; Tunstall (bd.) 558
Scientia water closet, 649
Scott's (W. B) "Temptation of Eve," 702
Screens: Merchant Taylors' hall, 588, 589, 630; organ console, Coats ch., Paisley, 446; Rochester cathedral, 852; south transept, Gloucester cathedral, 226
Secondary schools, Richmond, Surrey, 152
Secretaire, 683
Sections: barracks, designs for, 626, 627; baths (Brentford) 482; bungalow, riverside (club designs) 46; cathedral (Llandaff) 46, 116, 152; chapel (Tonbridge school) 78; concert halls, 693, 737, 738; dairies, designs (C. A. Callon) 740 (C. A. Battie) 740 (A. and H. Fenning) 780; fire brigade station (Belfast) 372; fireplace (Hutton Court) 12; house, country (club designs) 814; Ionic base and cap, 9; libraries, free (Hammersmith) 12; rooms (Willis's) 906; siphoned branches for gullies, 920; staircase (Rome, Berberini palace) 475; theatre (Glasgow) 391
Self-lighting gas-burner, 95
Settle, American, 683
Settlement buildings, Passmore Edwards, Tavistock-place, 189, 190, 209
Shanklin church, lych gate, 251
Shepherd's Bush, Passmore Edwards free library, 12
Shoreditch baths and free library: 1st design, H. T. Hare, 852; 2nd, A. H. Tiltman, 886; 3rd, Groll and Todd, 922; F. J. Smith, 922; Spalding and Cross, 922
Sideboard onts., nat. silv. med. design, H. D. Richter, 780, 797
Siena, Spannocchi palace, 184
Simon the Pharisee, Christ and, 372
Siphoned branches for street gullies, 920
Sketches: furniture, 114, 281; in Chartres and Normandy, 702; Loire valley, 12; Rochester cathedral, 630, 852
Soane medal design, picture gallery (H. Jefferis) 702
Sodbury, Little, manor house, 5
Soldiers' barracks, designs for, 626, 627
Solothurn: concert hall, 369, 372; museum, 368, 372
Southall, margarine works, 309, 319
Southampton, dining-hall, 885
South Kensington museum: altar, Sta Chiara, Florence, 476; chimneypiece and panel, from Lime-street, 879, 880; doorways, palace (Genoa) 476 (Gubbio) 477; Early French furniture, 114; Etruscan antefix, 72; fireplace from Brittany, 407; rood loft and crucifix, 520, 555; "Temptation of Eve," by W. Bell Scott, 702; wall fountain, Florentine, 510
Spalatro, palace of, arches, 147
Spannocchi palace, Siena, 184
Spongy iron, 661, 662
Staff, pastoral, Gloucester museum, 226
Staircases: Boston, Mass., 647; Goddington, 372; country house (W. H. Ashford's design) 372; Mercers' hall, 666; Rodway manor, 4; Rome, Berberini palace, 475; Sydney, Equitable assurance offices, 78; *Tantallon Castle*, 149
Stanton: doorway of house, 190; village and cross, 190
Stanway: church, 190; hall (courtyard, plan) 181 (gateway and details) 190
Station: fire brigade, Belfast, 372; hotel, Fort William, N.B., 630
Steel bridges, designing of, 136, 254, 355, 443, 663
Stonehenge, sketches at, 479
Street: corner in Mayence, 843; gullies, siphoned branches for, 920
Stresses: graphical determination of, 700; in roof trusses, 873
Striking centres of arches, 38
Strozzi palace, Florence, 184
Students' training wards, in asylum, 297
Study, a, in the roof (R. Barry Parker's design) 99
Sudeley castle, 226
Sword bracket, Vintners' hall, 336
Sydney: assurance offices (Equitable, U.S.A.,) 78 (New York Mutual) 408; Callan-park asylum, 777

TABLES, French, 114 (money changer's) 281; wall, 683
Tantallon Castle: music-room, 148, 149; staircase, 149
Tavistock-place, Passmore Edwards Settlement buildings, 189, 190, 209
Taylors, merchant: hall, 587, 588, 589, 594, 630, 740, 814; school, headmaster's house, 885
Technical institutes: Richmond, Surrey, 152; West Ham (selected, Gibson and Russell) 482, 520 (2nd, Clark and Hutchinson) 520 (3rd, T. Davidson) 520 (S. Beale) 594
Temples: Clontarf (by Sir W. Chambers) 558; Ephesus (Diana, details) 8, 41, 72; Erectheium (Caryatid) 9 (frieze) 73; Rome (Jupiter Stator, console) 135 (Mars Ultor, details) 72
"Temptation of Eve," by Bell Scott, 702
Tewkesbury: abbey, sketches in, 226; timbered houses, 218, 251
Theatre: Glasgow, 391; Rome, Marcellus, tiers of arches, 146
Threadneedle-st., E.C., Merchant Taylors' hall, 587, 588, 589, 594, 630, 740, 814
Tilbury cottage hospital, 594
Tithe pot, Cluny museum, 558
Titus, arch of, Rome, Composite capital, 40
Tombs: Arlington's, Rolls chapel, 881; Bishop Bradfield's, Rochester cathedral, 852; Bishop Bridport's, Salisbury cathedral, 152; John Gibson's, Kensal-green cemetery, 780
Tonbridge school chapel, 78
Tottenham, St. Frances, R.C. church, 556
Touraine, sketches in the, 12
Towers: Barcelona cathedral, 336; Gloucester (St. Michael) 226; St. Paul's cathedral (N.W.) 917
Town hall: Audenarde (door) 807; Cologne, 842; Rotherhithe, 408
Training wards, at asylums, 297
Triforium, Gloucester cathedral, 226
Trivet, Cluny museum, 575
Trusses, roof, stresses in, 873
Trut hall, near Helston, 630
Tufnell-park, pair of houses, 425
Tulse Hill Presbyterian church, 482
Tunstall, High-street board schools, 558
Tynemouth priory, 213

UNIVERSITY: college, Aberystwith, hall of residence, 254; Glasgow, medical department, 740; Padua, arcade, 404

VALLEY, Loire, sketches in the, 12
Valmarana palace, Vicenza, 258
Venetian: caricatures in alabaster, 814; paintings, 594
Venice, library, 295
Ventilator, Hill's new, 76
Verona: Bevilacqua palace, 295; Carnossa palace, 295
Vicenza, Valmarana palace, 258
Villas, East Grinstead, 869
Vintners' hall, master's chair and sword bracket, 336
Vire, la porte Horloge, 702
"Virgin and Child," by Memlinc, 886
Vlaenderbergh, Barbara van, Memlinc's, 630

WALL: cupboard, Haberdashers' hall, 336; fountain, Florentine, 510; table, 683
Warehouses: Belfast, 46; Rushden, 537; Southall (margarine) 300, 319
Warwick chapel, Tewkesbury abbey, 226
Washington, loggia at Metropolitan club, 831
Water: closet, Scientia, 649; gate, design for (G. Lacy) 300
Waxwell farm, Pinner, drawing-room, 408
Weaver's house, Ghent, 372
Well head, Maison Fontaine Henri, 711
West Ham: casket of freedom of, 549; technical institute and free library (1st design, Gibson and Russell) 482, 520 (2nd, Clark and Hutchinson) 520 (3rd, T. Davidson) 520 (S. Beale) 594
West Norwood, Presbyterian church, 482
Westminster: banqueting hall, Whitehall, 916; from the river, by Canaletto, 594; old Houses of Parliament, 264
Whitehall, banqueting hall, 916
Wickhamford church, details from Sandy's tomb, 190
Willis's rooms, plans, 903
Winchcombe, old houses at, 226
Wind pressure on ogee roof, 835
Windows: dining-room, American cottage, 264; Settlement buildings, Tavistock-place, 209
Wing, new, Park hall, Oswestry, 12
Woking, Eventyde house, St. John's, 336
Wolstanton board schools, Tunstall, 558
Woodford, Essex, house at, 78
Worcester, old houses in Friar-street, 300
Writing bureau, 683
Wrought iron work, Coats church, Paisley, 446

XANTHOS, Nereid monument from, 41

YARROW convalescent children's home, Broadstairs, 171
York: gate and Westminster, Canaletto's, 594; new buildings, Duncombe-place, 336

THE BUILDING NEWS
AND ENGINEERING JOURNAL.

A FIELD FOR THE SKETCHER.

If we were to say that the great majority of architects habitually leave out of sight one of the most effective sides of the art they practise, and if we were to add that an immense number of students, and even of artistic ones, follow their example, we should scarcely go further than facts would warrant. Yet this neglected side is not only a most attractive, but might be a most popular one. In some phases of style, and those the most refined, it has been the side to which the architect mainly trusted for success. Though it is capable of any amount of elaboration and costliness, it does not insist on them. It crowns all other details in palaces and cathedrals: it makes up for the want of all others in cottages and sheds. Nature is teaching it by direct example all day long. Earth and sky and sea cry aloud about it, though few regard them; and it is only amongst buildings that a human being could pass his life without ever being reminded how glorious a thing is colour.

For this neglect there are several reasons. It is not long since many good people thought colour sinful. They were not the first, and will not be last, who aimed at sanctity through singularity. The way looks so tempting. To be better than one's neighbours, more honourable, more benevolent, more unselfish is difficult; to dress in drab and revel in whitewash is easy. To believe, and to make others believe, that goodness consists in things like the latter, and not in things like the former, is to stake out a royal road to perfection, with no hills, no stones, no quagmires in it. It was a road which a great many people followed in the early half of this century, and which is far from deserted yet. But it is not probably a road much travelled by architects, though the footsteps of the illustrious Pecksniff may still be traced there. Others, when they come within its borders, are perhaps rather taken there by their clients than urged by any preferences of their own. If they neglect colour, at least they do not claim this as a virtue: their work happens to lie in quarters where colour is still practically prohibited.

On the other hand, a great many persons who never troubled themselves about the supposed wickedness of colour, have, in the course of the last two or three centuries, prided themselves on their aversion to it for other reasons. They have held it to be vulgar, impure, or, in other words, contrary to Classic precedent. We know now that old Greek and Roman art was full of colour. Not only did it employ all sorts of coloured marbles and gems, which ancient writers describe, and which even time has not wholly destroyed, but it revelled in surface decoration, both on walls, floors, ceilings and sculpture. This fact, however, has only been found out by slow degrees. When the remains of ancient art were first studied, about the end of the 15th century, the great bulk of this adornment had perished. A thousand years of destruction or neglect had worn away everything but the marble itself, and it was taken for granted, then and long afterwards, that with beautifully-shaped marble works, Classic art had practically begun and ended. As the ancient temples and statues were more and more studied, it became more and more the rule to try and copy them exactly. No colour being perceptible without close scrutiny on the old ones, it was held an artistic crime to put any on the imitations. It thus became a primary article of the orthodox creed that the Greeks and Romans loved to surround themselves with bare white marble, as lifeless and cheerless as the ice of which a palace was once built at St. Petersburg. Nothing else was pure; nothing else was proper; nothing else was in good taste. So every gentleman who had received a classical training, felt bound to condemn all colour as an abomination, and if he could do no more, at least he whitened his parish church, and took the stained glass out of the windows.

The antiquarian blunder and the moral one supported each other. The hatred of colour became at once a proof of refinement and a token of virtue; and so it has happened, that from the time of Charles I. till now, Englishmen have almost allowed one of their faculties to perish by disuse. How far it had failed became manifest some five-and-twenty years ago, when, going from one extreme to another, a passion seized so many architects for "polychromatic decoration." It was as if a sudden fit had come on a roomful of people who scarcely knew their notes, for performing an oratorio they had never even tried to practise. The discords were frightful. The thing threatened to be a public nuisance, and the performers abandoned it. "Polychromatic decoration" no longer shows itself in street fronts. But the failure does not prove it wrong. There is a place for it, as there is a place for an oratorio. What the failure proves is, that complex things in colour, like complex things in music, need skill and study. It is necessary to begin at the beginning, and to master the art by degrees.

How is it, then, that so few students are apparently trying to master, not only elaborate systems of colour design, but even those elementary ones which are indispensable to everybody who builds? One answer is, that in this age of examinations, it "does not pay." The young architect, with more subjects forced on his attention than any young man ever had before, is obliged to make a selection. He has to neglect those which are, in comparison, worthless, and, not unnaturally, he feels that "the worth of anything is just as much as it will bring." The study of colour will not bring him much in examinations, though it may do more for him in after-life. But his examinations are pressing, and his subsequent career is at a distance; so he puts off the matter to a more convenient season. He grows older and goes in, perhaps, for competitions. But here, again, by the wisdom of committees and assessors, colour is strictly prohibited. In this quarter, therefore, it still "does not pay." He starts in practice, and roused at last by some suggestive lecture at the Institute or the Association, he feels that his opportunity has arrived. His first building shall be a triumph, not only in design and construction, but in colour also. The principles he has heard seem so easy of application, and so pleasant too. Structural questions will not trouble him here; points of practical convenience will refrain from interfering; even the district surveyor himself can be set at defiance. But the young architect finds that this branch of its profession, like the rest, has perils of its own. He has been taught, for instance, how to combine or to contrast his yellows and reds and greys; but when he comes to do it, he fails to get the right yellow, or the right red, or the right grey for his special purpose. If at last he gets the right one, his workmen cannot match it, or, if they do, it turns out to be too pale or too dark for its place. He makes acquaintance with the colour-blind painter,—that everyday product of our civilisation,—and with that still commoner one, who wants to put chrome yellow and French ultramarine into everything. Then the effect of distance upsets his calculations. The changes of light from dawn to sunset play all sorts of tricks with his scheme of colour; the lime of the plaster eats into it, and the wall surface which was purple in the morning has transformed itself to a lively green by the afternoon. The end is that he distempers half his decorations over, with some wash "warranted to stand," and that thenceforth he is very shy of trying others like them.

All this means that, as a colourist, he has set up for a master before being an apprentice. The suggestions of an accomplished decorator are valuable to those who have practised decoration, but they are no substitute for training and observation. Without these things, an architect may attain a certain success by turning over his elaborate colour-schemes to capable men who make a speciality of them. But whether he desires it or no, he has to do with colours throughout his work. His architecture will depend greatly on his materials, and his materials will form, in combination, either a good colour system or a bad one. If he leaves it to chance, it is pretty sure to be the latter. Yet he too often does leave it so, and either spoils good detail, or makes bad detail worse. Unless he is naturally destitute of an eye for colour, he might do better than this with very little labour to himself.

"What shall I sketch?" is the question which recurs every year at this season. To those who naturally love colour, we would reply: Try for one holiday the sketching of colour. Take a small moist-colour box and a couple of water-bottles, and make a set of simple memoranda of all the colour combinations which take your fancy. They are to be found everywhere, outside our great cities, and sometimes even in them. There are the varied colours of building stones, some as striking as those of marble, but almost unknown, like one that is in use near Banbury. Then there is the red stone of Coventry and Kenilworth, the bluish grey of Dean Forest, the orange and brown and white of Ham Hill, the brighter reds and blues of South Devon, the silvery granites and deeply stained porphyries of Cornwall, the bricks and flints of the Eastern counties. Mark what goes best with each in the way of tiles or slates, or wood, or paint, or plaster; and mark it, not in words, but in actual tints. Note in the same way all beautiful harmonies or contrasts in flowers, or buds, or insects, in tints of sky or water, or fading leaves, and you will have a series of definite facts as a foundation, whether your decorative attempts in future are simple or complex. Your sketches will not make much show. They cannot well be illustrated in the architectural journals, and so far, your friends who go in for draughtsmanship will have a temporary advantage over you. But they will be things to fall back on all your life—definite statements, compared with which, mere words are worthless; guides which, on a thousand occasions, may keep you from going wrong, and counsellors who will put you in the right road for gaining a thorough knowledge of decoration, should you end by studying it more completely.

REASONABLE SKILL AND CARE.

THE phrase "reasonable skill and care" is so often used in a legal sense, and so much turns upon its meaning in the discharge of the architect's functions, that it may be worth while asking what it implies in the ordinary duties of the practitioner. When an employer claims damages from his architect for negligence or want of skill, he has to prove by attested witnesses the truth of his allegation, and, of course, this is a question of expert evidence. It is not an arbitrary or fixed measure of skill, but sufficient under the circumstances of each case, which varies, as a matter of course. For example, in the design of a hospital, it would be reasonable to suppose that the architect planned his sick-wards on principles that were generally recognised; that the sanitary provisions were sufficient and convenient, that the heating and ventilation were devised upon good models. If he failed in any of these points of plan or provision, he could not be said to have shown reasonable skill. Mr. Brown is a good general house designer, but has had no experience in the planning of a free library. Would it be just to charge him with having failed to carry out the requirements of the committee? Here the question of limited experience might be urged; that the promoters knew beforehand Brown had no experience in building libraries, and that they could not therefore expect him to exercise a high degree of skill in the design or plan. Such a view of the matter has been held by judges and juries, they holding that "reasonable skill" must be interpreted in a limited sense in such a case. But there is a presumption that every professional man represents himself as possessed of the requisite ability and skill. When an architect is employed to carry out any building, no matter of what description, and he undertakes the work, there is an implied warranty on his part that he is reasonably competent to the task. And this is the general and reasonable view. Mr. Tompkins, the architect, who undertakes to design Mr. Smith a house or a shop, is supposed to bring to his task all necessary knowledge and experience, and, on his part, Mr. Smith expects all that he has bargained for, and certainly holds Tompkins responsible for any defects in design or negligence in superintending the building. If it were not so, an employer might just as well engage a builder or a foreman of works to carry out what he wants in his own way. In the same manner a man who was suffering from illness or some malady might save the cost of a doctor's fee by going to an apothecary, and would be himself to blame if by mischance a wrong medicine was given him. On the other hand, if he went to any registered medical practitioner—whether or not he was a specialist matters little—he would be justified in assuming that his case would be treated with a certain or reasonable amount of skill, or that, at least, his competence for the task would be assured him. If it was an eye or throat trouble, the general practitioner would, at least, prescribe safe measures that were generally followed; or, if it was too complex a case, would at once recommend his patient to go to an hospital or consult a specialist. And so the professional architect is presumed to understand the requirements of any particular building he undertakes—so far, indeed, as to protect his client against loss or damage.

One of the frequent charges brought against the architect is that of under-estimating. A client has a right to expect a certain degree of accuracy in the estimate he receives, and if he prescribes an outside limit of expenditure, he has reason to be dissatisfied if the lowest tender exceeds that limit to any large extent. A reasonable approximation to the actual cost is certainly a question of skill. When the contract sum exceeds, say, by 30 per cent. the architect's estimate, it can hardly be said that reasonable skill or care has been exercised, unless, of course, as often happens, additions, changes, or alterations have been made during its progress. Estimating is certainly one of those branches of architectural practice about which a certain degree of skill is looked for. The Law Court reports afford ample evidence of what is expected from the architect. No doubt the profession are great sinners in this respect. The exceeded estimate is a common reproach levelled against architects, but that is no reason why they should be content to bear the brunt of a charge which is damaging to their interests, and which in many instances can be avoided. An architect is blamed for many things which are not to be placed to his charge. For instance, he cannot foresee the nature of the soil on which his building is reared. When the digging for foundations is begun, it often turns out that they must be sunk to a greater depth than shown or specified, and expense of concrete or even piling may be incurred. The architect is blamed because he has not foreseen this and provided for it. His estimate has been based on a superficial examination, or on borings that have been supplied him; these turn out misleading, and his charges are disputed because he neglected to make a more thorough personal examination. In one or two cases cited the architect has failed to recover on this ground. But such charge can scarcely be said to be due to want of skill: it is merely an excusable omission on his part, which may be made up at any time without incurring loss.

Then we have supervision. What is a reasonable amount of supervision, will always be a very debateable question, because some people are apt to think that every part of the building should be inspected and approved by the architect; while his notion of his duties is that he gives only a general supervision, and is not responsible for such things as improper bricks in any conceivable situation, or the stone to be laid on its natural bed in every part, nor is he responsible for the laying of drains underground or their proper jointing. The charge of want of skill or negligence may be raised by an irate client in several ways. There may be mistakes in the design, in the use of materials, and it is for every architect, in the particular circumstances in which he is placed, to avoid these as far as he can. Want of skill in design is again a question depending on the evidence of experts, which may vary. Conceptions of plan, for example, would be difficult to define in many cases unless there was some glaring omission, or some self-evident want of skill—as, for instance, a hall with inadequate means of ingress and egress, a too-narrow main entrance, cramped or dangerous staircase, a dark corridor. Want of skill would arise if an architect planned a block of offices with windows too small for giving adequate light, or without considering the right of the dominant adjoining owner to obstruct. A court of law will assume, naturally, that it is the duty of an architect to make himself familiar with the law of easements, such as those of light and air and support, as his ignorance of the law may involve his client in serious litigation and loss. Examples of such cases abound in our columns of "Legal Intelligence." Every architect is presumed to know so much law as will be necessary to protect his client's interests. There is no excuse for a professional man in London or elsewhere if he blunders in not complying with the Building Act or by-laws, and thereby puts his client to needless expense. The law will not excuse him by pleading ignorance of its provisions.

So also with respect to other matters than those directly connected with his profession. There is no excuse for him to plead ignorance of engineering. He cannot plead that he knew nothing of treacherous soils or the substrata of the site if the foundations give way and the building settles, or that it was a technical matter outside the architect's work. If he did not know how to provide for wet sand or clay, or what engineering expedients to adopt, such as piling, or planking, or coffer-dams, he should have called to his assistance some one who did. Again, if through defective design an iron girder gives way, precipitating a wall, or an iron roof collapses, causing serious injury, it will not do for the architect to exonerate himself and lay the blame on the engineer. If an arch fell in from want of sufficient abutment, as shown by scale on the drawings, the architect would certainly be held liable, and the same if any wall or column proved too weak. Perhaps in questions like ventilation and acoustics there would be more difficulty in proving incompetence. We are not aware that any legal charge of incompetence has been made out against any architect because the ventilation of his building was bad, or because the acoustical properties of a concert or lecture hall were defective. These are matters about which there are conflicting view and theories. It may indeed be affirmed generally that the term "reasonable skill and care" could only be applied to those practical and definite matters relating to building which every architect is supposed to know, and not to questions of any speculative or doubtful kinds, about which opinions would naturally vary. A wider interpretation of the meaning of the phrase would be given by any jury in some cases where, for instance, the complexity of the building or its conditions rendered the architect not altogether responsible, and the phrase would bear a more

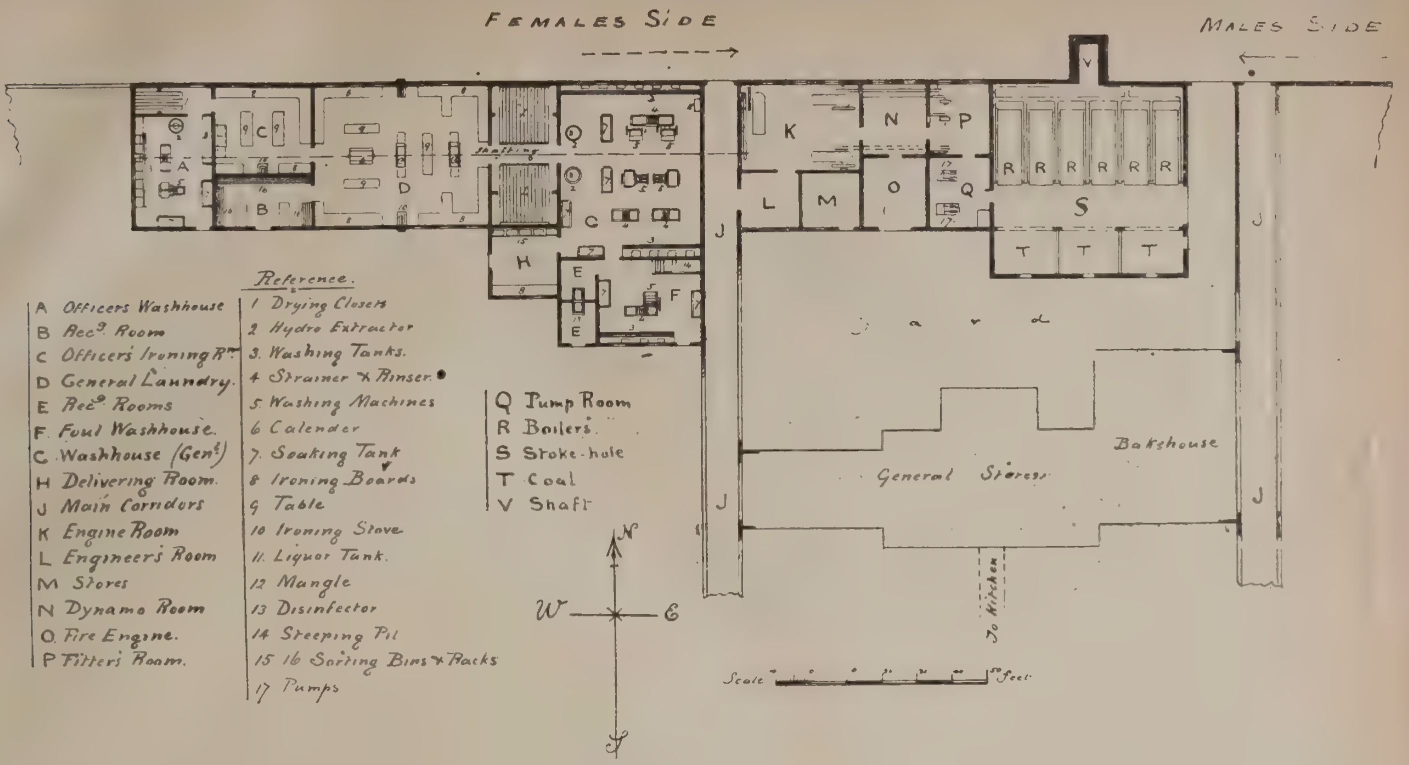


FIG. 37.

definite meaning in connection with buildings of ordinary size and everyday use.

COUNTY LUNATIC ASYLUMS.—XXI.

By GEORGE H. BIBBY, F.R.I.B.A.

ASYLUM LAUNDRIES.

AN asylum laundry should be different in many respects to the laundries for any other class of building, and the efficiency of this department is a most important factor as regards the health and comfort of the patients, for the special reason that a large number of asylum patients are very dirty in their habits, both by day and night. Employment in the asylum laundry has frequently great and special disadvantages as regards health and sanitary considerations; but, as a rule, the laundry stands in a similar position to the female patients that the workshops and farm lands, &c., do to the males, as regards opportunities for useful employment.

In the older asylums, and perhaps in many of more recent date, a great danger has existed with regard to fire, but the more modern asylums are so planned and constructed as to greatly minimise this risk; all hot pipes, flues, and fires should be isolated from woodwork, and, at all events, in large institutions steam-pipes are preferable to open fires.

Yet even with many of the latest asylums there are special fire risks for which the authorities have to adopt various precautions, especially in the ironing-room, where there must (under present conditions) be gas or fire-stoves to heat the irons, and where patients will also have easier means of reaching the burning coals or gas-flames, thus getting opportunities of doing mischief. Then, again, ironing patients may allow the irons and apparatus to become overheated (if not carefully watched), and are more liable than sane ironers to bring the linen, &c., into contact with the flames or red-hot surfaces, or to try overheated irons upon pieces of cloth and then throw the latter away in a smouldering condition. The ironing-room is frequently kept at a high temperature, and the adjuncts are, therefore, in a condition tending to the spread of any fire that might arise.

All this trouble and risk may be averted by the use of electrical appliances both for the washhouse and the ironing-room, the drying of the clothes being accomplished by means of electric drying closets, and the ironing by hand-irons connected with detachable wires to the electric mains. Some of these appliances are already in use in hotels and elsewhere, and I am strongly of opinion that the time is not far distant when electricity will be developed to such an extent in laundry matters that its use will entirely take the place of existing modes, when no ironing-stoves or fires of any kind will be required in connection with either the washing or the drying of clothes. The ironer would merely have to connect (instantaneously) the flat-iron with an ordinary electric cord, such as is generally in use with small electric lights; the iron would be quickly heated, and the heat regulated to a nicety without difficulty.

The drying of the clothes might either be by an electric fan, or by a direct application of electrically-produced heat.

In the construction of a laundry for an asylum, the superficial space to be allowed for each patient should not be less than 5ft.; therefore for an asylum for 2,000 patients there would be required 10,000ft. of area for the patients' laundry, which, however, would include an area of about 500ft. for the foul washhouse, unless there be a large proportion of patients with filthy habits.

In addition to the above accommodation there would be required a laundry area of about 1,500ft. for the officers and nurses, &c., preferably in a separate building, or apartment with separate receiving and delivering-rooms, &c.

It will be convenient here to take such an illustration of an asylum laundry upon a large scale, as is shown in Fig. 37, in which A indicates the position of the officers' and nurses' washhouse; B, the officers' ironing-room; C, the delivering-room from the general laundry; D, the general ironing and finishing-room; E, the general washhouse; F, the general receiving-room; G, the foul washhouse; H, the foul washhouse receiving-room; I, the engine-room; K, the engineers' room; L, fitters' shop; M, stores; O, the dynamo-room; N, fire-engines; P, the pump-room; Q, boilers; R, stoke-hole; S, coal-bunkers. The position of the various appliances is indicated by figures on the plan, and which should be supplied by firms having special experience of asylum laundries.

The construction of a large laundry of modern type is a vastly different affair to those in asylums erected some twenty or thirty years ago, and since the introduction of gas, steam appliances, and elaborate machinery for nearly every operation.

The walls of an asylum laundry should (at all events, to a height of 5ft. or thereabouts) be lined with glazed bricks or tiles of a light or white colour; the apartments should all be light and well ventilated. Many laundries are lighted only by skylights; but it would appear to be much more desirable that there should, in addition, be a fair supply of windows in the side and end walls. The floors of the washhouse may be either of tiles or cement, the latter for preference, and so dished, guttered, or inclined, that the waste water, soap-suds, &c., may be collected into receiving-tanks. The washhouse should be constructed so as to allow the washing troughs to face the windows, not only for purposes of light, but also to secure for the patient employed therein as much cheerfulness as may be obtainable.

To a very great extent hand labour should be utilised in an asylum laundry; but in the foul washhouse and elsewhere some washing machines would generally be required, and (with proper and sufficient protection from the asylum patients) steam-power would frequently be advantageous, the belting, &c., being driven from a shaft *below* the floor-level rather than above the heads of the workers, although circumstances may sometimes make the latter arrangement more convenient.

With regard to the machines to be employed, these must be chosen with special regard to the fact that the asylum patients engaged in working them should not have opportunities of injuring either themselves or the apparatus; and the latter should be as compact as may be, space being so valuable in this department.

There is a patent self-reversing washing machine that is made for steam-power, the dimensions of which (largest size) are 6ft. in the clear. It consists of an outer case with a revolving cage, actuated by pulleys upon the centre shaft, passing through the case. This central shaft is driven from a counter-shaft overhead, which is a component part of the machine, and is fitted with a set of automatic striking-gear, which by means of a crossed and open strap causes the inner revolving drum to *reverse its direction at every three or four revolutions*, thereby preventing the tendency of rolling-up and balling of the fabrics undergoing cleansing.

The revolving cage is, for convenience, divided into four compartments, and all the clothes in each of these compartments are passed through the washing solution at each revolution. The outer door in the case provides access to the inner drum, and a hand-shaft with worm and wheel arrangement is fixed on the side for bringing the door of each separate compartment to the position for discharging and filling opposite the door in the outer case. The lower part of the case is provided with an emptying valve, to run off the cleansing solution; hot water, cold water, and steam are laid on to the machine, so that it may be used either as a rinser or washer, or as a boiling tub or a disinfector, by turning the steam direct on to the clothes. Another type of this machine is made to resist pressure, and is fitted with a safety-valve, and these machines may be fitted with a vertical steam-engine as an integral part of the machine, so that where no line of shafting exists it has its own motive-power, with a sufficient reserve to drive a wringing-machine or mangle if required, or for doing other work.

These latter machines are suitable for asylums of moderate size, and are in use at the Herbert Hospital, Woolwich, and the Netley Hospital, Southampton.

The washing troughs may be made of 2in. wood, grooved, leaded and fixed together with lag bolts, having brass waste plugs and iron legs, and the inside measurement of each compartment may be 28in. by 25in. by 17in.; the height to the upper edges may be about 32in.

In an asylum for 800 patients (and for the officials and nurses, &c., having charge of them) the following are, approximately, the appliances for which space must be found by the architect:—

In the General Laundry, one hydro-extractor 36in. in circumference; one box-mangle 8ft. 6in. by 3ft. 3in., with patent self-acting risers and gear and friction rollers; one rinsing and wringing machine, with sliding drainer over trough. The above would comprise all the *machines* necessary.

The *fittings* would include one galvanised iron vessel and wood frame, fitted boiling apparatus with steam supply and cold water; a range or ranges with 30 washing troughs, each 2ft. 6in. by 2ft. by 1ft. 6in., all made in best manner, with copper bolts, nuts and washers; 1½in. pine draining boards and racks to each; full way brass plugs, grates, washers and chains, hot and cold supply copper steam sparge pipe and valves, and strong wood supports and grids.

One range of drying-horses (in a brick-built chamber) with runners, guides, and including the steam coil and necessary heating apparatus.

There should be provided about five 10ft. drying-horses to every 100 patients; therefore in this case for 800 patients there would be not less than 40 of these, and a considerable area would be necessary, having in view the necessity for ample means of drawing out the horses, passageway, &c.

There would also be a laundry stove for heating about 50 irons.

In the Officers' Laundry, an area would be provided sufficient for the working of the following apparatus:—One 26in. hydro-extractor; one patent box-mangle, 7ft. by 3ft., with automatic rising gear and friction rollers, and hard wood bottom; one patent rinsing and wringing machine with drainer and trough; one goffering machine, and one hot calender or cylinder mangle.

The fittings would comprise a boiling vessel with cold water supply only and a steam (copper) coil complete; a range of 12 washing troughs (as for general laundry); one range of drying-horses (about seven 10ft. horses), and one laundry stove for about 20 irons.

In the Foul Linen Laundry, space should be found for one hydro-extractor, one mangle, 7ft. by 3ft., and one rinsing and wringing machine.

The fittings here would include one boiling vessel, with cold-water service, and steam (copper) coil; one range of seven washing troughs; one foul linen tank (provision to be made for drainage and overflow to drains); and one range of seven 10ft. drying-horses.

In an asylum for 800 patients, the total number of inmates (patients and officials) may be taken, approximately, at about 1,000 persons, and in an estimate before me by Messrs. D. W. Forbes and Co., Limited, the total cost of the laundry appliances for an asylum of this size, including hot, cold, and waste services for the laundry, should not exceed £1,600; the figures being divided thus:—General laundry, £1,040; officers' laundry, £370; foul washhouse, £190.

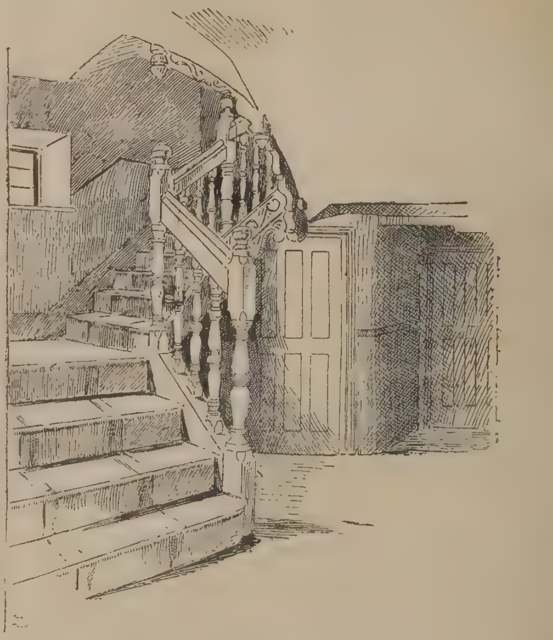
In Fig. 37 the boilers (six in number) would be used for all purposes connected with the engines, hot water and steam supply, electric lighting, &c., as well as for laundry purposes, and arrangements should be made for such utilisation of exhaust steam from the engines as may be found advisable.

The laundries of all asylums should be arranged of sufficient capacity to provide the whole of the inmates with at least two changes of underclothing every week, and with a sufficient further provision for the cleansing of bed-linen, table linen, and the preliminary cleansings of the bedclothes and linen of patients with foul and dirty habits. Therefore, before planning an asylum laundry, full information is required by the architect as to the numbers of the clean and dirty classes of patients; these differ in proportion in various institutions; but frequently I believe the foul laundry would not be constructed on too large a scale if arranged for about *one quarter* of the total number of patients; and in connection with this department there should be a disinfecting apparatus, in such a position as is indicated on Fig. 37 (in the receiving-room at H). The advantage of this arrangement is that the persons bringing the foul clothing pass it into the disinfecting apparatus, whence it is taken into the washhouse.

(*To be continued.*)

THE ARCHITECTURAL ASSOCIATION EXCURSION, 1895.

THE excursion programme has now been settled upon, and the district round Cheltenham will furnish some Gloucestershire houses of architectural interest, and some degree of freshness will be imparted to the proceedings by a steam-launch trip up the Avon in the Pershore country, starting from Tewkesbury. The excursion will thus encroach to some extent upon the places visited during the Worcester excursion, when Mr. Aston Webb was president, and it nearly reaches the neighbourhood comprised by the Warwick programme, when the late Bowes Paice presided, and the late Charles Pink acted as secretary. Cirencester, with its grand church and great porch, is too far across country to be reached from Cheltenham, and difficulty of access will exclude Northleach and Stowell, where Earl Eldon has a new house of some consequence. On Monday, August 12, going northwards from the headquarters at Cheltenham, the excursionists, under the guidance of Mr. W. D. Caröe, the new president, will visit Southam House, with its farm-buildings and pigeon-house, &c., and Bishops Cleeve, with its church and old houses, will make out the day. On Tuesday, Tewkesbury Abbey, old bridge, and timbered houses in the streets will be seen, with the river trip to follow. Wednesday is to be devoted to Chastleton, on the borders of Oxfordshire (see "B. N.," May 12, 1893, for view). On Thursday, Broadway, interesting by reason of the old houses and church, Staunton, Stanway, and Brickland will be visited. Friday is to be occupied at Severnhampton, Winchcomb, and Sudeley Court. On Saturday the Associationists will take the city and cathedral at Gloucester on their way home.



STAIRCASE, RODWAY MANOR.

SOME ANCIENT ENGLISH HOMES.*

THE attractive title adopted by Elizabeth Hodges for her carefully-compiled and readable record, just published, about a few comparatively unknown houses in Warwickshire and Gloucestershire, is well chosen to insure an inquiry into its contents, for the growing interest in all that pertains to our national historic homes every year increases. In the search, however, for fresh material adapted to illustration and description from an architectural and archæological point of view, it necessarily becomes more and more difficult to discover examples which have not hitherto been sketched and published in a more or less complete form. The days for the continued reprinting of old, worn-out stereotyped wood-blocks, which at best but crudely depict objects of topographical interest, are, fortunately, passing away; and excursionists now are, rightly enough, not satisfied with the miserably produced guide-books which formerly obtained a market in the absence of any serious competition. Education has materially improved the general knowledge of the public in such matters, and most people who possess any taste at all desire to obtain better drawings and more accurately-written descriptions of the places they visit in these times of cheap trips and easy locomotion. The houses selected for record in this volume, which Mr. Fisher Unwin has added to the books of the season, are still practically but little known, and their importance is not likely to bring either of them into marked prominence.

Such ancient dwellings, nevertheless, are eminently typical, and while affording glimpses of the family and social life of bygone times, they serve to furnish associations and enrich the pages of our local history. The first two old homes described in the volume under notice are Lisle House, at Wotton-under-Edge, and Bradley Court. The gabled roofs of the first of these "standing houses" group with the church tower at Wotton, but only fragments remain of the once princely mansion of the Berkeleys. The ball-crowned gate entrance still stands, and the general outline of the site can be distinguished within the rampart wall, on which a picturesque summer-house remains as an original feature. Half a mile west of Wotton stands the small hamlet of Bradley. No record of the present house known as Bradley Court is known to exist, but it presumably dates from the early days of James I. The sturdily-proportioned bay-like projections which run up the whole height of the building break the sky-line pleasantly, and mingle suggestively with the gables of the roofs. There is, however, but little detail of an ornamental kind, and the drawing which we print herewith furnishes a capital idea of the house. The trim parterres of the 18th century, the stone-built summer-house and dovecote, the charming gardens which surround "the Court," and the two fine avenues of elms which lead up to it, charmingly augment the quaintness of the homestead. Beverston Castle is next described, and then Rodway Manor, Mangotsfield, some five miles to the north-east of Bristol. The house, which is three stories high, has been too well "done up and excellently kept" to bear distinctive marks to denote its age. Inside the buildings the signs of historic construction are more conspicuous. The first object which meets the eye on entering is a good specimen of the Jacobean dog-legged stairway winding

---

* Some Ancient English Homes and their Associations, Personal, Archæological, and Historic. By Elizabeth Hodges. Illustrated by S. J. Loxton. London: T. Fisher Unwin. 1895.

MANOR HOUSE, LITTLE SODBURY.

up to the top story with its carved strings and shaped verges, massive newels and turned balusters, black and polished with age. The sketch with which we are enabled, by the publisher's courtesy, to illustrate these notes gives a very good notion of its design. Tradition has endeavoured to associate this old place with three of the Queens of Henry VIII.—viz.: Anne Boleyne, Jane Seymour, and Catherine Parr—though why it would be difficult to tell. The windows show its Tudor origin, but the house could never, even its palmiest days, have accommodated a royal party, and never could have ranked with the neighbouring mansions of Thornbury and Yate. Yate Court, long since demolished by the Parliamentarians at the time of the civil war, was not rebuilt, but a portion of Lord Maurice's mansion is incorporated in the present farmhouse standing on the west side of the courtyard. The authoress next describes Caludon Castle, near Coventry, where the remains of the banqueting-hall form the most interesting part of the existing ruin. Kingsbury, eleven miles from Birmingham, and Hurley Hall, the home of the Willingtons, are next recorded. Following these is a history of Little Sodbury Manor, which lies in a small village on the western slope of the Cotswolds, four miles from Yate. It is built upon a terrace cut along the side of the hill, and has a pleasant south-west aspect. The centre of the mansion is occupied by the usual lofty hall, still entire, but dismantled, with its wind-braced roof supported on angel corbels, its music gallery and screen at the south end. A grotesque mask carved in stone is pointed out in the wall opposite the western door, as the squint, formed by the monster's mouth, through which the ladies could obtain a view from their gallery outside the hall upon the revelry going on at times within its walls. Many additions of the last century considerably mar the artistic effect of the older portions, but the accompanying view, lent us by Mr. Unwin, shows what a quaint specimen of Mediæval Domestic architecture can be seen at Little Sodbury. Horton Court and Bidford Grange (which questionable tradition states is the original of the "dejected Mariana's" "Moated Grange" in "Measure for Measure") follow, and conclude the volume. The book is handled in a popularly entertaining manner, and makes a connecting narrative from the materials brought together, and if its architectural character at times is slight, it is but fair to remark that the aim of the volume was not intended to be more than an antiquarian record for the general reader. Without attempting to furnish a textbook for the historian, the architect, or the archæologist, the writer and the artist who combined forces to produce this record have so far succeeded as to well merit the attention of all three authorities.

BRADLEY COURT.

* * *

At a meeting of subscribers to the infirmary at Rochdale, held on Wednesday week, it was decided to carry out extensions to the building at an estimated cost of about £5,000.

SHERATON'S CABINET-MAKER AND DRAWING-BOOK.

VERY few complete and perfect copies of the rare and valuable third edition of Sheraton's famous book are now to be had, and high prices are obtained whenever a clean impression comes into the market. Messrs. Gibbings and Co., of Bury-street, in conjunction with Mr. Batsford, as we understand, have therefore done well in their reissue of the work in facsimile, so that now cabinet-makers and designers, as well as technical teachers, can obtain for £2 10s. an entire reproduction of Sheraton's volume, which, for all practical purposes, is as good as the original. Mr. Wasmuth, of Berlin, a few years ago reproduced Chippendale's great folio, and English enterprise, following this lead, has risen to the occasion, and students in art may now secure Sheraton's companion volume, which cannot fail to be welcomed by many who, in a variety of ways, are associated with the production of furniture and the technical art of upholstery. It is hardly necessary for us to attempt anything like a review of the book itself. To name it surely should suffice as a guarantee of its interest and quaintness. The preliminary part of the volume is devoted to a series of problems intended to provide the student and craftsman with instruction in the matter of perspective delineation as applied to furniture design, besides a variety of diagrams of a practical kind, such as the method recommended by the author for planning carpets, mitring mouldings, and setting out elliptic domes. The Classic orders of architecture are described with typical illustrations, and rules are given, too, for tinting drawings. More modern books have developed and concentrated, of course, most of the principles so enthusiastically put forward a hundred years ago by Sheraton for the advantage of his pupils; but although some of his methods may be considered antiquated nowadays, no expert, however efficient, would fail to recognise the author's useful rules, and no student can afford to overlook the principles which underlie this master's unreserved and, perhaps, sometimes verbose descriptions. Few men of taste have exercised so lasting an influence as Sheraton, and his designs, after more than a century has elapsed, are more valued still for their grace of form, elegance of detail, and lightness of perfect construction than the productions of any other maker. The plates include his "Universal Table," a sideboard with pot-cupboards at the ends, useful patterns for bookcase doors, secretaries, and library tables, "Kidney tables," and cylinder desks, sofa-beds, alcove-beds, a summer bed in two compartments (invented by the groom of the household furniture to the Duke of York), and "an elliptic bed for a single lady." Chairs are given, of course, in great variety, with dressing-tables, washstands, clocks, and fire-screens. In the "Accompaniment," details are added of carved work, Girandoles, painted panels, table centres, pilasters, and window-cornices, making together a thick book of some 440 pages, including no less than 122 plates. We have said enough to draw attention to this standard volume thus so capitally reproduced, whereby, instead of having to wait the chance of securing some imperfect, soiled, or mutilated copy of the original, the reader may at once obtain the new edition at about a fifth of the cost demanded for the old impressions.

NOTES ON BUILDING PRICES.

By JOHN LEANING.

(*Continued from p.* 581, *last Vol.*)

TEAK.

THE use of teak in buildings has within a few years much increased, and for many purposes it is a valuable wood. No timber bears the weather better; it is consequently frequently used for the exposed fittings of ships, such as decks, seats, gratings to hatchways, &c. Vast quantities have, of late years, been used as backing for the armour-plating of war ships, and this demand has increased the price. The lessons taught by the recent Naval War between China and Japan will probably induce a greater use of iron instead of wood, and the demand for naval purposes will decrease.

For sills of sash-frames, for dormer fronts where the wood is to remain uncovered, for hospital floors, and for good internal fittings, it cannot be surpassed.

Malabar produced the best teak, but it is now seldom seen in European markets. The chief supply is drawn from Burmah or Siam, and is shipped from Rangoon, Moulmein, and Bangkok.

It is imported in squared logs from 15ft. to 40ft. in length, and from 12in. to 27in. square; also in planks of various widths and thicknesses.

The so-called African teak is not teak, and is an inferior wood of poor quality. Teak, whether log or plank, is sold at the timber sales at per load of 50c.ft.

The labour on teak is equal to that on Honduras mahogany (which see). The waste may be taken as about 5 per cent. more than deal—*i.e.*, 7½ per cent. for sawing and 7½ per cent. for conversion = 15 per cent. in all.

The price of good teak is quoted by the retail timber merchant by the inch in thickness; the other thicknesses above inch increasing in uniform proportion. The rates are as follows:—

½in.	⅝in.	¾in.	1in.	1¼in.	1½in.	1¾in.	2in.
-/5¾	-/6¾	-/7¾	-/9	-/11¼	1/1½	1/3¾	1/6

Add 7½ per cent. for conversion:—

-/0⅜	-/0½	-/0⅝	-/0⅝	-/0⅞	-/1	-/1⅛	-/1⅜
-/6⅛	-/7¼	-/8⅜	-/9⅝	1/0⅛	1/2½	1/4⅞	1/7⅜

Adopting for the purpose of illustration and comparison the same items as before, we have for the deal skirting in two pieces, material 2¾d., labour 6⅝d. = 9⅜d. total. Excluding the deal fillet and its fixing, we have 8½d. remainder. If we increase the labour constants for deal by 100 per cent., and adopt the teak prices in the table of teak, the calculation will be as follows:—

ft.	in.		s.	d.
1	0	run of 1in. by 4½in. teak, at 9⅝d.	0	3⅝
1	0	,, of 1¼in. by 7in. teak, at 12⅛d.	0	7⅛
1	0	,, labour to moulding 3in. girth, at ·144 super. of 7s. 11d.	0	3½
1	0	,, labour to moulding 1in. girth, at ·024 of 7s. 11d.	0	2¼
1	4	super. of planing, at ·020 of 7s. 11d. ..	0	2½
1	0	run fixing ·030 of 7s. 11d.	0	2⅞
1	0	,, rebated edge to 1¼in., ·006 of 7s. 11d.	0	0⅝
1	0	,, rebated edge to 1in., ·006 of 7s. 11d.	0	0⅝
			1	11⅛
		Add 10 per cent. for extra care and protection	0	2⅜
		Cost per foot run	2	1½

Three times 8½d. is 2s. 1½d.

Applying the same process to the calculation of the value of 1¼in. square framed doors, we find the material valued at 2¾d., the labour 4¾d., equal 7½d. total. If we increase the labour constants for deal by 100 per cent., and adopt the teak prices in the table of teak, the calculation will be as follows:—

					s.	d.
2/3	0					
	9	4	6			
23	2					
	4½	8	8			
		13	2	1¼in. teak at 12⅛d.	13	3⅝
2/1	1					
1	8	3	7			
2/1	1					
3	9	8	2			
		11	9	¾in. teak at 8⅜d.	8	2⅜
Glue					0	3½
Glass-paper					0	1½
					21)21	11
Cost of material per foot super.					1	0½
Labour making ·084 of 7s. 11d.					0	8
Labour fitting and hanging ·016 of 7s. 11d. ..					0	1½
					1	10
Add 10 per cent. for extra care and protection					0	2¼
Cost per foot super.					2	0¼

Three and a quarter times 7½d. equal 2s. 0¾d.

AMERICAN WALNUT.

American walnut work is of equal value to wainscot, both as to labour and materials. The labour on some is exceptionally troublesome, but as a general rule wainscot is a fair parallel. Its use for internal fittings is increasing. It is imported in log planks and boards of various thicknesses. The leading brand is <K>. The greater part is shipped from Baltimore or Quebec.

AMERICAN WHITE WOOD.

American white wood or Canary white wood is shipped from Baltimore or New York in logs, planks, and boards. The better qualities are very fine grained and of good figure. It takes polish well. It is frequently used for shop fittings, and when stained and French-polished, bears a fair resemblance to mahogany. The labour is not more expensive, nor the waste greater, than on deal. The timber merchants' prices are quoted by the inch in thickness, the prices for the other thicknesses above inch increasing in uniform proportion.

½in.	¾in.	1in.	1¼in.	1½in.	1¾in.	2in.
-/2	-/3	-/3½	-/4⅜	-/5¼	- 6⅛	-/7

Add 5 per cent. for conversion:—

-/0⅛	-/0⅛	-/0⅛	-/0¼	-/0¼	-/0⅜	-/0⅜
-/2⅛	-/3⅛	-/3⅝	-/4⅝	-/5½	-/6½	-/7⅜

Adopting, for the purpose of illustration and comparison, the same items as before, we have for the deal skirting in two pieces, material 2¾d., labour 6⅝d. = 9⅜d. total. Excluding the deal fillet and its fixing, we have 8½d. remainder. Adopting the labour constants as on deal, and adding 10 per cent. for extra care and protection, the calculation will be as follows:—

ft.	in.		s.	d.
1	0	run of 1in. by 4½in. white wood at 3⅝d. per foot supl.	0	1⅜
1	0	,, of 1¼in. by 7in. white wood at 4⅝d. per foot supl.	0	2⅝
1	0	,, labour to moulding 3in. girth at ·072 supl. of 7s. 11d.	0	1¾
1	0	,, labour to moulding 1in. girth at ·012 of 7s. 11d.	0	1⅛
1	4	supl. planing at ·010 of 7s. 11d.	0	1¼
1	0	run fixing at ·015 of 7s. 11d.	0	1½
1	0	,, rebated edge to 1¼in., at ·003 of 7s. 11d.	0	0¼
1	0	,, rebated edge to 1in. at ·003 of 7s. 11d.	0	0¼
			0	10⅛
		Add 10 p.c. for extra care and protection ..	0	1
		Cost per foot run	0	11⅛

One and one-third times 8½d. is 11⅓d.

Applying the same process to the calculation of the value of 1¼in. square-framed doors. We find the material valued at 2¾d., the labour 4¾d. = 7½d. total. Adopting the deal constants for labour, the calculation will be as follows:—

					s.	d.
2/3	0					
	9	4	6			
23	2					
	4½	8	8			
		13	2	1¼in. white wood at 4⅝d.	5	1
2/1	1					
1	8	3	7			
2/1	1					
3	9	8	2			
		11	9	¾in. white wood at 3⅛d.	3	0¾
Glue					0	3½
Glass-paper					0	1½
					21)8	6¾
Cost of material per foot supl.					0	4⅞
Labour making ·042 of 7s. 11d.					0	4
Labour fitting and hanging ·008 of 7s. 11d. ..					0	0¾
					0	9⅝
Add 10 p.c. for extra care and protection ..					0	1
Cost per foot super.					0	10⅝

One and one-third times 7½d. is 10d.

SEQUOIA.

Sequoia, known also as Californian red wood, is imported generally in planks of various thicknesses, 2in. and upward, and sometimes as wide as 3ft. 6in. The shipping port is San Francisco. Some of this wood has a pleasing figure; it is used for internal fittings, French polished. The labour and waste is about equal to that on deal.

The timber merchants' prices are quoted by the inch in thickness, the prices for the other thicknesses above inch increasing in uniform proportion—

½in.	¾in.	1in.	1¼in.	1½in.	1¾in.	2in.
-/2¼	-/3¼	-/4	-/5	-/6	-/7	-/8

Add 5 per cent. for conversion—

-/0⅛	-/0⅛	-/0⅛	-/0¼	-/0¼	-/0⅜	-/0⅜
-/2⅜	-/3⅜	-/4⅛	-/5¼	-/6¼	-/7⅜	-/8⅜

Adopting for the purpose of illustration and comparison the same items as before, we have for the deal skirting in two pieces, material 2¾d., labour 6⅝d. = 9⅜d. total. Excluding the deal fillet and its fixing, we have 8½d. remainder.

Adopting the labour constants as in deal, and adding 10 per cent. for extra care and protection, the calculation will be as follows :—

ft.	in.		s.	d.
1	0	run of 1in. by 4⅛in. red wood, at 4⅛d. per foot super.	0	1½
1	0	,, 1¼in. by 7in. red wood at 5¼d. per foot super.	0	3
1	0	,, labour to moulding, 3in. girth, at ·072 super. of 7s. 11d.	0	1¾
1	0	,, labour to moulding, 1in. girth, at ·012 of 7s. 11d.	0	1⅛
1	4	super. planing at ·010 of 7s. 11d.	0	1¼
1	0	run fixing, at ·015 of 7s. 11d.	0	1½
1	0	,, rebated edge to 1¼in., ·003 of 7s. 11d.	0	0¼
1	0	,, ,, ,, to 1in. ,, ,, ..	0	0¼
			0	10⅝
		Add 10 per cent. for extra care and protection	0	1
		Cost per foot run	0	11⅝

One and one-third times 8½d. is 11¼d.

Applying the same process to the calculation of the value of 1¼in. square framed doors, we find the material valued at 2¾d., the labour 4¾d. = 7½d. total. Adopting the deal constants for labour, the calculation will be as follows :—

						s.	d.
2/3		0					
		9	4	6			
	23	2					
		4½	8	8			
			13	2	of 1¼in. red wood at 5¼d...	5	9⅛
2/	1	1					
	1	8	3	7			
2/	1	1					
	3	9	8	2			
			11	9	¾in. red wood at 3⅜d.	3	3⅝
Glue						0	3½
Glass-paper						0	1½
						21)9	5¾
Cost of material per foot super.						0	5⅜
Labour making ·042 at 7s. 11d.						0	4
Labour fitting and hanging ·008 at 7s. 11d...						0	0¾
						0	10⅛
Add 10 per cent. for extra care and protection						0	1
Cost per foot super.						0	11⅛

One and a-half times 7½d. is 11¼d.

ELM.

Elm is very rarely used for building work. Occasionally it is seen in stables as wall-lining or boarding to stall divisions. It has no particular merit to recommend it for such purposes. In water it is said to be exceptionally durable.

The labour and waste is equal to that on wainscot. It can be bought of country timber merchants, in sawn planks or scantlings, at the rate of 2s. 6d. per foot cube. In fair quantities the various thicknesses could be obtained at similar proportional rates. Coffin plank, which is usually of fair quality, is quoted by the timber merchants at per 100ft. of inch, commonly about 17s. in the summer, and about 18s. in the winter—*i.e.*, 2d. and 2¼d. per inch ; 2s. 6d. per foot cube is equal to 2½d. per inch. If this price be uniformly adopted, the difference will be sufficient to cover any extra sawing, and the prices for various thicknesses would be as follows :—

¾in.	1in.	1¼in.	1½in.	1¾in.	2in.	2½in.	2¾in.	3in.
-/1⅞	-/2½	-/3⅛	-/3¾	-/4⅜	-/5	-/6¼	-/6⅞	-/7½

The comparison of labour and materials may be investigated in the same manner as recommended for the other kinds of wood.

IRONMONGERY.

Builders' ironmongery varies very much in quality, and consequently in price. Those manufacturers who have a high reputation for their wares—such as, among others, Chubb, Hobbs, and Tucker and Reeves, of London, and Gibbons, of Wolverhampton, for locks ; Baldwin, of Birmingham, for butts, &c.—are able to command high prices ; but much of the ironmongery in use is of very poor quality and low priced, and in the case of brasswork the weight of the articles is reduced to the lowest possible limit. If bought by retail, as it often is in the case of small jobbing work, the price is high ; for the profits of a retail ironmonger, selling (as he does) articles in small quantities, must. of necessity, bear a large proportion to the original cost.

The builder who has a large business buys his ironmongery in large quantities of the wholesale manufacturer, or he opens an account on special terms with a local ironmonger, who reduces his prices in consideration of the quantity required.

The trade lists of the large houses which deal in builders' ironmongery—such, for instance, as Tonks, of Birmingham, or Pfiel Stedall, of London—are indispensable to the estimator, and the various trade discounts on the various kinds must be known.

Articles of ironmongery are frequently inadequately described in specifications ; butts, of which there are a great variety, being frequently described by their length only. All kinds of ironmongery are conveniently designated by numbers from a trade list.

Knowing the net prices of the articles, the only other considerations will be fixing and screws, and profit.

A few constants for fixing to deal are given below, and will serve as a guide for *similar* articles not mentioned therein. The fixing of butts is properly a part of the hanging of a door ; but, although this view is correct, the prices in most bills of quantities will be found to include something for fixing.

It is a common practice with estimators to charge a certain number of pence per inch for bolts and fixing and profit—as 2d. for iron bolts, 3d. for brass, 2s. for the fixing of a mortise lock, &c. Some such ready rules will be found convenient.

For fixing ironmongery to hardwoods, add 25 per cent.

Prices of rim locks generally include the furniture ; for mortise locks they do not.

Fixing only—	Days of a joiner.	Screws. s.	d.
2½in. butts, per pair	·022	0	1
3 ,, ,,	·022	0	1
3½ ,, ,,	·027	0	1¼
4 ,, ,,	·033	0	2
4½ ,, ,,	·033	0	2
5 ,, ,,	·037	0	2¼
15in. cross-garnets	·053	0	1½
3in. to 6in. tower bolt	·043	0	1
9in. to 12in. tower bolt	·065	0	1
Flush bolts, per inch	·008	0	0¼
Espagniolette bolts, per inch	·006	0	0¼
3in. cupboard locks	·085	0	1
3in. cut ditto	·137	0	1
Rim locks	·095	0	1
Mortise locks	·252	0	1
Kaye's locks	·286	0	1
Rim dead locks	·095	0	1
8in. drawback locks	·137	0	1
10in. ditto	·170	0	1
W.C. latch	·137	0	1
Night latch	·085	0	1
Door knobs	·033	0	0
Knockers	·126	0	0
Door chains	·085	0	1
Letter-box and plate	·252	0	1½
Padlock, hasp, and staple	·095	0	1
Thumb-latch	·095	0	1
Mortise lock furniture, per set..	·033	0	0½
Sash lifts	·043	0	0½
Ditto flush	·065	0	0½
3in. sash centres, per set	·095	0	1
Casement fastenings	·043	0	0½
Sash fastenings	·033	0	0½
Casement stays	·033	0	1
Patent water bars, per inch	·006	0	0¼
1½ knobs	·027	0	0
Turnbuckles	·033	0	0
Button and plate	·022	0	0½
Cabin hooks 6in. to 9in.	·033	0	1

Relacquering.—Satisfactory repainting of good work requires the removal and refixing of the whole of the ironmongery except hinges and locks ; but the lock furniture would be removed also. Often, in such a case, the brass lock furniture and the general brasswork would be relacquered. Relacquering should be done with judgment, as it is not an uncommon thing to relacquer brasswork at a cost beyond the value of new articles of a similar kind.

Relacquering involves, besides the lacquerer's charge, taking off, labelling, conveying to and from the lacquerer's, and refixing.

As a rule, the value of taking off is about two-thirds of the value of original fixing.

The following list gives the prices commonly charged to builders by the wholesale people for relacquering. They will serve as a guide for the pricing of similar articles not mentioned therein :

	s.	d.
Butts up to 4in., per pair	0	3
Flush bolts, per inch	0	0½
Rim lock furniture, including striking plate	0	4½
Mortise lock furniture ,, ,, ,,	0	6½
Turnbuckles	0	1½
Striking plates	0	1½
Escutcheons	0	1
Brass barrel bolts, per inch	0	0¾
Sash fasteners	0	2½
Casement fasteners	0	3
Sash lifts	0	1½
Letter plates	0	6
Bell levers	0	4

ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS.

THE annual meeting of this association was held in the Town Hall, Halifax, on Thursday in last week. Mr. Edward Rice Sweet Escott, borough engineer, Halifax, the president, occupied the chair. On the opening day a vote of thanks was accorded to the retiring president, Mr. A. M. Fowler, of Manchester. Mr. C. Jones, of Ealing, hon. general secretary, in submitting the annual report, said the association had entered upon its 21st year. During the past year satisfactory progress had been made. In the financial year ending April 30 last 73 new members—56 ordinary members, and 17 graduates—had joined their ranks, 7 members had resigned, 14 names had been written off, and 5 members had died. At the close of the year the numbers on the roll were 9 hon. members, 570 ordinary members, and 67 graduates, making a total of 646, or an addition of 47 to the numbers of the preceding year. Three graduates had been transferred to the list of members. The statement of accounts showed a balance in hand on April 30 of £235 14s. 4d., and invested capital amounting to £300. The new council had for its president Mr. E. R. S. Escott, and as vice-presidents Mr. A. R. Binnie, Mr. C. H. Lowe, and Mr. O. C. Robson. The report was adopted on the motion of Mr. C. H. Lowe, Hampstead, seconded by Mr. Mann, Sevenoaks. The President, in the course of his address, said that perhaps no subject of late years had called for more consideration than that of sewage disposal. Throughout the country Rivers Conservancy Boards were being established with powers equal to the provisions of the Public Health Act, 1875, and local authorities would no longer be allowed to discharge the raw sewage of their respective districts into any stream flowing through the same. Acts of Parliament had for years given corporations and local boards all the powers necessary to deal with this important subject, yet the progress made in manufacturing towns had not been as great as many of them had anticipated. Hence the municipal engineer should persevere in this difficult yet interesting branch of his profession, until the streams of every district were flowing with clear and pure water from source to ocean. He would not lay down any hard-and-fast line in favour of any definite system of sewage disposal. It was well to remember that a system in every way adequate for a suburban district might in no way answer the requirements of a large manufacturing town. They were all agreed that a clear and bright effluent could be produced by land filtration where there was sufficient area ; yet an effluent could be produced by chemical treatment and precipitating tanks of such a standard of purity as to justify its discharge into any river or stream. The extent of land required was to be determined by circumstances. One acre, or even half an acre, per 1,000 of the population must in many cases be quite out of the question. In the near future, with scientific development, the land required would be reduced to a small area. A town with 100,000 inhabitants would not require one-twentieth part of an acre per 1,000 inhabitants. Engineers were left very much to their own resources with reference to standards of purity. The effluent that would give satisfaction to the Rivers Conservancy Board was still unknown to them. It was to be hoped that the law relating to combined drainage would be altered, or that the mode of reading the section bearing on the subject would be amended. They must all regret the little progress made by the Amendment Bill in the present session of Parliament. The measure had been systematically blocked on every occasion. Turning to the subject of hospitals and their erection, Mr. Escott remarked that when the cost of a new hospital was defrayed out of rates there was little difficulty to contend with, and no time was lost in executing the works. But when the intended erection comprised an administrative block, and application had to be made to the Local Government Board for sanction to borrow money, the question became one of importance. The cost of a new hospital did not appear to enter into the consideration of the head department, and when the latter was waited upon with some modest design, of an inexpensive character, in every way suitable to meet the pressing requirements of the epidemic, the promoters were most politely handed a carefully drawn up report upon the provisions of isolation and hospital accommodation for local sanitary authorities, accompanied by several specimen sheets of plans and sections, showing administrative blocks and wards, drawn to suit the requirements of nearly every district. These were accompanied by the intimation that plans drawn to correspond with these specimens were the only plans the Department would consider or accept. It was, therefore, necessary to produce another set of drawings before sanction to borrow was given. Such delay might lead to serious consequences if an epidemic was raging at the time. To avoid unnecessary delay, it was better for engineers to approach the officials of the Local Government Board in the first instance. The plans on the walls of the room in which they were assembled complied with the requirements of the Local Government Board for a smallpox hospital for Halifax. A site of 65 acres, two miles from the Town-hall, upon high ground, had been secured, and the works could be proceeded with as soon as the health department of the corporation thought necessary. The approximate cost would be £12,000, exclusive of the land.

Papers on the sewage works at Royton, near Oldham, were read by Mr. T. S. McCallum, of Manchester, and Mr. W. Naylor, one of the inspectors of the Irwell and Mersey Conservancy Board. That by Mr. McCallum dealt chiefly with the construction of the refuse destructor and sewage purification works at Royton, and Mr. Naylor described the tests applied to the machinery, the refuse destructors, and the effluent.

Subsequently the members were taken to see the new Technical School, which is in course of erection, the People's Park, and the Free Library. In the evening they dined together at Bankfield Mansion.

CLASSIC DETAILS AND THEIR APPLICATION.*

By G. A. T. MIDDLETON.

II.—CLASSIC TIMES: THE IONIC ORDER.

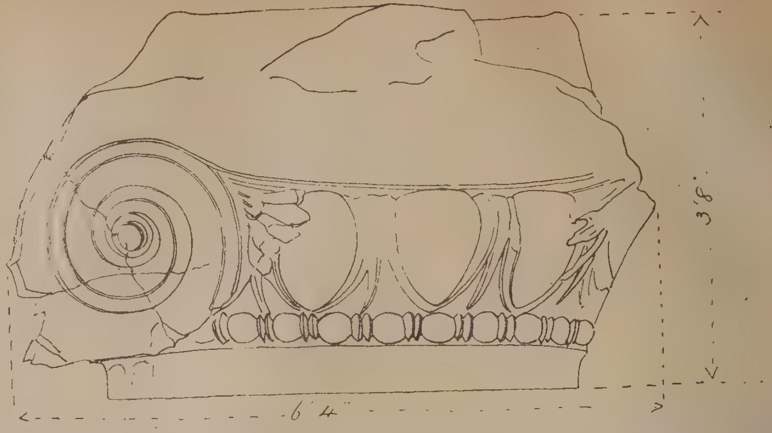
THE origin of the Ionic Order is even more deeply involved in mystery than is that of the Doric, for there is no Proto-Ionic example known which compares in the least with the Proto-Doric of Beni-Hassan. A few small indications point to its introduction from Assyria and Persia rather than from Egypt, and the use of a base, together with the form of the flutes, as if gouged out with a gouge, suggest its being the translation into stone of forms originally devised for timber. Again, therefore, we must accept it upon its first appearance in Grecian work as a complete and fully developed order, varying in its different examples as did the Doric, but having in all cases an entirely different part to play. When used alone it was employed in all instances save one upon buildings of smaller size than was the Doric—upon the lighter edifices where grace and elegance were to be aimed at, rather than majesty and the over-awing of the multitude. The one exception is the Temple of Diana at Ephesus, where queenly rather than kingly dignity was achieved, and this, too, was built at a somewhat later date than were the greater Doric works.

Under these circumstances an increased employment of enrichments was to be expected, and such we find; but the parts were still so few that it was upon their co-relation that the effect principally depended, and enrichments had to be introduced with the utmost skill and care, else the whole would have been spoilt.

Similarly the proportions became more slender. The following table, taken from Gwilt, gives those of the now-destroyed Temple on the Illyssus, and of the two Ionic porticoes of the Erechtheium.

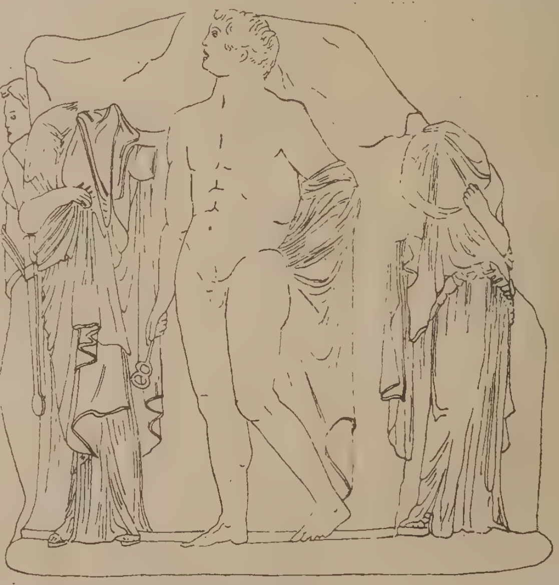
—	Diameters High.	Height of Entablature to Diam.	Inter-Columniation.	Height of Capital in Terms of Diam	Upper Diam. in Terms of Lower Diam.
Illyssus	8·241	2·265	2·090	·610	·850
Minerva Polias	9·119	2·287	3·500	·700	·833
Erechtheus	9·337	—	2·000	·773	·816

With these we may compare the proportions of the Temple of Diana at Ephesus, the columns of which were 8·5 diameters high, while the taper was so great that the upper diameter was only ·786 of the lower—and this in spite of the columns being of no extreme slenderness. It will thus be seen, that when greater dignity was called for, greater strength was shown in the proportions, the great size of the columns, again, carrying off a degree of taper which would have appeared clumsy in a small building.



FRAGMENT OF AN IONIC CAPITAL FROM THE TEMPLE OF DIANA AT EPHESUS.
(Now in the British Museum.)

With regard to the several parts of the order, a considerable amount of freedom was evinced. The bases alone varied from the simple roll at the foot of the sculptured columns at Ephesus to the elaborately-moulded base, in two stones, of the unsculptured columns in the same building; but the upper member is almost invariably a roll, either plain, or fluted horizontally. The columns also, though generally fluted with 20 tolerably deep flutes separated by fillets, were, in rare instances, as at Ephesus, enriched with bands of sculpture, or even, as in the Caryatid Portico of the Erechtheium (by the way, rather an altar than a portico) replaced by sculptured figures. In this way it will be observed that sculpture was used in this order, not merely as an adjunct to, but as an integral part of, the architecture.



FRAGMENT OF THE LOWEST DRUM OF A COLUMN FROM THE TEMPLE OF DIANA AT EPHESUS.
(Now in the British Museum.)

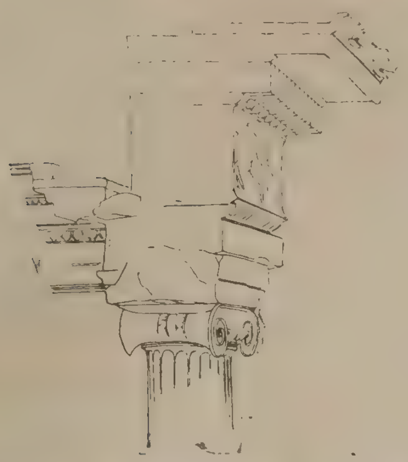
Though the voluted capital is considered to be typical of the order, it not only occurs in many forms, but is not even invariable, as it will be observed that the caryatidæ already mentioned are crowned in a much more simple manner; and there are large square capitals in the British Museum from the Temple of Athené Polias at Priene, which are carved with winged griffins of Assyrian type, and in which the volutes are quite minor features. The general type, however, is that illustrated, from Ephesus, and from the Mausoleum, though the scale is generally smaller; and occasionally there are two, and even three, rolls to the volute, as in the famous example of the Erechtheium, which also has a band of the anthemion ornament round the top of the shaft. As an example of how far the refinement of mouldings was carried, it may be noticed that the fillet to the volute roll at Ephesus is not flat, but slightly convex, though it becomes flat, and is more coarsely worked, when it is converted into a band above the eggs, and consequently would be hidden from sight.

The entablature, like the other portions of the Ionic Order, was treated with considerable freedom by the Greeks, the proportions especially being liable to alteration, though the general arrangement of an architrave in three facets, then a sculptured frieze, and then the cornice over, was almost invariable. The example illustrated herewith, from the Mausoleum at Halicarnassus, may well be compared with others. The moulded band separating architrave from frieze is here formed of the egg and tongue; while at Eleusis it is a plain moulding of cyma reversa below and cavetto above it, and upon the Erechtheium there is the leaf-and-dart enrichment, with bead and fillet below and a moulding over. Then the frieze, though sculptured generally, is sometimes plain, and the cornice varies greatly. The large dentils at Halicarnassus, with egg and tongue under and cyma reversa above, are of smaller proportion at Eleusis, with cyma above and below, and this is almost the same in the Caryatid Portico at the Erechtheium, save that there the cymas are enriched with leaf and tongue; while the dentils are absent from the rest of the Erechtheium, a single leaf-and-tongue enriched cyma alone remaining as bed-mould to the cornice.

In the cornice itself, the corona seems to be invariable, and also the cyma recta used as a crowning member, and worked as a gutter behind, with outlets for the water provided through lions' heads at frequent intervals; but the small moulding between corona and cyma is open to variation, and the cyma itself is sometimes plain, but more often enriched with the anthemion.

The Ionic Order seems to have been a good deal more used by the Romans than was the Doric, and though generally as an applied ornamental order, it sometimes appears as a constructional order also. Thus it is found treated in different ways, and differently again when, as an applied order, it was used in superimposition to the Doric, and so had to be proportioned to harmonise with the order below, and to have its mouldings, and even its base, contrived for observation entirely from beneath. Still, generally speaking, both its proportions and details compare tolerably closely with those adopted by the Greeks, and Gwilt's table of proportions may again be quoted, as follows:—

—	Diameters High.	Height of Entablature to Diam.	Inter-Columniation.	Height of Capital in Terms of Diam.	Upper Diam. in Terms of Lower Diam.
Fortuna Virilis...........	8·796	2·182	2·125	·457	·874
Theatre of Marcellus...	9·000	2·391	—	·557	·842
Colosseum	8·842	2·280	—	·466	·833



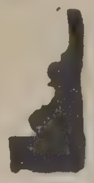
CAPITAL AND ENTABLATURE OF THE MAUSOLEUM AT HALICARNASSUS.

(From the British Museum.)

CARYATID FROM THE S.W. PORTICO OF THE ERECHTHEIUM.

(Now in the British Museum.)

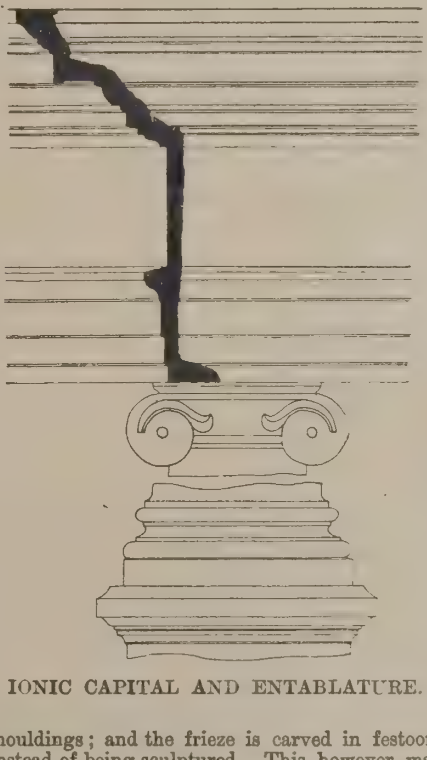
The greatest variation from Grecian practice will be observed to lie in the height of the capital. Of course, there are the usual changes in the contours of the mouldings, but in other respects most of the other details coincide with tolerable exactitude with the Grecian; but the capital is flat both in actuality and in appearance, the waved line across the top being made stiff and straight, and the light elegance of the order is thus much interfered with.



IONIC BASE FROM ELEUSIS.

When employed as a constructional order, it cannot be said that the arrangement of the angle capital is happily managed either by the Greeks or Romans, and certainly no satisfactory expedient has yet been discovered for overcoming this fault, where the order is returned.

In the Temple of Fortuna Virilis the facets of the architrave are separated from one another by mouldings; and the frieze is carved in festoons instead of being sculptured. This, however, may be looked for, figure sculpture being much less used upon Roman than upon Grecian buildings, and being replaced by the work of the stonecarver in a repeating pattern of natural leaves and flowers.



IONIC CAPITAL AND ENTABLATURE.

* * *

FOUNDATIONS IN QUICKSANDS.

THE method of excavating, or taking out so many hundreds or thousands of tons of one description of material, to replace them with an equivalent quantity of another description, in order to obtain foundation for an engineering work of magnitude, is a tedious and laborious operation. Not only does the difficulty augment in the direct ratio of the depth—especially in cases where the piers and abutments, if the work take the form of a bridge, are founded under water—to which the foundations must be sunk, but the cost increases enormously in proportion to the same dimension. One mode of escaping the necessity of taking out stuff and filling in again is probably the oldest employed, and that consists in driving piles into the substratum, which they tend to consolidate, cutting off their heads at the level required, laying a strong timber platform or floor over the whole area, and starting the superstructure upon it. There is nevertheless some amount of excavation and refilling even under these conditions, for it is usual to take out all the loose earth for, at least, 3ft. or 4ft. below ground level, and fill in with solid cement concrete, well rammed and punned, upon which the footing courses are commenced. Simple and undoubtedly useful as this system of getting in foundations is, it has several serious drawbacks. It is, in the first place, slow, whether the ordinary "monkey" be used for driving, or whether steam, air, or gunpowder be the means of obtaining the necessary pressure in the pile engine. The use of timber piles is also very much restricted by the nature of the ground and the number needed.

It may be mentioned that the difficulty of driving the necessary number of piles 30ft. deep into the London clay would of itself have forbidden the construction of timber coffer dams, instead of iron caissons, for the building of the piers of the Tower Bridge. As it was, timber coffer dams were strictly prohibited by the clauses of the Act of Parliament authorising the undertaking.

When piles are got down through sand by the aid of jets of water, a plan adopted for the first time by the late Sir James Brunlees, many years ago, the allegation of slowness does not apply. Piles were also sunk in this manner in the extension of the harbour works at Calais, and, as will be pointed out, the method is susceptible of many and various applications to the getting in of foundations generally. The operation is very simple, and can be described in a few words. A pipe between 2in. and 3in. in diameter is attached to the side of the pile, and connects with a pump. The pile having been pitched, water is forced through the pipe underneath the bottom of the pile, and by loosening the sand until it attains the necessary degree of fluidity, causes the pile to descend with extreme facility and rapidity until the proper depth is reached. When the pile is "down," the feed-pipe can be detached, spiked on to another, and the operation repeated. So great is the accuracy and the certainty of this "washing-out" process, that it is a common practice to make the holes for the bolts in the piles before they are got into position. It is stated that in this manner piles can be got down at the rate of about 10ft. per minute under fair conditions. Those who have had experience in the driving or sinking of piles in foreshores or river beds are aware that it is by no means an uncommon occurrence to come across sunken pieces of wreckage, boulders, and other obstructions, both natural and artificial, which it is absolutely necessary to remove before any further progress can be made. By passing a pipe underneath the obstacle, and turning on the water, it is speedily cleared away, without any knocking of the pile out of position, battering the head to pieces, or breaking it off short, and thus necessitating the always troublesome and unpleasant task of drawing it. After the pile is down, and a reasonable time allowed for the churning up of the sand to subside, it recovers its solidity, and grips the pile so tightly that it becomes well-nigh impossible to "start" it again. It is not difficult to perceive that the system of Sir James Brunlees can be equally well applied, and has been applied to the sinking of caissons and cylinders when circumstances permit of it, which, however, is not very frequently. A large cylinder would require a greater number of jets of water and of pipes, and probably a greater head or pressure of water. But the difference is, after all, only one of degree, and not of principle.

The conditions of the examples to which we have drawn attention become completely inverted, when, instead of it being necessary to impart a certain amount of fluidity, or at least plasticity, to the substratum, the latter possesses it to a degree so excessive as to require artificial agglomeration and consolidation in some form or another. It is, in fact, a case of dealing with a quicksand, a description of foundation which, from time immemorial, has invariably constituted one of the most difficult constructive problems which has ever engaged the attention and taxed the professional skill of those engaged in engineering and architectural works. Several attempts, evincing considerable ingenuity and knowledge as well of the whole subject, have been put forward at different times to effect a satisfactory solution of the question, which it will be interesting and instructive to refer to. One method of dealing with the difficulty was the "Poetsch" freezing process, which, on a limited scale, was attended with some measure of success, and for a while was regarded by many able judges as the only available mode of treating subsoils of so treacherous and shifting a character. Briefly, the *modus operandi* was as follows:—A large number of pipes were distributed as uniformly as circumstances would allow in and about the unstable site. They were filled with a powerfully freezing liquid, which was maintained in a constant state of active circulation, with the result that in a short space of time the quicksand became solidly frozen. There are two strong objections to this mode. One is that, after the freezing process is discontinued, the sand returns to its primordial condition, which is not one of stable equilibrium and conducive to the permanency and stability of the work, as was exemplified in the application of the Brunlees principle. On the contrary, the quicksand rapidly thaws again, and becomes as unstable as before. It is true that it may be possible during the continuance of the congelation to get in a fairly secure foundation, but the risk is great; and, what forms the second objection, the cost of the whole refrigerating plant, machinery, and appliances is excessive.

Another method of accomplishing the same result is known as the "Neukirch" system, which similarly dispenses with all dredging or excavating of the layer of sand or of sandy gravel, and aims at converting it into a solid mass of concrete by its own automatic agency in the following manner:—By means of compressed-air machines cement or hydraulic lime, in a state of powder, is forced into the sand at a pressure which causes it to form a very intimate mixture, combining with it, and resulting in the creation of, a rough but strong cement concrete. So thoroughly is the permeation and saturation of the sand accomplished, that after the forcing operation is relinquished, the particles of sand, if brought into contact, adhere to one another with the greatest pertinacity and energy. It is well known to those who are conversant with the making of concrete, whether by hand, mixer, or mill, that the product occupies a less volume than that of the sum of the ingredients when free and uncombined. Experience has shown this rule to be strictly adhered to in treating concrete by the Neukirch plan, in which the proportions of the two ingredients are one part by volume of cement to five parts of sand, measured in the same manner. The area of the foundations—or, what is equivalent, the area of the sand to be thus treated—is defined and separated by an ordinary timber casing, exactly as is done in tipping boxes of concrete under water in the building of a pier. As the caisson is intended to last only while the concrete is setting, it may be removed afterwards; but as a rule it is left in the ground. It is not worth while, for the sake of the old timber, to run the risk of drawing the main and sheet piles, and possibly damaging the permanent work. Upon another occasion we shall draw the attention of our readers to one or two other methods of dealing with foundations in quicksands.

◆

BOOKS RECEIVED.

A NEW edition of the *G.E.R. Tourist Guide to the Continent* has just been published. It contains useful maps of Europe and of Continental capitals, as well as many illustrations of Holland, Germany, Switzerland, and the Rhine. A new chapter, "Dull, Useful Information," gives reliable particulars as to the time required for, and cost of, Continental tours. Another practical chapter is that on "Cycling on the Continent," which points out that there is now no duty whatever chargeable on cycles of any description, accompanied by owners, entering Holland, Belgium, or Germany.——The *Antiquary* for July (Elliot Stock) contains an illustrated article on closing-rings and knockers in Norfolk and Yorkshire churches, by the Rev. C. R. Manning, and a continuation of R. C. Hope's papers on "Holy Wells of Scotland." —— The chief contents of *The Reliquary and Illustrated Archæologist* (London and Derby: Bemrose) are an illustrated description of the "Roman Thermæ of Fiesole," by Leader Scott, and an account of the quaint "Churchyard Games in Wales," most of which have now died out, by Elias Owen. The illustrated notes are an attractive feature.——The first number of Vol. III. of the Edinburgh Architectural Association's *Transactions* gives full descriptions of the old buildings visited during the latter part of session 1893-4.

◆

OBITUARY.

WE have to announce the death, at the age of 66 years, of Mr. THOMAS CHATFEILD CLARKE, F.R.I.B.A., F.S.I., which occurred on Friday last at his town residence, 132, Westbourne-terrace, W. Mr. Chatfeild Clarke was born in 1829 at Newport, Isle of Wight, being the eldest surviving son of the late Abraham Clarke. He was apprenticed to a well-known architect in the City, the late Mr. Richard Tress, and after completing his articles spent some time in a large builder's office. In 1855 he commenced practice on his own account in the City, and had since carried on an extensive practice, with offices first in Leadenhall-street, and in later years in Bishopsgate-street Within. In 1859 he married the daughter of the late John Sutton Nettlefold, and of late years had taken into partnership his son Howard. His works include the Royal Bank of Scotland, Bishopsgate-street Within, built upon the site of the Old London Tavern; the London and Lancashire Life Office in Cornhill; Mary Datchelor's Schools, Camberwell; the whole of the schools for the Hornsey School Board; the Parminter Charity Schools; a church and manse in Kensington Mall; Bishopsgate Girls' School, Spital-square; Sydney Chambers, Leadenhall-street; 25, Throgmorton-street; and many blocks of offices in Fenchurch-street, Billiter-street, and on the banks of the Thames; warehouses in Camomile-street and St. Mary Axe; and blocks of artisan dwellings, one of the largest being in Hoxton. He also carried out the Homes for Little Boys at Farningham, a Convalescent Home at St. Leonard's, extensive buildings for the Duke of Westminster on the south side of Oxford-street, the offices for the *Daily News* in Bouverie-street, E.C., and many churches and chapels. Mr. Chatfeild Clarke was surveyor to the Fishmongers' and Cordwainers Companies, for many years. He was a well-known expert in compensation, light and air cases, and of late years had a large practice in compensation cases, and as arbitrator. He joined the Royal Institute of British Architects as an Associate in 1855, becoming a Fellow seven years later, and he served on the council of that body several years since, and read several papers at its meetings, being a prominent supporter of the examination movement. He was one of the original members of the Surveyors' Institution, having joined as No. 27 in June, 1868, and after serving on the council and as vice-president was elected president last year. He was also one of the founders of the Surveyors' Association. He was a justice of the peace for the Isle of Wight, where he had a country residence, Oakfield, Wootton; he held advanced views on land reform and leasehold tenure, was a member of the Reform, Devonshire, National Liberal, and City Liberal Clubs, and unsuccessfully contested Poole, Hammersmith, and Grantham in the Liberal interest. He was a member of the first two School Boards for London, and took an active interest in various philanthropic societies. We gave Mr. Clarke's portrait and a biography in our issue of September 5, 1890.

◆

The seventh congress of archæological societies in union with the Society of Antiquaries was held yesterday (Thursday) at Burlington House, under the presidency of Sir Wollaston Franks. Among the subjects discussed were the better preservation of municipal records, county bibliographies, the treatment of monumental remains, and the present state of the Ancient Monuments Act. The members of the congress dined together in the evening at the Holborn Restuarant, and afterwards attended a reception by the President at the rooms of the Society of Antiquaries.

It is stated authoritatively that there is no foundation for the statement made in the daily Press on Saturday, that the memorial to the late Mr. Frank Holl, R.A., is completed, and that it has been placed in position in St. Paul's Cathedral. The work will not be finished by Mr. Alfred Gilbert, R.A., for some time to come.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

DUNDEE INSTITUTE OF ARCHITECTURE.—The annual meeting of the Dundee Institute of Architecture was held on Thursday in last week, Mr. Leslie Ower in the chair. The annual report stated that there were 51 members and 155 associates on the roll. The income, including a balance of £16 9s. 11d. from the previous year, had amounted to £89 15s. 10d., and the expenditure to £50 6s. 4d. While the Institute might not take credit for much interference with professional matters nor for striking into new and untrodden projects, it could easily be shown that its indirect influence upon the current of the education and life of the profession had been strong, steady, and progressive. The report was approved, and office-bearers were elected.

◆

CHIPS.

Mr. Arthur T. Bolton is the architect, and Messrs. Mowlem and Co., of Pimlico, were the contractors for the new free library for St. George's, Hanover-square, opened last week in Chapel-place North, South Audley-street, W.

The Christchurch, Hants, Town Council have applied to the Local Government Board for sanction to alter and revise their by-laws relating to new streets and buildings in the borough.

The Lancaster Town Council resolved on Friday to apply for borrowing powers for £17,000, in order to open out a new street adjoining the L. and N.W. railway station.

The St. Paul's Schools, Newtown, near Manchester, are being warmed and ventilated by means of Shorland's patent Manchester grates, the same being supplied by Messrs. E. H. Shorland and Brother, of Manchester.

It has been decided to make an addition to the Claughton Concert Hall, Birkenhead, which comprises a large promenade room. The contract has been let to Messrs. McLachlan and Batkin for £600. The plans have been prepared and the work will be under the superintendence of Mr. T. Taliesin Rees, A.R.I.B.A., Hamilton-street, Birkenhead.

The new carillon for the chimes at the Royal Exchange was inaugurated on Monday. The old bells were a suite of fifteen, produced by Dent, and had played a course of four tunes for 50 years. Under the superintendence of Messrs. Gillett and Johnston, of Croydon, thirteen of the bells have been rehung; the other two, being faulty, have been broken up. A new carillon has been erected to play, at the required hours, a series of some twenty-one tunes from three barrels. The tenor bell weighs 40cwt. It formerly had a hammer of 18lb.; it now has one of 40lb.

Last week at the Auction Mart showed an aggregate of £209,769, the highest figure which has as yet been recorded this year for any one week's business. Large landed estates failed to sell, but there was a better demand for residential properties, freehold and leasehold investments of sound character, and for town houses of a moderate class.

The select committee of the House of Lords on the Tower Bridge (Southern Approaches) Bill decided on Thursday to adopt the Betterment Clause, as proposed by the London County Council, without any amendment.

A new clergy-house, which has been erected in the rear of the parish church of Leeds, was opened on Monday. The residence has been designed by Messrs. Chorley and Connon, architects, of Leeds. The basement comprises kitchens and cellars; on the ground floor there are four sitting-rooms for the clergy, a dining-room, an oratory, and a visitors' room; on the floor above, bedrooms are provided for five clergy and for visitors, and accommodation has also been provided for servants. One leading aim of the architects has been so to construct the premises as to minimise labour, and with this view each bedroom intended for the use of the clergy and visitors has been provided with a lavatory and bath. The contracts for the building amounted to £1,700.

On Thursday the historic Bridge-street Chapel, Walsall, one of the leading homes of Nonconformity in the Midlands during the last hundred years, was reopened, after having undergone extensive alterations and additions, including the erection of a front in terracotta and brick in the English Renaissance style. The work was carried out by Mr. Kendrick, builder, under the supervision of Messrs. Bailey and M'Connall, Walsall, architects, and the total outlay was about £2,000.

The Prince of Wales has intimated that Saturday, August 3, will be a convenient date for him to open the new graving dock at Southampton. His Royal Highness is being approached with a view to lay the foundation of a new grammar school for Southampton on the same date.

CONTENTS.

A Field for the Sketcher ... 1
Reasonable Skill and Care ... 2
County Lunatic Asylums.—XXI. ... 3
The Architectural Association Excursion, 1895 ... 4
Some Ancient English Homes ... 4
Sheraton's Cabinet-Maker and Drawing-Book ... 6
Notes on Building Prices ... 6
Association of Municipal and County Engineers ... 7
Classic Details and their Application ... 8
Foundations in Quicksands ... 9
Books Received... ... 10
Obituary ... 10
Architectural and Archæological Societies ... 10
The BUILDING NEWS Directory ... xi.
Our Illustrations ... 11
Building Intelligence ... 30
Engineering Notes... ... 31
Competitions ... 32
Intercommunication ... 32
Legal ... 32
Legal Intelligence ... 33
Water Supply and Sanitary Matters ... 34
Stained Glass ... 34
Statues, Memorials, &c.... ... 34
Our Office Table ... 35
Meetings for the Ensuing Week... ... 35
Trade News ... 35
Tenders ... 36

ILLUSTRATIONS.

THE PASSMORE EDWARDS FREE LIBRARY, HAMMERSMITH.—PARK HALL, OSWESTRY.—SKETCHES IN THE LOIRE VALLEY.—HULME GRAMMAR SCHOOLS, OLDHAM.—FIREPLACE, HUTTON COURT, SOMERSET.—GOGAR CHURCH, MIDLOTHIAN.

Our Illustrations.

PASSMORE EDWARDS FREE LIBRARY, HAMMERSMITH.

YESTERDAY (Thursday) the foundation-stone of this building was laid by the donor, Mr. J. Passmore Edwards, at Shepherd's Bush-green, when the Vestry of Hammersmith and the Public Library Commissioners united in arranging a public reception, the ceremony being attended by representatives of all the local associations, of all parties, who combined in advancing the project during the recent poll, which was taken with such overwhelming results in favour of the extra rate to maintain the library when it is completed. We give a reproduction of the half-inch scale detail sheet from the contract drawings, showing the principal entrance which faces the Uxbridge-road. A view of the library and copy of the original plan, now somewhat modified and enlarged in execution, appeared in the BUILDING NEWS for March 29 last, from the architect's perspective drawing, which is now at the Royal Academy Exhibition. The builders are Messrs. W. Johnson and Co., Limited, of Wandsworth. The steel girders and cast-iron columns are contracted for by Mr. R. J. Gifford Read, A.M.I.C.E., of Westminster. Messrs. Burt and Potts are to supply the metal casements, and Messrs. Mellowes' "Eclipse" glazing is provided for the skylights. Mr. Thomas Elsley is to do the ornamental wrought-iron work, and Mr. Aldam Heaton is supplying the quarry glazing. Mr. John Gundry will heat the buildings. Red brick for the walling, with Portland, Doulting, and Box Ground stone dressings, are being used. The Val de Travers Company are supplying the asphalte. Mr. Maurice B. Adams, F.R.I.B.A., is the architect.

ADDITIONS TO PARK HALL, OSWESTRY.

WE publish in our issue of to-day a perspective sketch of the additions to this charming 16th-century residence, which, as most of our readers are aware, is one of the finest examples of architectural grouping in this country. The additions consist of dining and billiard rooms and a saloon on the ground floor, with bedrooms on first floor. The new wing faces the terrace side, which is contiguous to the old portion, and the small building shown on the right is the old family chapel, the return elevation of which adjoins the principal façade of the original edifice, which is well known to all lovers of half-timber architecture. The elevations are treated with thin Ruabon red bricks, the dressings being of red and white Grinshill stone. The main contract has been let to Mr. W. W. Freeman, of Chester, and the plumbing, &c., to Messrs. Isaac Williams and Son, registered plumbers and sanitary engineers, also of Chester, under the architects, Messrs. Thos. M. Lockwood and Sons, of Chester. We gave a view of the entrance front of this fine old mansion in our pages for Feb. 27th, 1891, when a description with detail sketches of the house appeared in connection with our plate.

SKETCHES IN THE TOURAINE.

INTERESTING from its innumerable historical associations as is the valley of the Loire to the historical student, it is far more so to the student of the fascinating architectural style of the Early Renaissance, which, so far, no Englishman has been able to understand or adequately reproduce. Pity it is that the last five Kings of the House of Valois left not memories as pleasing in the annals of their country as their contributions to its artistic possessions. Every charming oriel and every delicate turret has its gloomy association with one or other of this fated race. Almost in sight of the little chapel of St. Hubert at Amboise, perched like a sentry on the outer walls—the first subject of the accompanying sketches—the gay courtiers and ladies of Charles's Court made merry wagers on the numbers of shrieks to be given forth by the tortured Huguenots, and the minutes their sufferings could endure before their last silent agony. Every portion of the majestic pile of buildings, from the Portail of Louis XII. to the galleries of François I., has its own dramatic incident. Here was committed that foul, yet unavoidable, crime which is made the subject of a somewhat stagey picture, by Seymour Lucas, in this year's Academy. The wretched Henry III., after years of sottish pleasures and weak neglect of his duties, only realises the masterful position of the Duke of Guise when he finds himself a prisoner in his metropolis. He makes the midnight flight of a malefactor, and proposes a conference at Blois, when, after a rebuff from the brave Crillon, he persuades De Loignac to assassinate the duke, and thus props his tottering throne a few more wild and wretched months. The room in which the scene was enacted and the chamber below, from which the dying Catherine de Medicis heard the struggle, are within the buildings here portrayed. The old church of St. Nicholas is, of course, of much earlier date. Like most French churches, and, in fact, most things French, the external general appearance is more beautiful and interesting than the interior and details. The small building with the quaint roof I was informed, according to one authority, contained the baths, and, according to another, equally doubtful, the oratory of Catherine de Medicis. My informants apparently confused the location of her physical and moral ablutions. God knows she required both. EDWARD W. JENNINGS.

HULME GRAMMAR SCHOOLS, OLDHAM.

EARL SPENCER has, within the past week or so, taken a leading part in the opening ceremony of these schools, which have been erected from the designs of Mr. John W. Firth, architect, of Oldham, at a cost of about £15,000. The freehold site cost £5,406. The schools are built to accommodate 250 boys and 150 girls, on a plot of land (about eight acres in extent) bounded by Chamber-road, Frederick-street, Hulme-street, and Windsor-road. The buildings are placed on the crown of the hill, with the front to the south-west, overlooking Manchester. The large space of land behind is for the boys for a playground for cricket and football, and the land at the front is for the girls, and is intended to be laid out in terraces, with lawn-tennis grounds, &c., for out-door games. The basement floor contains the gymnasium, which will be used by both, with dressing-rooms for each, a workshop for the boys, and a recreation-room for the girls. Separate dining-rooms are provided, and drying stoves for wet clothing, fitted up with radial horses. There are staircases to ground floor, one at each end, which, together with the corridors and gymnasium, are lined with glazed brick dados. On the ground floor are separate entrances, with offices or waiting-rooms, and private rooms for use of master and mistress. The cloakrooms and lavatories for the boys and girls are placed near the entrances. There is a large central hall, capable of seating about 600 persons, with corridors round it on three sides, from which is access to the various classrooms, 13 in number. All the classrooms have raised galleries, and are lighted from the left; a space of 15ft. (superficial), and a separate desk is provided for each scholar. A chemical laboratory is provided, and is fitted up with benches to accommodate 36 students working at a time, with separate bench on a raised platform for the use of the master. There is also a preparation room adjoining the laboratory, and a chemical lecture-hall which has a raised gallery, with fixed benches for the students, and a large demonstrating table, fitted up with most modern appliances. The style of the building is Gothic (Perpendicular). The whole of the rooms are heated by hot water (low pressure), having ornamental radiators fixed in different parts of the rooms and corridors. The lighting is on the Stott-Thorp principle, with ornamental pendants and gaseliers. Ventilation is effected by fresh-air inlets with Tobin's tubes, and with outlets in the ceilings connected with a large exhaust ventilator on the main roof of hall. The whole of the contract was let to Messrs. C. Schofield and Co., of Oldham. The sub-contractors are:—For excavating and drainage, Messrs. Spencer Brothers; foundations and stonework, Mr. S. Smethurst; brickwork, Messrs. Ogden Brothers; slating, Mr. Joseph Jackson; concreting, Mr. Roger Lowe; steel joists and girders, Messrs. Dorman, Long, and Co.; plumbing and glazing, Mr. J. Kershaw; plastering, Mr. F. Kelly; painting, varnishing, and decorating, Mr. R. Edmondson; facing bricks and terracotta, the Ruabon Brick and Terracotta Company, Limited; the tiling to walls and floors and mosaic, Messrs. Williams and Company, of Manchester; heating, Mr. W. F. Spencer, of Oldham; ventilation, gas fittings, &c., Messrs. James Stott and Company, of Oldham; the desks and laboratory fittings, the Bennet Furnishing Company, Glasgow; the ornamental iron gates and railing, the Art Metal Company, Manchester; iron fencing, Hill and Smith, Brierley Hill, Staffordshire; and the glazing with lead lights, Messrs. Williams and Watson, of Liverpool. Mr. W. R. Norris was clerk of the works.

FIREPLACE, HUTTON COURT, SOMERSET.

WE give to-day a measured drawing, by Mr. K. Gammell, of another of the interesting Jacobean chimneypieces from Hutton Court, near Weston-super-Mare, an ancient manor house modernised, but containing some good specimens of old oak work. On Feb. 1 and May 31 of this year we published other drawings of fireplaces from this house, also by Mr. Gammell, and accompanying same will be found further notes thereon.

GOGAR CHURCH, MIDLOTHIAN.

THE parish church of Gogar, in Midlothian, is picturesquely situated on a rising ground overlooking the Gogar Burn, about two miles west of Corstorphine. The parish of Gogar was in existence at least as far back as 1167. In the statistical account of the parish of Corstorphine, it is mentioned that there was a church or rectory at Gogar, which is mentioned in the MS. "Taxationes Ecclesiasticarum in Episcopatu St. Andrea et Deconatu de Linlithgow," in the year 1167, as Ecclesia de Gogar. In the taxt roll of the Archbishopric of St. Andrew's it is entered as Rectoria de Gogar, and it is included in Keith's list of the parsonages at the Reformation. It was at one time annexed to the Trinity College of Edinburgh. The foundations of the earlier church are still distinct. At what time, or how, this older church was destroyed is not known. A later church of small dimensions, with high-pitched crow-stepped gables, occupied part of its site. It is this later building which has now been restored, and fitted for the needs of modern worship, by means of an addition in keeping with the old architecture. The drawing was exhibited at the recent Royal Scottish Academy Exhibition.

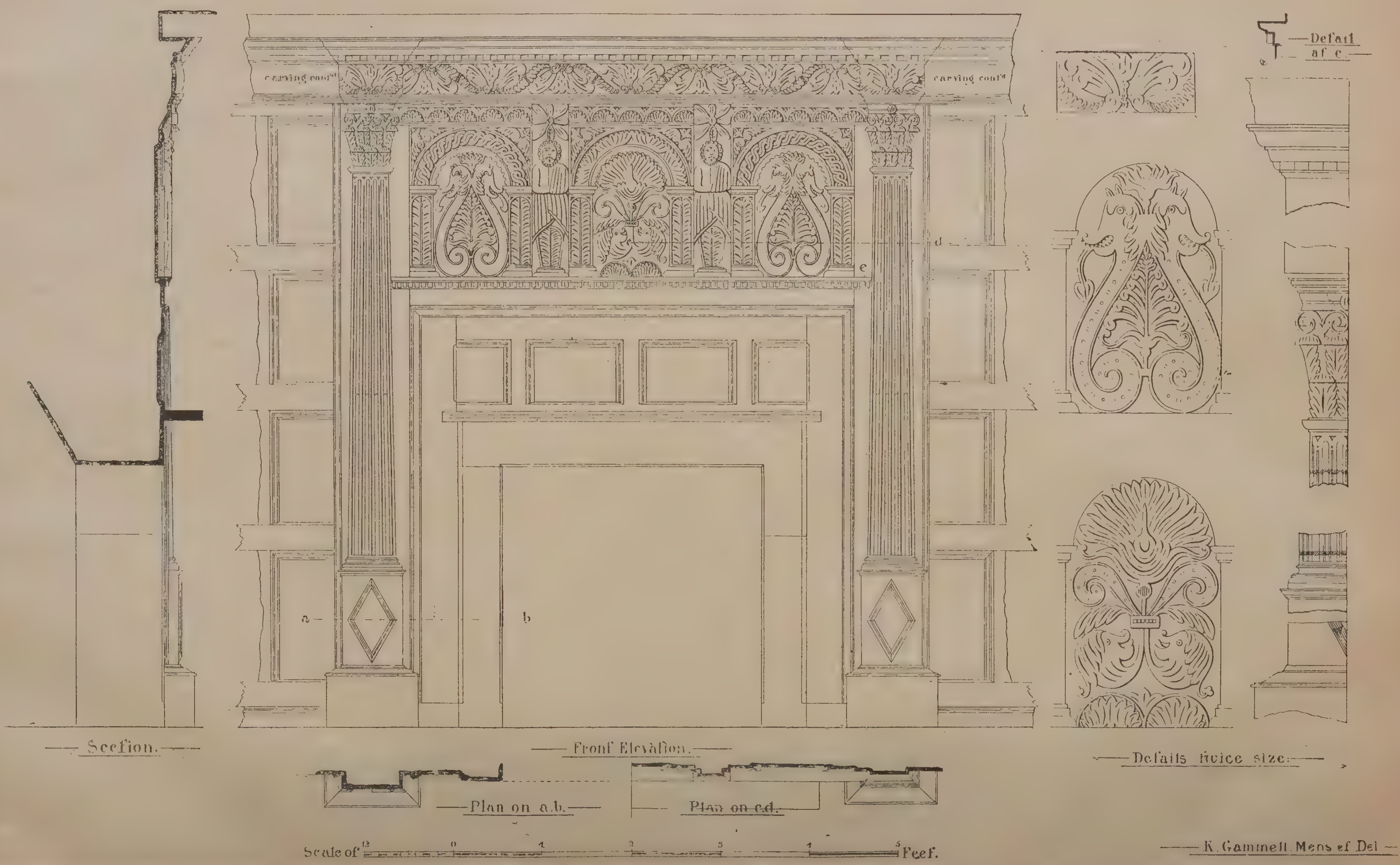
J. A. WILLIAMSON, A.R.I.B.A.

◆

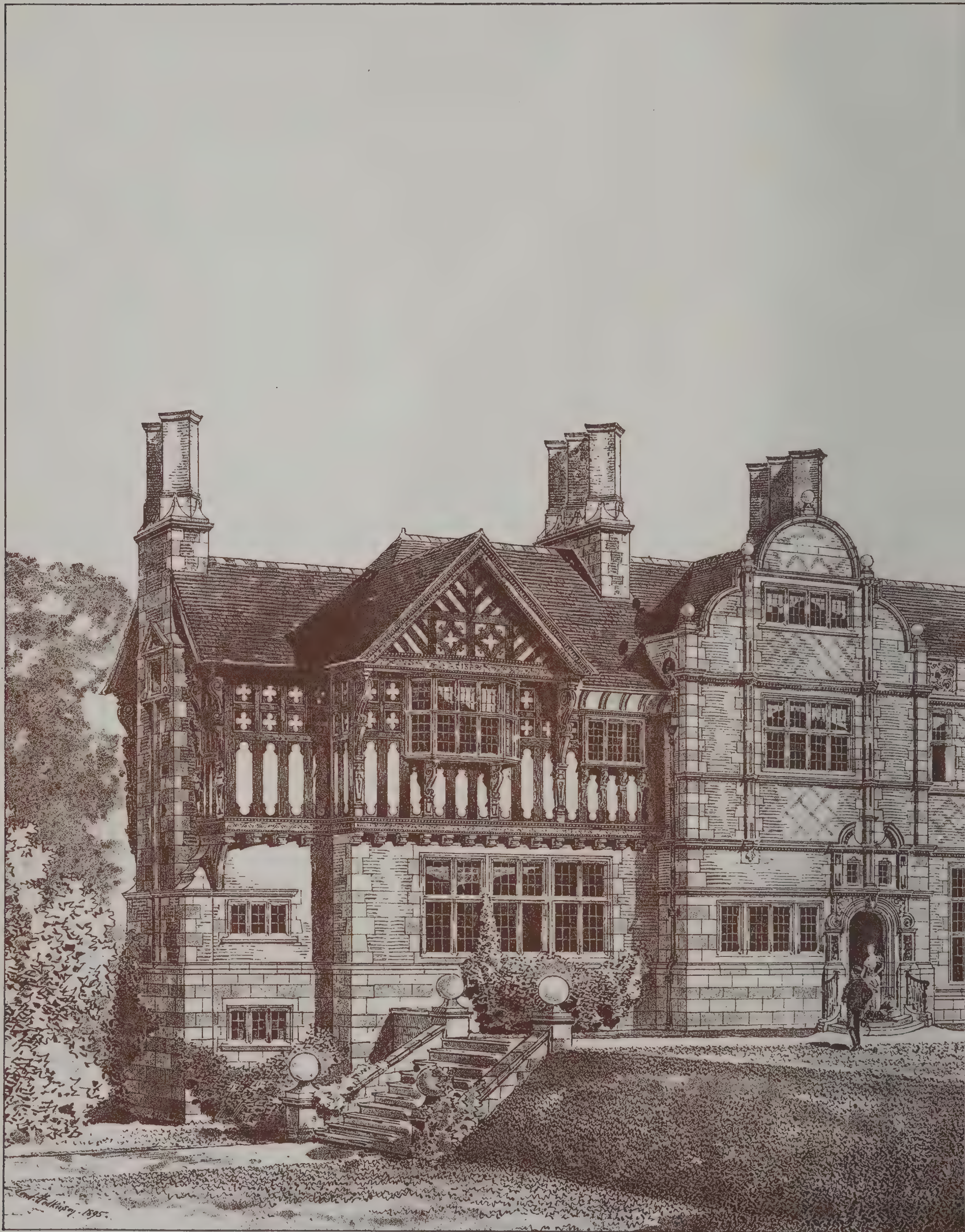
Another stage in the work of restoration now being carried on at the fine church of St. Bartholomew the Great, West Smithfield, from Mr. Aston Webb's designs, was reached on Saturday, when the crypt, which had been disused since the Reformation, was reopened by the Duke of Newcastle. The crypt, originally an ossuary, will in future be used as a mortuary chapel.

The parish church of Manby, Lincolnshire, which has been undergoing restoration, was reopened last week. A new roof, Perpendicular in style, has been put up; the walls have been cleaned of the old plaster, and the stones dressed and pointed; half the church has been reseated with oak seats nicely carved, and the rest filled with chairs, the flooring between the seats being deal block work. The architects are Sir Arthur Blomfield and Sons, and the builders are Messrs. Woodward and Sons, of Louth. The cost, exclusive of special gifts, has been £400.

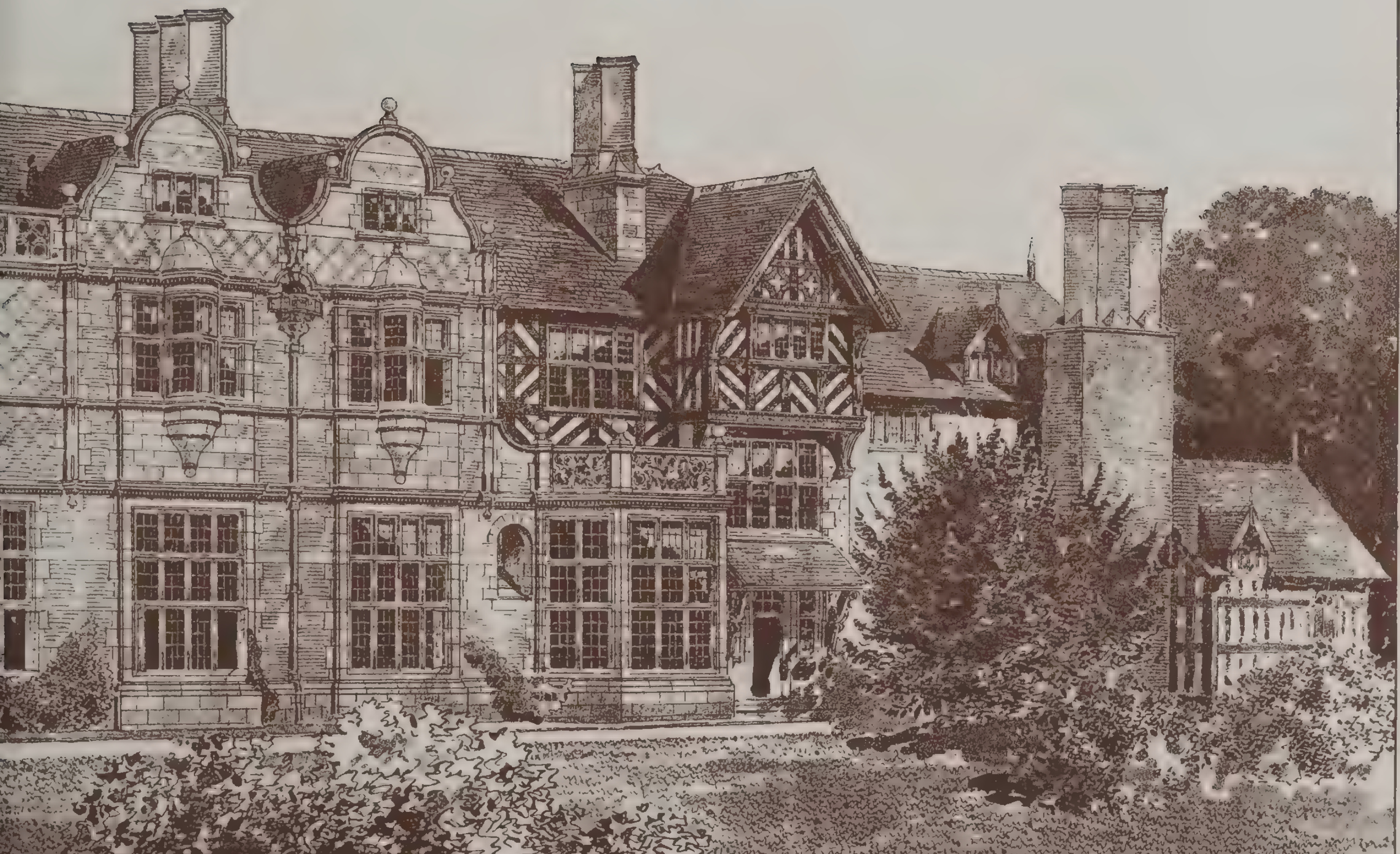
Fireplace Hutton Court, Somerset.



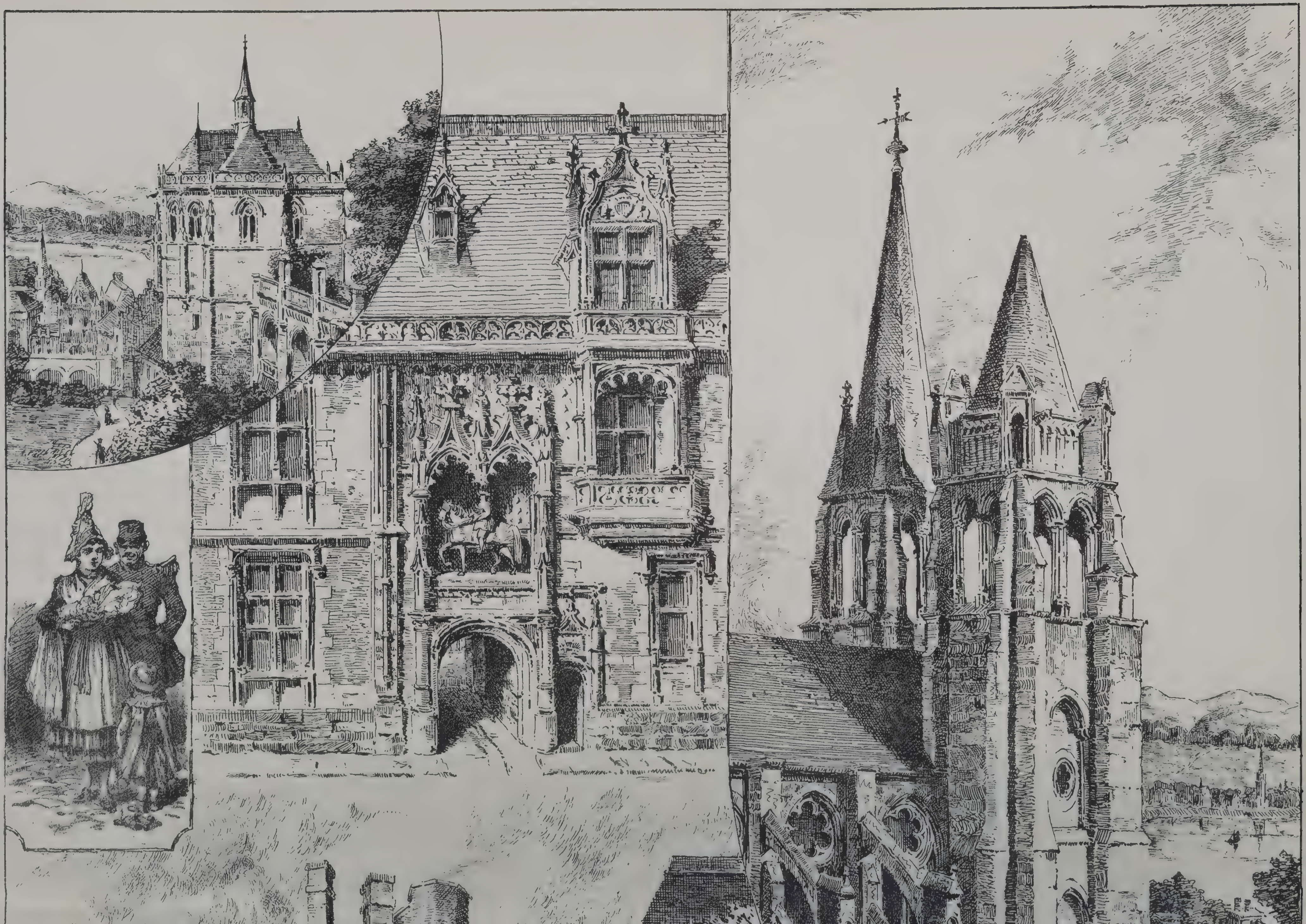
LIBRARY
OF THE
UNIVERSITY OF ILLINOIS


Hodkinson · 1895.

NEW·WING · PARK·HALL· OSWESTRY· MESS^RS T·M·LOCKWOOD·&·SONS·ARCH^TS



"PHOTO-TINT", by James Akerman, 6, Queen Square, London, W.C.



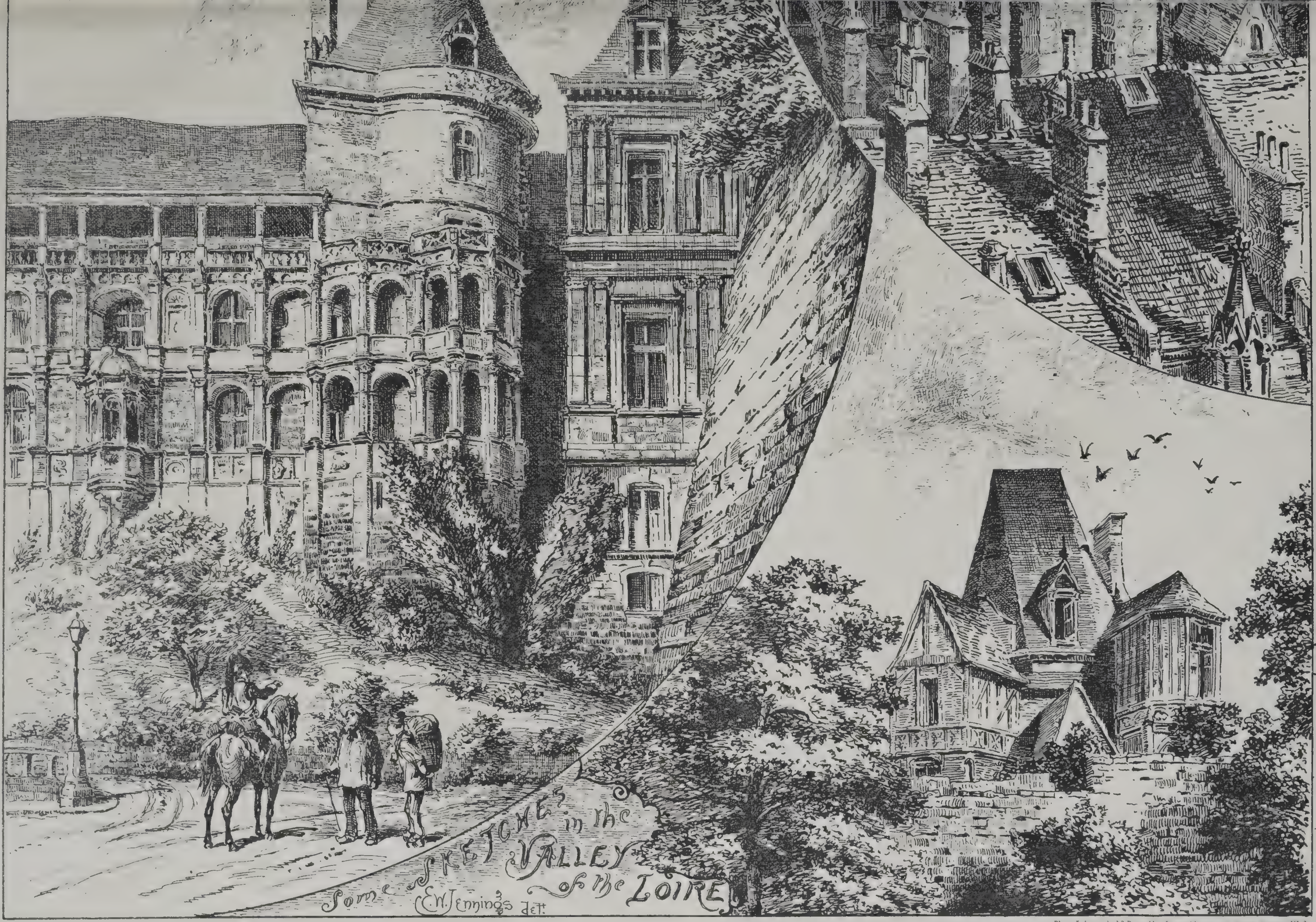
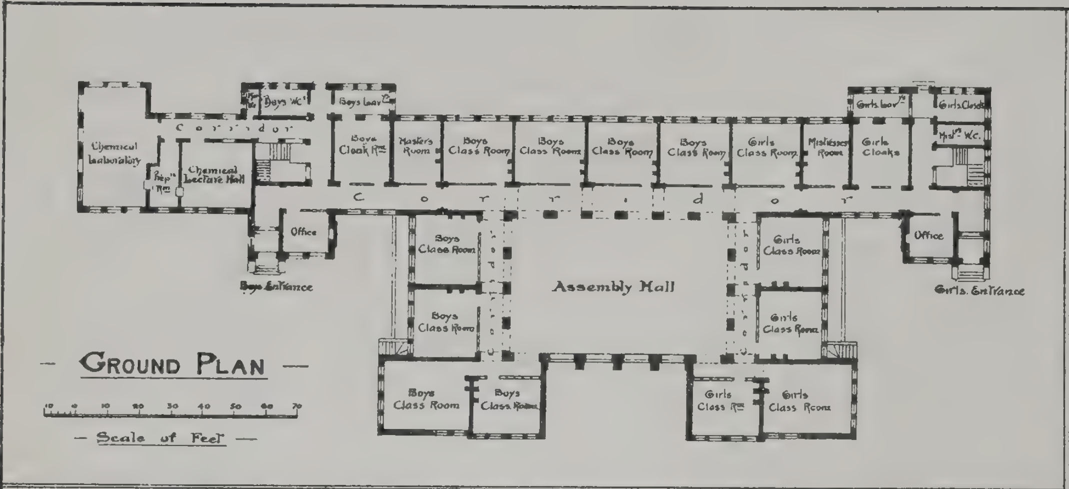
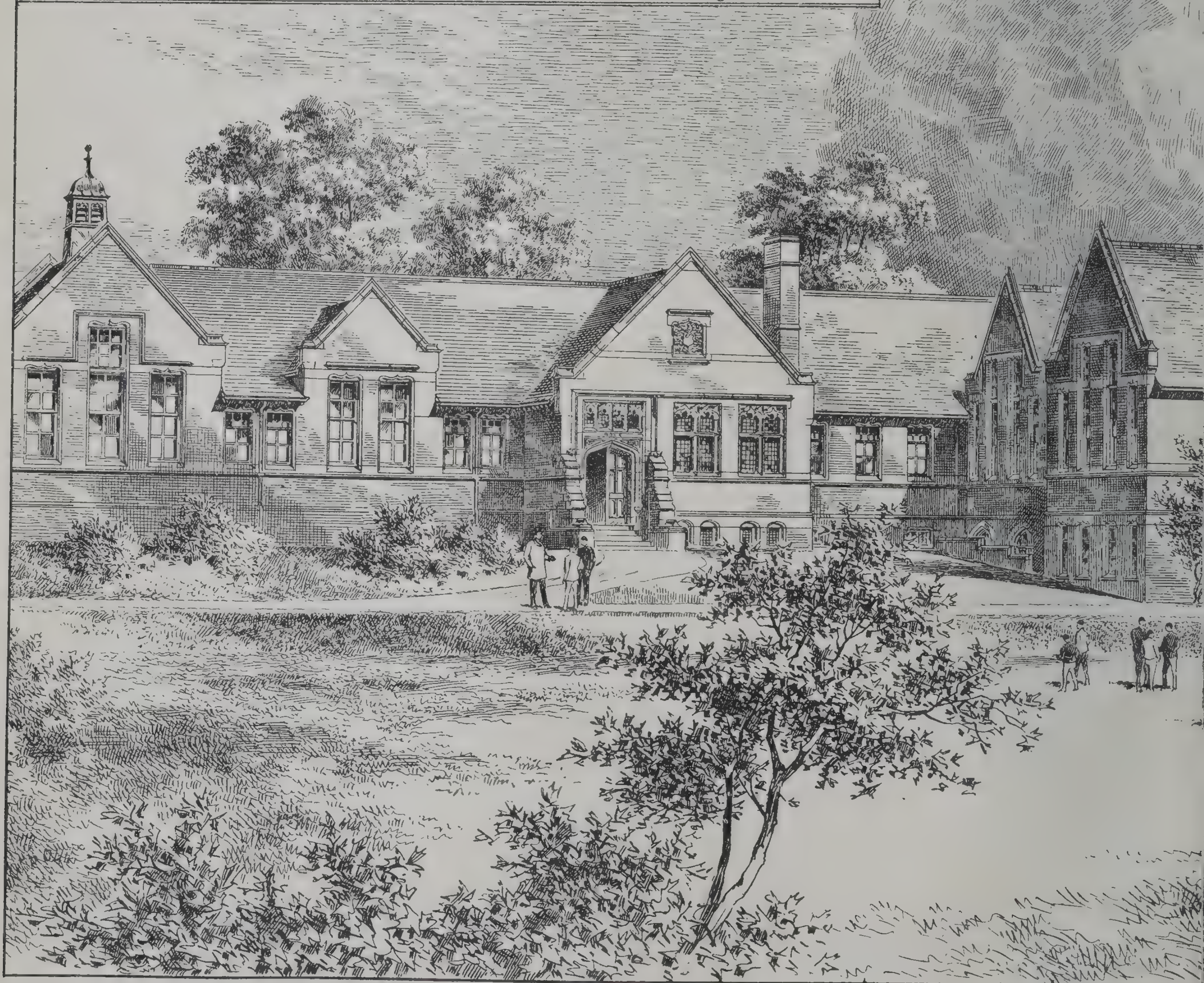

Some Sketches in the Valley of the Loire
E. W. Jennings del^t

Photo Lithographed & Printed by James Akerman 6 Queen Square W.C.



·A.D. 1894. HULME · GRAMMAR · SCHOOLS · OLDHAM · John. W. Firth. Archt.



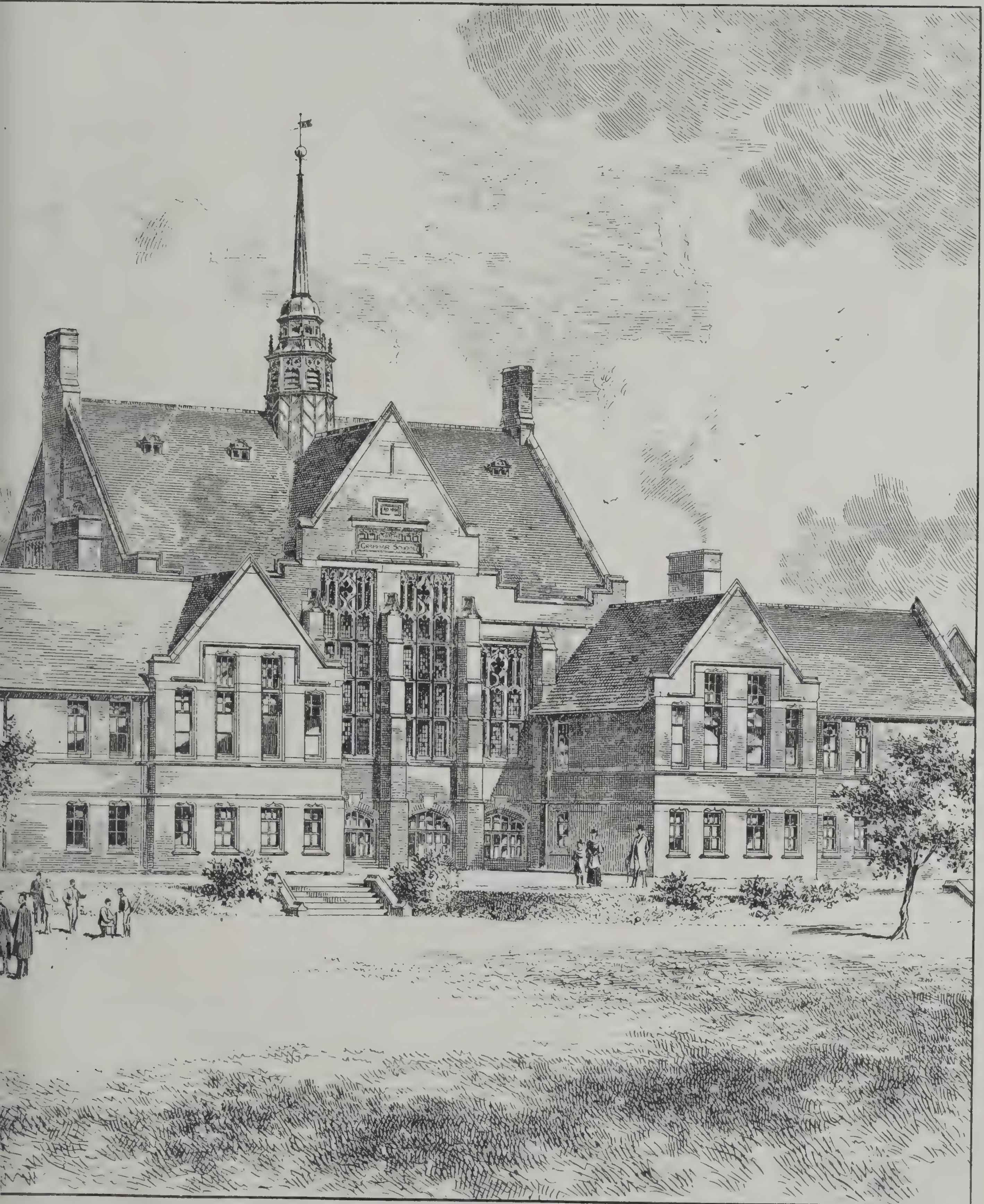
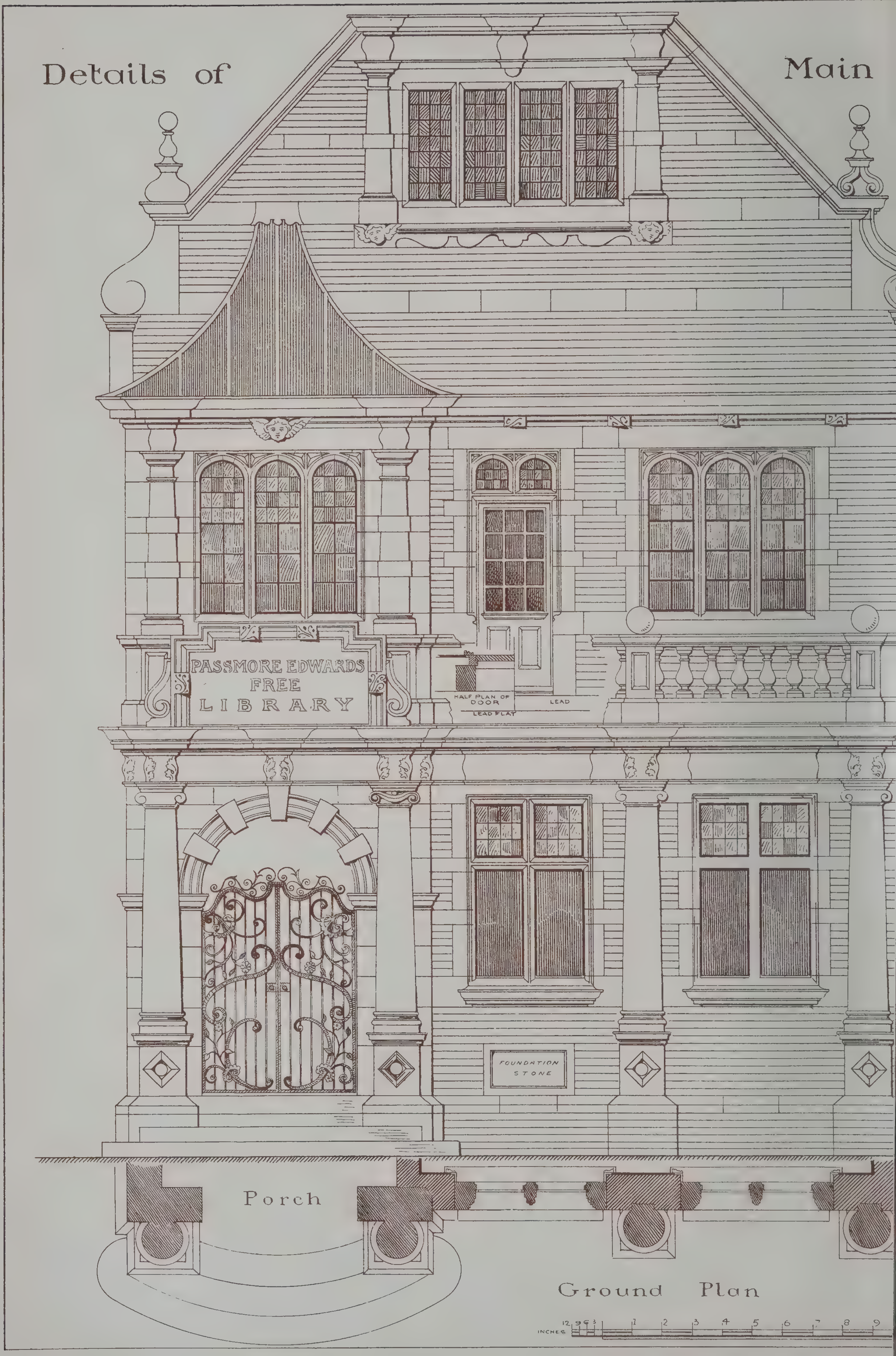


Photo-Lithographed & Printed by James Akerman, 6, Queen Square W.C.

Details of Main



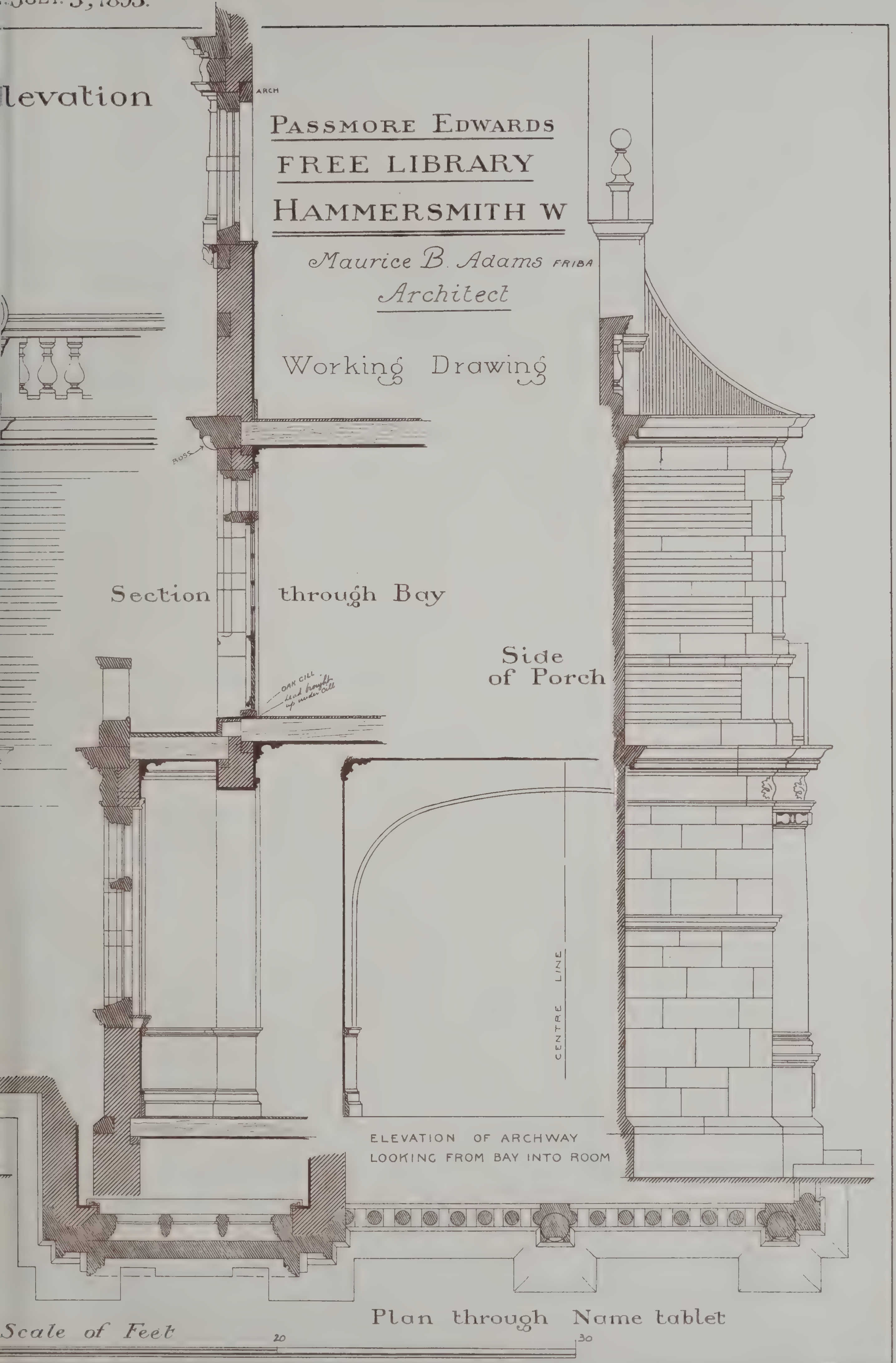
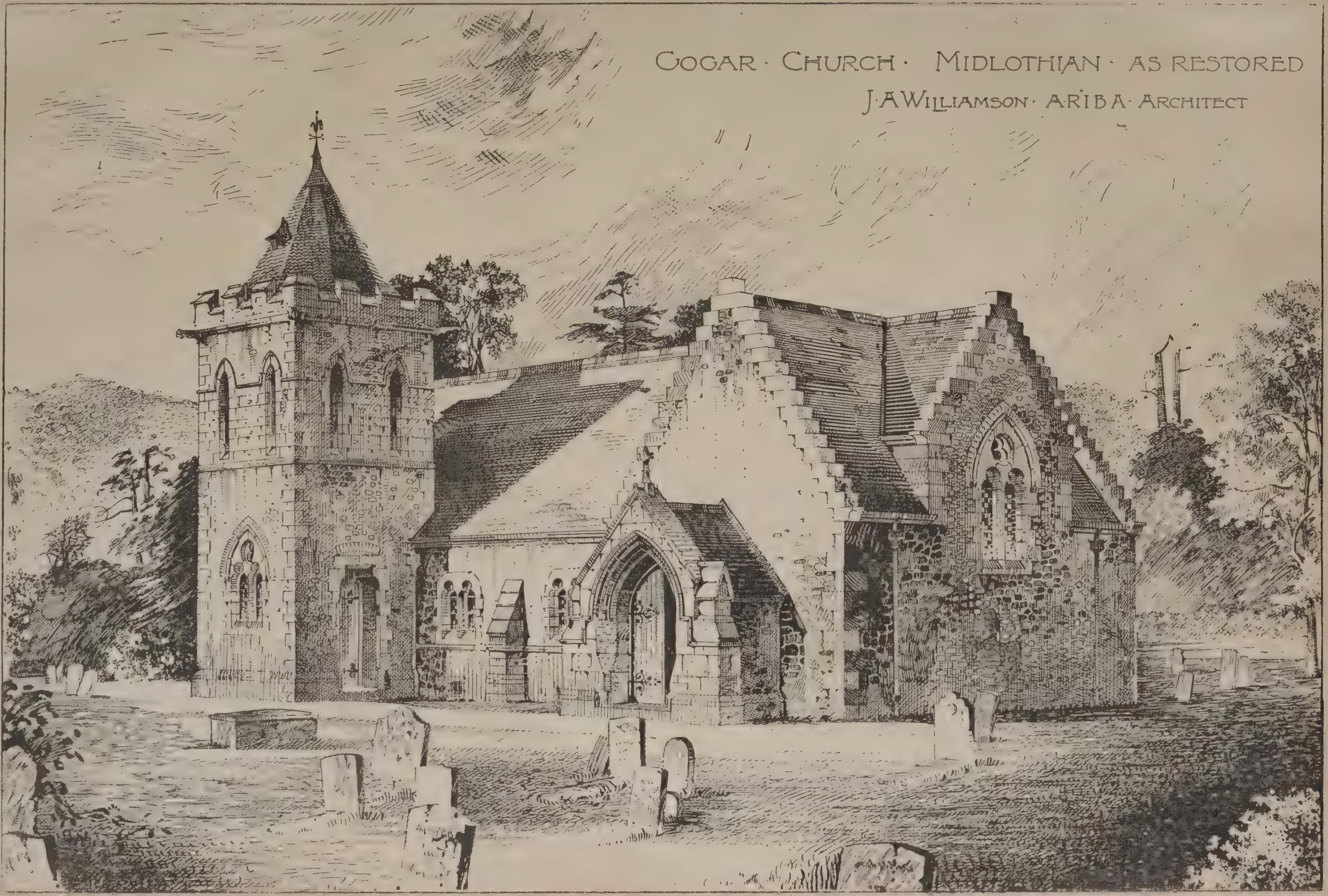


Photo-Lithographed & Printed by James Akerman 6 Q



Cogar · Church · Midlothian · as restored

J · A Williamson · A R I B A · Architect

Building Intelligence.

Bromley, Kent.—An important extension of the Presbyterian Church in England was marked, on Wednesday, 26th ult., by the opening of the new church and buildings in Freelands-road, Bromley. The new buildings, which are of red brick, with Doulting stone dressings, have been erected at a cost of about £8,000, inclusive of fittings; they are Early Gothic in style, with a spire 118ft. high. They comprise a church seated for about 720, a hall for about 240, and a complete suite of rooms admirably arranged for carrying on the various religious and social works of the congregation. Mr. John C. T. Murray, of Old Queen-street, Westminster, is the architect, and Messrs. W. H. Barber and Son, Adelphi, were the quantity surveyors. The general contractor for the work has been Mr. John Bentley, of Waltham Abbey, Mr. Geo. Barber acting as clerk of works.

Carlisle.—Fisher-street Presbyterian Church was reopened on June 27th, having been reconstructed at a cost of about £3,400. The new street front is flanked on either side by a low tower, with high-crested roof rising behind battlements. The church roof is in three sections, there being separate aisle roofs over the gallery on either side, and a large open roof over the nave. Between the nave and gallery roofs, supported on columns resting upon those carrying the gallery, is the clerestory, running along the whole length of the church, and having four trefoil-headed lights to each bay. The chancel arch is carried on red marble corbels. The organ will be placed in position in this chancel during the course of the next month. The pulpit, the gift of the architect, is of oak, octagonal in form, and with stairs on either side at the back. Each side has tracery panels of Late Gothic design. The gallery, providing accommodation for 362, is entirely new, and is carried without trusses. The whole of the inside woodwork, with the exception of the oak pulpit and chair, is pitch pine, varnished. The roofs are slated with Welsh slates, a flèche and tower roofs being covered with Buttermere green slates. The stone walling is of white Lazonby level-bedded shoddies, and the polished dressings are of Prudham stone. Accommodation is now provided for about 800 worshippers. The builders, carpenters, and joiners were Messrs. W. and H. Davidson, Corporation-road; painter and decorator, Mr. W. N. Ballantine, Henry-street; slater, Mr. C. J. Nanson, Lowther-street; heating engineers, Messrs. Musgrave and Co., Limited, Belfast; ventilating engineers, Messrs. E. H. Shorland and Brother, Manchester; stone carver, Mr. J. Hewson, Maryport; wood carver, Mr. Gandy, Fisher-street; stained-glass artists, Messrs. Swaine Bourne and Son, Birmingham; brass and iron gasfittings, and brass pulpit and communion-table desks, Messrs. Jones and Willis, art metal workers, London and Birmingham. The whole of the work was carried out under the immediate supervision of Mr. T. Taylor Scott, of Carlisle, the architect.

The Church House.—The seventh annual meeting of the Corporation of the Church House was held in the new building in Great Smith-street, Dean's-yard, and Tufton-street, Westminster, on June 27th. The report stated that there was every probability that the fabric, irrespective of the fittings, will be completed before the end of the present year. The building consists of offices in the basement, temporary accommodation for the two Houses of Convocation on the ground floor, and the great hall which occupies the whole of the first floor. In the basement there are ten rooms, to be let as offices for church societies. Each room is about 19ft. long by 16ft. wide, and has one large window facing an area lined with white glazed bricks. The ground floor now contains two rooms—one 41ft. long by 29ft. wide, and the other 52ft. long by 29ft. wide—for the temporary use of the Upper and Lower Houses of Convocation respectively. When permanent quarters have been provided for Convocation in that part of the building which will face Dean's-yard, these rooms will be divided into smaller ones for use as offices or committee-rooms. The basement and ground floor will be laid with pitch-pine blocks bedded in damp-proof cement upon a fireproof floor. The doors and all the other wood finishings in the basement and on the ground floor are of pitch-pine. The great hall, which is reached by a double staircase from the main entrance in Great Smith-street, is 115ft. long by 50ft. wide, and, with the galleries, will accommodate about 1,200 persons. The platform will be at the east end, opposite the main entrance. Behind it will rise the organ, now being built by Messrs. Lewis and Co., of Brixton, the gift of the Hon. Richard Strutt. The roof and all the other woodwork of the hall, together with the flooring, is of oak. The building will be lighted throughout by electricity. The ground floor and hall will be heated by hot water; but the offices in the basement will have ordinary fireplaces. The exterior is faced with red brick and dressings of Portland stone. For all the interior stonework Ancaster stone is used. The architect is Sir Arthur W. Blomfield, A.R.A.

Dorking.—The new Roman Catholic church of St. Joseph at Dorking, opened on Wednesday week, has been built from designs by Mr. Frederick A. Walters, F.S.A., of Westminster, and is Early English in style. It is constructed, externally, with Godalming stone, with Bath stone for the windows and dressings, the roofs being covered with red tiles. The plan consists of a wide nave and aisles, with square-ended chancel, and two side chapels. The tower, when completed, will stand on the south side of the chancel over one of the chapels, and will be of rather short and massive proportions, sacristies and organ-chamber near the chancel completing the arrangements. The interior is lofty. The roof of the chancel is vaulted, those of the nave and aisles being of wood painted. Owing to the nature of the site there is a considerable flight of steps up to the main door, and the chancel floor is again raised by more steps about 3ft. above that of the nave. The high altar, which thus stands out very prominently, is supported by clustered grey marble columns, and has a low retable for candles and crucifix, the tabernacle of circular tower form standing in front of the retable. Behind the altar, and against the east wall, a lofty reredos will eventually be erected, with a canopied throne, supported by angels in the centre. Accommodation is provided for about 500 persons at present, with one of the aisles temporarily omitted.

Kennerleigh, Devon.—The parish church of St. John was reopened on June 24. The small building consists of nave, aisle, and chancel, with a low, square tower at west end. Previous to the commencement of the work, the damp and narrow aisles were paved with cobble stones and roughly squared blocks, deal horse-box pews choked the nave, and two of the windows had wooden mullions and were partly unglazed and rotting. A gallery blocked the western end, he roof-plastering was falling in, and ivy growing through the ceiling. The gallery and pews have been demolished, the floors uprooted, and a bed of concrete, 6in. thick, spread over the whole of the floors, which have been laid with oak-block paving throughout. The nave has been reseated with open benches of English oak, with moulded top rails and bench ends, a portion containing tracery carvings. Some old oak benches have been restored and placed in the north aisle; these have ends and seats, varying from 4in. to 5in. in thickness. The walls have been lined with oak dado boarding, and the walls above restuccoed. Inner stone sills have been added to all the windows, and wooden mullions replaced by stone. The chancel is approached by two steps of blue limestone. Moulded oak choir-stalls occupy the chancel, and there are a new reading-desk and hexagonal pulpit, both in oak. The tower-arch has been filled in with an oak screen, with tracery panels and battlemented cornice. Messrs. W. Dart and Son, of Crediton, were the builders.

London County Council.—At Tuesday's meeting of this body the adjourned report of the Public Health Committee was adopted. This recommended that the work of erecting the superstructure of the dwellings on plots 1, 2, 3, and 4, comprised in the Shelton-street improvement scheme, be executed by the Council without the intervention of a contractor; but that, in the event of the Works Committee not being satisfied of the sufficiency of the estimate, the Public Health Committee be authorised to invite tenders for the work. The same committee recommended that the Council should itself prepare a scheme for dealing with the Falcon-street area, St. George the Martyr; the cost to the Council would be £7,750, but that entirely excluded any provision for rehousing. This led to a long discussion, and it was eventually amended by the addition of a proviso that the Council may obtain powers to divest itself of the responsibility of building and managing the buildings erected on the lands acquired. A recommendation of the same committee for the employment of a specially qualified architect to prepare plans for the erection of working-class dwellings on the Millbank Prison site was, after long debate, referred back to the committee. The Asylums Committee reported that at the present moment all the beds in the asylums were full, and that they had 1,156 patients in out-county asylums under contracts. They, therefore, recommended that temporary iron buildings be provided for 300 patients at Banstead asylum and 300 female patients at Colney Hatch; and if further accommodation were required, to make similar provision for 250 females at Cane Hill. The estimated cost of providing this accommodation was £40,000. It was decided to take steps for the immediate provision of this temporary accommodation as recommended.

Wapping.—The Bishop of Stepney, on Saturday last, dedicated the new Baptistery which has been erected at St. Peter's, London Docks, in memory of Father Lowder. The building is constructed of red brick and stone, and is groined in the same materials, the vault forming a pointed dome with intersecting Welsh groins, which divide the sides into two bays, following the method illustrated so well in the S.W. chapel of the nave of Lincoln Cathedral. The windows are filled with geometric tracery, and the glass was supplied by Mr. Aldam Heaton, of Bloomsbury. The carving of the Evangelistic Beasts, introduced on the pillar which carries the hoist beam above the stone lintel spanning the staircase, was executed by Mr. Nathaniel Hitch, who did the sculpture of the angel figure by the font and other enrichments. The wrought-iron grilles and elaborated crane, which supports the chain carrying the font canopy, were carried out by Messrs. Hart, Son, Peard, and Co., and Mr. Thomas Elsley made the wrought-iron and brass gas-fittings. The builders are Messrs. Ashby and Horner. We illustrated the interior of the Baptistery in the Building News for May 11 last year from the drawing then on view at the Royal Academy. The architect is Mr. Maurice B. Adams, F.R.I.B.A.

Westminster.—The foundations of the new Roman Catholic cathedral of Westminster were blessed and the first stone was laid on Saturday by Cardinal Vaughan. The new building will occupy a site of an oblong shape between Ashley-gardens, Ambrosden-avenue, Francis-street, and Carlisle-place. At first, it will be remembered, it was intended to reproduce the ancient basilica of St. Peter, but the idea was abandoned as impracticable. Mr. J. F. Bentley, the architect, in his revised scheme, provides a building 350ft. long, 156ft. wide, and 90ft. high, and covering an area of 54,000sq.ft. The nave will be 240ft. in length, with 60ft. of clear width; and there will be transepts, aisles, and side chapels. In the apse, the floor of which will be raised some feet above the level of the nave, will be the monks' choir, visible from the main entrance. The canons' stalls will be in the sanctuary. A figure of Christ Crucified over the high altar will be the central feature. The style is Byzantine, like that of the church of Sant' Ambrogio, at Milan, with certain details suggested by San Marco of Venice and San Vitale of Ravenna. The characteristic of the building will be the great open span of the nave and transepts. The cost of the structure may be £150,000, towards which, it was announced on Saturday, over £55,000 has been promised. The cathedral will be dedicated to "The Most Precious Blood," and it is hoped to finish the building within two years, so as to honour the 13th centenary of the landing of St. Augustine in England by the opening of this Metropolitan cathedral.

* * *

Mr. A. Marshall Mackenzie, A.R.S.A., architect, Aberdeen, has visited and inspected New Mar Lodge in connection with the Duke of Fife's intention to erect a residence which will take the place of the lodge recently destroyed by fire.

The chairman of the Wilsden District Council, on Saturday afternoon, opened the valve at Manywells Heights meter-house, to allow the flow of water from the Bradford Corporation mains to run into those newly laid at Wilsden. The water comes from Thornton Moor Reservoir, situate at a height of 1,250ft.; the Wilsden levels are from 900ft. to 600ft. above Trinity mark, and there is a water-pressure at Ling Bob, the upper end of the village, of 200lb. to the square inch, and 250lb. at the Brewers' Arms, situate at the bottom of Wilsden.

Engineering Notes.

Glasgow.—The Glasgow Harbour Tunnel, which passes under the Clyde at Stobcross, was opened on Monday. Parliament, in 1889, sanctioned the scheme. The tunnel connects Mavisbank Quay, on the south side, with Finnieston and Stobcross Quays, on the north side, and consists of three tunnels, 16ft. in diameter, the side ones for vehicular traffic, and that in the centre for the passage on foot. The approach on either side is by a circular shaft, 80ft. in diameter, in which are operated the hydraulic hoists, raising and lowering the vehicles as they leave or enter the tunnels. The shafts are formed of cast-iron segments, and lined with brickwork. The tunnels themselves are also lined with cast-iron segments, filled-in with concrete and lined with glazed brick, presenting a particularly neat and pleasing appearance. All the tunnels were driven by means of shields and compressed air. The outer skin of the segments was coated by grouting with Arden lime, blown through a hole in the lining by air pressure. Each shaft contains six divisions for as many lifts, half being devoted to ascending, and half to descending, traffic. The maximum weight allowed for is about five tons, and the speed about 4ft. per second. The hoisting appliances have been supplied by the Otis Elevator Company, Limited, of London, and embody all the latest types of design, the pressure maintained by a pair of accumulators being 750lb. per square inch. The company are represented by Mr. Furman. The engineers of the undertaking were Messrs. Simpson and Wilson, C.E., of Glasgow, whilst the tunnels and girder work were executed by Messrs. Hugh Kennedy and Sons, of Partick, and Messrs. Alex. Findlay and Co., of Motherwell, respectively. The tunnels for vehicular traffic will be opened shortly.

Society of Engineers.—A visit was paid by this society on Wednesday to the Outer Harbour Extension Works, the existing harbour, and the Electricity Supply Co.'s Station, at Dover. The outer harbour now under construction at Dover has been designed for commercial purposes, and not as a harbour of refuge, the chief object being the provision, in all states of weather and tide, of accommodation for the embarking and landing of passengers on and from 'cross-Channel steamers. The contemplated works consist of :—(*a*) An extension of the Admiralty Pier, 580ft. in length, running approximately in an easterly direction; (*b*) an eastern arm starting near the clock tower, total length 2,760ft.; and (*c*) the reclamation of about five acres of the sea-bed, between the shore end of the Admiralty Pier and the entrance to the existing Inner Harbour, with two large steamer jetties projecting therefrom. The work now under construction, as a first instalment of the complete design, is the east pier (*b*), the contract for which is being carried out by Sir John Jackson, Messrs. Coode, Son, and Matthews being the engineers. The first 1,260ft. of this work will be an iron viaduct in bays of 40ft., except at three points in its length where stiffening bays of 20ft. span and of greater width will be added to give lateral rigidity to the work. The main part of the viaduct will have a uniform width of 30ft., including a footpath 6ft. wide on each side. The deck is at a level of 19ft. above high water of spring tides. In consequence of great irregularity in the quality of the chalk bottom, the centre pile of each bay is fixed on a cast-iron cylinder, filled with concrete, after being sunk well into the solid chalk; the outer piles have cast-steel screws 4ft. in diameter. The superstructure is formed of three rows of lattice girders, properly braced, carrying corrugated decking, on which the roads and footpaths will be formed. The gutters, curbs, and nosings are of cast iron. The direction of the viaduct is approximately south-east. Its outer end will abut on the solid portion of the pier, this latter being 1,500ft. long. For about 400ft. from its commencement, the solid work will follow the same south-easterly direction as the viaduct, but thereafter it will gradually curve to the south and south-west. The entrance between the head of the East Pier and the end of the Admiralty Pier extension will be 450ft. in width. The blocks in this solid work will range from 12 to 20 tons in weight. Above low water they will be faced with granite, and will in all cases be founded on the chalk, into which they will be sunk a depth of about 3ft. The top width of the pier will be 35ft., and the coping level 10ft. above high-water spring tides, the difference between the level of this portion of the work and that of the viaduct being met by an incline with an easy gradient. On the seaward side there will be a parapet 10ft. wide, somewhat similar to that on the Admiralty Pier. The pier will be finished by a circular head, 55ft. in diameter, on which a lighthouse will be built. The extension of the Admiralty Pier (*a*) will be of a similar character of construction to the outer portion of the existing work, but it is proposed to use concrete blocks of greater weight than those in the present structure. As soon as sufficient shelter is obtained from works (*a*) and (*b*), it is proposed to commence the reclamation (*c*) and the two steamer jetties, each 400ft. long and 100ft. in width. These jetties will be furnished with landing stages, and will practically form covered stations into which the trains of the L.C. and D. and S.E. Railways will run. The bed of the harbour will be dredged so as to give a minimum depth of 15ft. at low water of ordinary spring tides alongside the jetties and in their vicinity. The sheltered area of the new harbour, when completed, will be 56 acres. The Admiralty Pier affords protection to the western side of the new works. There are now two basins, one known as the Wellington basin of about 3½ acres, with gates of 70ft. opening, and the other, the Granville basin of 4¾ acres, with gates of 65ft. opening. The present outer harbour of 13½ acres will become an inner tidal harbour at the completion of the extension works. A new lighthouse with a masonry tower surmounted by a lantern of the fourth order, is being erected at the turret end of the Admiralty Pier, and the slipway at the upper end of the Wellington basin is capable of hauling up a safe load of 800 tons. The river Dour discharges into the harbour upon the upper or North side of the Wellington dock. Mr. A. T. Walmisley, M.Inst.C.E., as engineer to the Dover Harbour Board, has charge of the Admiralty Pier and inner harbour.—The entrance to the lighting station is by a private road leading from Park-street. The building consists of offices occupying the west portion, and adjoining these are the engine and boiler rooms. The engine room, which is faced with glazed bricks throughout, is 100ft. in length by 30ft. in width; the boiler-room is 100ft. long by 45ft. There is a circular chimney shaft 120ft. in height. The contract for the whole of the machinery has been, and is being, carried out by the Brush Electrical Engineering Company, Ltd. The engineer and manager is Mr. A. J. Lawson, and the resident engineer, Mr. A. A. Whitlock.

The St. Helen's and Lowton Railway.—The new railway from St. Helen's to Lowton, near Leigh, opening out connection with the lines of the Manchester, Sheffield, and Lincolnshire Railway Company, and providing direct communication with the eastern, midland, and southern counties, has just been completed, and was opened for goods and mineral traffic on Monday. It is the first section of the St. Helen's and Wigan Junction Railway which will eventually connect two portions of the great railway systems under the control of the Cheshire Lines Committee by means of 18 miles of rails to be laid from Fazakerley and West Derby on the Liverpool side to Golborne and Lowton on the Manchester side of the borough of St. Helen's, passing through Knowsley, Eccleston, St. Helen's, Haydock, Ashton, and Golborne. The new line, eight miles in length, passes through the heart of an extensive coalfield covered by 16 or 17 collieries. All the station buildings along the line are designed in a modified phase of the Queen Anne style. Leaving Golborne station the line is carried westward on three massive bridges over Wigan-road, and the adjoining four sets of rails constituting the main line to Scotland of the London and North-Western Railway Company. The erection of these bridges formed the heaviest work of the kind encountered in the construction of the new railway. The railway afterwards enters a deep cutting some three miles in length, and goes through a subway about 100 yards in length, underneath the extensive central colliery sidings of Messrs. Evans and Co. Its sides are of solid cement, 6ft. thick, lined with glazed blue bricks, and the rails belonging to Messrs. Evans and Co. are carried over the cutting by Hobson's steel floors, of similar design to that used for the Liverpool Overhead Railway. The St. Helen's station, with its sidings, platforms, warehouse, booking office, &c., has a total area of about eight acres; pending the continuation of the line to Liverpool, the buildings are but of a temporary character. The contractors are Messrs. S. W. Pilling and Co., of Manchester; Sir Douglas Fox and Mr. Francis Fox, of Westminster, are the chief engineers; Mr. J. Keith, of Golborne, is resident engineer; and Mr. W. G. T. Hallett, of St. Helen's, superintendent of the architectural department.

CHIPS.

The members of the Birmingham and Midland Institute made an excursion on Wednesday week to Shipton-under-Wychwood, inspecting the church there, the still finer one at Burford, and the Priory House, the seat successively of the Tanfields, Falklands, and Speaker Lenthall, and Shipton Court, an Elizabethan residence still occupied.

Colonel Luard, C.E., held an inquiry at the town hall, Huntingdon, on Tuesday week, respecting an application for a loan of £1,600 for improvements and alteration to the borough waterworks. Mr. J. P. Maule (deputy town clerk) went into details of the waterworks scheme from its foundation in 1872, and said that the engines had got out of order, and gas-engines, new mains, and other improvements were required, at a cost of £1,500. A scheme and plans by Mr. Middleton, C.E., were laid before the inspector.

A subscription full-length portrait of Lord Russell, of Killowen, in his robes as Lord Chief Justice, is to be painted by Mr. Doyle Penrose, and on completion will be hung in the central panel of the large room of Hackney Town-hall.

Mr. Willcocks, C.E., held an inquiry at Llandudno on Friday respecting an application by the rural district council of Llechwedd to the Local Government Board for power to obtain a loan of £3,000 for works of sewerage in their district. Evidence was given by Mr. T. B. Farrington, C.E., the engineer in charge of the scheme, and others.

The Sopley School Board have resolved to erect a new school at Ripley. Messrs. Hawker and Mitchell, of Bournemouth, are the architects.

Representatives of the various Temperance organisations of Keighley met on Saturday afternoon to lay the foundation stone of their new premises now being erected at the corner of North and Albert-streets. The building, designed by Messrs. W. and J. B. Bailey, is intended to accommodate on three floors all the Temperance agencies of the town and district. The cost is estimated at £5,687, without site or furnishing.

The Prince and Princess of Wales will open the new front building of the Royal Free Hospital, Gray's Inn-road, on Monday, July 22nd.

Messrs. Norman, Sons, and Beard, of Norwich, the contractors for the new organ at Bath Abbey, have taken possession of the building with a staff of fifteen workmen, who are building the instrument, which will occupy practically four positions in the church. Two large wind chests are already placed at a high level on the north and south sides between the piers supporting the tower. On these will be placed the sounding boards and metal pipes with ornamental fronts. To support these structures girders have been fixed into the piers. The wind chests are to be incased in carved oak panelling. The pedal organ will be in two sections in the north transept, one portion against the west wall and another against the east wall. The manual and organist's seat will be almost immediately behind the pulpit. The total cost will be £3,000.

Memorial stones of a Wesleyan chapel have been laid in Eastgate, Bramhope, near Leeds. The building will be Decorated in style, and will comprise nave, transepts, chancel, and organ recess. A tower and spire is to be placed at one angle, rising to a height of 120ft. The exterior is to be built of wall-stones from Apperley and Bradford, with ashlar dressings from Guiseley. The interior woodwork will be of pitch-pine. Behind the church are schools, classrooms, and vestry, and a detached house for the caretaker is to be built at the back. The chapel will accommodate 170 persons, and the cost will be about £2,200. The architect is Mr. W. J. Morley, F.R.I.B.A., of Bradford and Harrogate; and the contractors are: Mr. Lawrence, mason, Horsforth; Mr. S. Kaye, joiner, Poole; Messrs. Shuttleworth and Sons, plumbers, Otley; Mr. W. Walker, slater, Otley; Mr. A. Taylor, plasterer, Eccleshill; and Messrs. Couldwell and Sons, painters, Leeds.

The new altar of the Sacred Heart, erected at the east of the aisle recently added to St. Osmund's R.C. Church, Salisbury, opened last November, is now completed. The altar is of oak, in the 15th century style. In the centre of the altar, beneath a carved canopy, stands a statue of "The Sacred Heart," by a Paris artist. On either side there are two panels containing paintings on gold ground. The subjects selected are "St. Elizabeth of Hungary," "St. Frederick," "St. Dominic," and "St. Barbara." These paintings have been presented to the church by Mr. E. Doran Webb. Above the altar is a rose window, the central figure being the Lamb resting on the book with seven seals surrounded by cherubs.

COMPETITIONS.

Lancaster.—The Lancaster School Board have placed first the plans sent in by Mr. Robert Walker, F.R.I.B.A., architect, Windermere and Lancaster, under motto "Up to Date," for a large board school for 1,000 children, to be built in The Marsh, and have instructed him to proceed with the first part of the work without delay.

Nottingham.—In a recent limited competition for new chapel and Sunday-school for the United Methodist Free Church, Gregory Boulevard, Nottingham, the design of Mr. F. W. Dixon, architect, of Oldham and Manchester, has been selected. There were nine competitors.

Sowerby Bridge School Board.—The monthly meeting of the Sowerby Bridge School Board was held at the offices, Tuel-lane, this week. The Board, prior to the meeting, met in committee to consider the plans sent in in competition for the new school to be erected at Bolton Brow. Four sets of plans had been received, and those endorsed with the *nom de plume* "Up-to-Date" were unanimously selected as giving greatest satisfaction. This decision was confirmed in the board meeting, on the proposition of Mr. Bancroft, seconded by Mr. Swallow. The envelope accompanying the plans was then opened, and it was found that they were the design of Messrs. C. F. L. Horsfall and Son, Halifax, who were appointed architects for the new building. It was ascertained that the authors of the other plans sent in were Messrs. G. Buckley and Sons, F.S.I. (Halifax), Mr. S. Wilkinson (Sowerby Bridge), and Mr. C. H. Hebblethwaite, A.R.I.B.A., P.A.S.I. (Halifax). The following were the conditions of this competition :—"No premium will be awarded for any set of plans; but the author of the selected plans will be appointed architect for the proposed schools, to prepare all necessary plans, tracings, and specifications; to supply bills of quantities to the various contractors free of charge; to take the entire responsibility (without a clerk of the works) of superintending the works; to measure up the same when completed; to hand over to the board on the completion of the works, the plans and specifications; his remuneration for the whole of these duties to be at the rate of three pounds and ten shillings (£3 10s.) per cent. upon the total cost of the erections, exclusive of the cost of land and school furniture." The competitors had to survey the site for themselves !

CHIPS.

A new organ, built at a cost of £300 by Messrs. Blackett and Howden, of Newcastle-on-Tyne, was opened on Wednesday at the Methodist Free Church, Whitley.

Mrs. Ishmael Jones, of Trelawny Towers, laid at Flint, on Monday, the foundation-stone of a new Welsh church, to be built as a memorial to her late husband.

The council of the Institute of Civil Engineers of Ireland has awarded a Mullins gold medal to Mr. W. Kaye Parry, A.M.I.C.E., for his paper entitled "The Application of Recent Advances in the Study and Treatment of Sewage."

Some alterations are about to be made to improve the auditorium of Collins's Music Hall by Messrs. Dearing and Son, of Islington, under the direction of Messrs. Sachs and Woodrow, architects.

Mr. Thomas Egbert Lidiard James, F.R.I.B.A., of Halton House, Balham-hill, S.W., was married on June 27 to Margaret Hester Paske, only daughter of Mrs. Crozier, Grafton-square, Clapham, S.W.

The Bishop of Colchester consecrated, on June 27th, the Church of St. Chad, Chadwell Heath, Essex. The foundation-stone was laid in 1884 by Mrs. Claughton, wife of the late Bishop of St. Alban's, and the church was licensed for public worship in 1886. The building is Perpendicular in style, of red brick and stone facings, and Mr. F. Chancellor, of London and Chelmsford, was the architect. The tower and vestry are yet to be built, and the blocks of the building remain uncarved. The cost of the church has been £3,000.

At the Whitchurch, Salop, County Court last week, Mr. Walter Webb, architect, Whitchurch, sued William Lister for the sum of three guineas for preparing a plan for building sites on land in Wrexham-road. Plaintiff's case was that he received instructions from Mr. Bates, defendant's agent, to prepare a plan, and this he did in August last. Three houses had been erected practically in accordance with the plan produced. The defence was that the plan was only a sketch, to which plaintiff replied that it was not inked-in, as defendant was in a hurry to begin work. Judge Hughes awarded plaintiff two guineas and costs.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to The Strand Newspaper Company, Limited.

TERMS OF SUBSCRIPTION.

One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India, £1 6s. 0d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front-page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No Front-page or Paragraph Advertisement inserted for less than 5s.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page Advertisements and alterations in serial advertisements must reach the office by Tuesday morning to secure insertion.

Situations.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., LI., LIII., LIV., LVIII., LIX., LX., LXI., LXII., LXIII., LXIV., and LXV. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Received.—J. E. Russell.—Alpha.—C. W. (Chester).—Perplexed.—J. T. and Co.—F. E. R.—E. S. and Co.

Intercommunication.

QUESTIONS.

[11372.]—**Bonding Walls.**—Can any of your readers state why front walls of houses are not bonded with the party-walls, as I have come across many such cases in houses built early in the present century? The ends of the party-walls are complete. There is no bond whatever with the front and back walls of several houses in a terrace in several separate and distant streets.—H. Lovegrove.

[11373.]—**Footings.**—Has anybody been able to fix the date when projecting footings came in, as in many cases of underpinning, the walls of houses start on the earth, without the usual and modern spread of footings?—H. L.

[11374.]—**Wood-carving.**—What are the conditions of the wood-carving competition instituted by the Company of Carpenters?—Carver.

[11375.]—**Northamptonshire Churches.**—Any information about the chief features of the principal churches in Northamptonshire will be thankfully received. Their interior features are, I believe, worthy of study.—Bicyclist.

[11376.]—**Right of Support.**—If an excavation of ground is made, and causes subsidence of adjoining premises, can the owner of latter claim damages. The excavation was of a very slight depth, and the house very old and rickety.—Box.

[11377.]—**Water Colours.**—Which are the most effective tints for stone buildings, old and new, in light and shadow? Any hints, or a few combinations of pigments, will oblige.—A Sketcher.

REPLIES.

[11369.]—**Commission.**—Young architects get what they can out of house-agents in a lump sum for work done in the preparation of drawings; but if the agent simply introduces the work, and the architect gets the usual charges, with his name appearing, about one-third is allowed for the introduction.—H. L.

The annual soirée of the Institution of Electrical Engineers was held on Wednesday night in the galleries of the Royal Society of Painters in Water Colours, which were crowded. The President, Mr. R. E. Crompton, and the Council received the guests.

Legal.

TENANTS' FIXTURES.

ALTHOUGH the fixtures upon the premises he occupies may certainly and clearly belong to the tenant, he must take care to remove them before his term expires or his tenancy is determined, because, even though he holds over, the mere possession of the premises will not give him a legal right to remove them afterwards. Such, at all events, seems to be the present state of the law, although if the recent case of "Barff v. Probyn" (*Times*, 22nd June), in which the point lately arose, is taken up to the Court of Appeal, it may be reconsidered. This action was brought by the plaintiff, as lessor, against the defendant, as assignee, of the lease of a public house in London, to recover the value of certain trade fixtures which the defendant had removed after his term expired, and while an action of ejectment was actually pending against him. His term had run out in September, 1893; but because the person to whom he had sold his fixtures for £90 had not paid for them, he simply held over until this matter was settled. The plaintiff had, therefore, to issue a writ in ejectment, and when the defendant went out in March, 1894, as the result of these proceedings, it was found the fixtures had been removed meanwhile.

The plaintiff's contention was legal and logical, he maintaining that after the admitted expiration of the defendant's term in September, 1893, he became merely a trespasser, and had therefore no right to remove even his own fixtures. On the other hand, it was argued for the tenant that as he removed his fixtures while he was in possession of the premises, although he was holding over, the removal was legal. Mr. Justice Charles was desirous of taking that view if he could, as he thought it rather hard the tenant should lose all his fixtures, and there was one case in the books that seemed to support that contention. But, on the other hand, the general current of authority was to the contrary effect, and it appeared to be laid down in several cases that a tenant could only remove his fixtures during his tenancy. He therefore gave judgment for the plaintiff, but with a stay of execution to appeal, and he only gave the plaintiff the break-up sale value of the fixtures on the ground that as the public-house was at once going to be pulled down that was all he could rightly claim.

Fred. Wetherfield, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

F. J. B.—Libel.—Postcard.—Discount.—There is nothing legally libellous in this word, especially as, if the whole card be read, it shows what was meant, and that it has nothing to do with lending money.

D. C. L.—Contract.—Building.—Architect.—(1) No, I think not. (2) Not usually. (3) No. (4) Yes, if the contract is so drawn. (5) The architect's certificate is generally final, and cannot be upset.

A new wing added to the hospital at Gravesend was opened last week. The extension has cost £6,700, and raises the accommodation to 52 beds for adults, and 14 for children.

A new parish room for St. Barnabas, Tunbridge Wells, was opened on Thursday in last week. It is placed at the junction of Stratford-street and Lower St. James's-row, is built of red brick with stone dressings, and cost £1,850. Messrs. Cronk were the architects, and Mr. Judd the builder.

The members of the Hampshire Field Club held a meeting in South-east Hants on Thursday in last week, the rendezvous being at Chalton, the church of that village being first inspected, and a visit to the neighbourhood of Butsey Hill and Catherington was afterwards made, Mr. Shore, of Southampton, acting as guide.

Among the recipients of ministerial honours is Dr. Henry D. Littlejohn, of Edinburgh, who is knighted. He has a wide reputation as an authority in matters of public health and medical jurisprudence. For years he has been officer of public health for the City of Edinburgh, and in a wider capacity he has come before the public as officer of health to the Board of Supervision in Scotland. The British Institute of Public Health, when they held their annual Sanitary Congress in Edinburgh a few years ago, elected Dr. Littlejohn to the presidential chair, and the University of Edinburgh at the same time conferred upon him the honorary degree of LL.D.

LEGAL INTELLIGENCE.

Superintending Architect's Power to Determine Building Line.—Allen and Another v. London County Council.—In the Queen's Bench Division, on Monday, Mr. Justice Wills and Mr. Justice Wright heard a special case stated by a Metropolitan magistrate, who had made an order for the demolition of a certain building in the Metropolis as being beyond the building line. The question raised was whether the decision of the architect as to the building being beyond the building line was conclusive and binding on the magistrate. A complaint had been made to the magistrate by the London County Council that the appellants began to erect a building beyond the general line of buildings on the north-western side of Birchington-road, Kilburn, without the consent of the County Council, contrary to section 75 of the Metropolis Management Act, 25 and 26 Vic., c. 102. The appellants, on November 13, 1894, began to build four shops and houses upon the land at the corner of Birchington-road, Kilburn High-road, having a frontage of 22ft. to Kilburn High-road, and 58ft. to Birchington-road. This front in Birchington-road extended 16ft. beyond the general line of buildings, as determined by the certificate of the superintending architect of the London County Council, who stated in it that the main fronts of the buildings in a certain row of houses formed the general line of buildings on the north-western side of Birchington-road, "in which road the building in question is situate, and the building in question would project beyond the prolongation of the said general line." It was contended on behalf of the appellant that the architect had not by his certificate found that the building was situate in the "street, place, or row of houses" described as the north-western side of Birchington-road, and if he had so found, he had placed the building in a "street, place, or row of houses" in which the same was not situate. The respondents contended before the magistrate that the certificate had determined that the building was situate in Birchington-road, and that such determination was binding on the magistrate. The magistrate adopted this view on the authority of the case "London County Council v. Cross," and directed the demolition of so much of the building as was beyond the line. The question for the Court was whether the certificate showed that the house in question was situate in the street, place, or row of houses on and for which the general line of buildings was determined; (2) whether it was the duty of the architect to decide and find the situation of the appellants' building, and, if so, whether his decision was binding on the magistrate. The Court decided in favour of the London County Council, and gave judgment accordingly. Mr. Justice Wills said the question raised was whether the certificate of the superintending architect of the London County Council, who now represented the Metropolitan Board of Works under the Metropolis Management Act of 1862, deciding whether a particular building to which the building line applied in a street was decisive of the point in dispute. Looking at the Act apart from the authorities, the learned Judge would have thought that the tribunal which should decide that was the magistrate. But the matter had been much discussed both in the Divisional Court and in the House of Lords. It could not be said that the authorities were satisfactory. In 1886, in the case of "Barlow v. Vestry of St. Mary Abbott's, Kensington," Lord Watson held, without hesitation, that the architect was the person to decide, while Lord Bramwell equally unhesitatingly held it was the magistrate. Lord FitzGerald agreed with Lord Watson. The majority of those learned Lords, therefore, were against the view that the magistrate was the deciding tribunal. The point also came before the Divisional Court in "London County Council v. Cross," where Mr. Justice Denman and Mr. Justice A. L. Smith both adopted the view that the architect was the person. It was true that the case was subsequently overruled on another point, and, therefore, could not be called a binding judgment; but it seemed better to follow the views of this majority of Judges rather than to set up his own opinion. The point was not so important as it might seem, because the London Act of 1894 had made provision for the appointment of a tribunal of appeal against the architect. On the second question the architect must be taken as meaning to decide and determining that the building in question was in the street to which the building line applied. Mr. Justice Wright, solely in deference to the judgment of the other Judges, concurred. Mr. Wedderburn, on behalf of the appellants, asked for leave to appeal if leave were necessary. This was granted, as of course.

In re Hayward and Son, Bournemouth.—At a sitting of the Poole Bankruptcy Court on Wednesday week, John Hayward and Frank Hayward, trading as Hayward and Son, builders, Bournemouth, came up for public examination. Their statement of affairs shows gross liabilities amounting to £2,870 3s. 7½d., of which £1,281 17s. 11d. is expected to rank for dividend. The net assets, including a sum of £258 10s. 10d., an estimated surplus from securities in the hands of creditors fully secured, are only put at £306 2s. 7½d., showing a deficiency of £975 15s. 3½d. The debtors allege that bad trade, inability to realise property, and want of capital are the causes of their failure. They first commenced business, they stated, in 1889 with a joint capital of £500. In 1890 they took in Mr. Penton as a partner; but in 1892 the partnership was dissolved, and a deed of assignment was given on behalf of the creditors, who received a dividend of 6s. in the pound. The Official Receiver points out that even had the debtors been able to realise the £258 10s. 10d., estimated as the surplus on properties, there would still be a deficiency of £975 15s. 3d. to be accounted for. Frank Hayward, the son, was the first examined, and in answer to questions admitted that he knew of his insolvency some months before he filed, but that they had nevertheless gone on contracting debts. The debtor admitted that several warrants were served upon him by the Sheriff in January, February, and March, that he had still continued ordering goods, and that the goods were still unpaid for. John Hayward, the father, admitted that he had never properly looked into his affairs to see how he stood, and that he must have been insolvent for some time past. The Registrar thought this was one of the worst cases that had been before the Court for some time past, and assented to an application that the further hearing should be adjourned to the 31st July, to allow of some books being produced, and of further information being given.

What is a Sky-Sign?—The representatives of the Savoy Hotel (Limited) appeared at Bow-street Police-court on Tuesday to a summons issued at the instance of the County Council, charging them with unlawfully retaining a sky-sign without the license of the County Council, contrary to Section 128 of the London Building Act, 1895. Mr. Chilvers appeared for the Council, and Mr. Marshall Hall for the company. Mr. Chilvers described the sign to which exception was taken, and, after quoting sections of several Acts, argued that it was a sky-sign within the meaning of the law. He called Mr. George Townsend, a surveyor in the employ of the Council, who said that the sign was fixed to the roof of the Savoy Hotel. It consisted of a series of boards in three sections, to which large embossed glass letters were attached. The letters, which were about 7ft. high, formed the words "Savoy Hotel and Restaurant," on three different sides of the hotel. The sign was fixed to the roof and chimney stacks. Witness, in reply to Mr. Hall, said he had heard that the sign as it now appeared had been suggested by the district surveyor. Mr. Marshall Hall said the large letters, "Savoy Hotel and Restaurant," were originally put on the roof of the hotel as a protection for the servants when duty or pleasure took them there. It was a dangerous roof, at a high elevation, and some protection was required. Originally, these letters had nothing but the sky behind them, and they undoubtedly formed a sky-sign. Then the district surveyor suggested that a board should be put behind the letters. This was done, and he urged that the letters as they now stood were not a sky-sign within the meaning of the Act. It was perfectly clear that the object of the Act was to protect the public against dangerous and unsightly signs. In this case the sign was neither dangerous nor unsightly. It was an advertisement, certainly, but not a sky-sign. It had been said that in certain parts the sign was slightly raised from the roof, but that was merely to let the rain-water run away. Mr. Chilvers admitted that there were a great many cases similar to this. It was a case of considerable importance, and he wished to quote Mr. Justice Mathews as to the object of this Act. Mr. Vaughan said that was unnecessary. The preamble was sufficient to show the object of the Act, which was directed against the dangerous and unsightly sky-signs popular a few years ago. In his opinion, this structure was neither unsightly nor dangerous. Nor, in his opinion, was it a sky-sign in the popular acceptance of the term. He considered, therefore, that he would be going contrary to both the spirit and the provisions of the Act if he accepted the contentions of the County Council. He therefore dismissed the summons. On the application of Mr. Hall, the magistrate Mr. Vaughan, allowed £5 5s. costs. He refused to state a case for the opinion of the High Court, and this decision he adhered to when Mr. Chilvers repeated his application on Wednesday.

Sanitary State of Furnished House.—Abraham v. Power.—An action was tried in the Queen's Bench Division, on Tuesday, by Mr. Justice Wright and a jury, to recover damages for injuries suffered in consequence of the plaintiff having rented of the defendant a furnished house that was not in good sanitary condition. The plaintiff was a surveyor and estate agent, and the defendant was Major Power, of Leamington. In August, 1894, the plaintiff took of the defendant, for six months, the house, 38, St. George's-square, and entered into possession. Some time afterwards his wife and some of the children, servants, and other inmates of the house became unwell, suffering from sore throat and other mischiefs. These mischiefs were caused, according to plaintiff, by the drainage of the house not being in a good condition. For the defendant, it was said that he acquired the house in St. George's-square in July or August, 1890, and he spent £50 upon it in repairs and sanitary work. This was done through the Army and Navy Stores. He himself lived in the house from that time until 1893, and had no fault to find with the sanitary arrangements. The late Professor Stuart Poole lived in the house for six months, and afterwards it was occupied by Mr. Hobhouse, M.P., and the defendant received no complaint from either of them as to the condition of the premises. The case of the defendant, which was supported by the sanitary authorities of the parish, was that, although the most recent sanitary arrangements had not been adopted, yet the house was in a reasonably good sanitary condition, and safe for habitation. A good deal of evidence was given upon the one side and the other, by sanitary and medical experts, as to the condition of the house when it was let to the plaintiff in August last, and as to the probable cause of the illness that happened in it. The jury not being unanimous, were discharged without giving a verdict.

CHIPS.

The post of road surveyor for the Longtown Union, and sanitary inspector for the Low District, rendered vacant by the removal of Mr. Maxwell to Gainsborough, was filled at the last meeting of the Longtown District Council, held at Hallburn. There were 21 applicants for the situation, the choice falling on Mr. Murray, of Alstonby.

A stained-glass window, illustrating Mary weeping at the Tomb of Jesus, has just been erected in St. Catherine's aisle of Linlithgow parish church. The window is in memory of the late Mr. Robert Riddoch Glen, at one time town-clerk of Linlithgow.

The Local Government Board have sanctioned the application of the Middleton Corporation for powers to borrow a sum of £36,544 for the new sewage scheme. Sanction had already been given to the borrowing of upwards of £13,000, which had been paid to the Earl of Wilton for the site of the outfall works at Land's End, Rhodes.

The Duchess of Teck opened on Monday the new Children's Hospital at the corner of Church-street and Paddington-green. The hospital, which was illustrated in the Building News for August 17, 1894, by a perspective and plans, has been built by Messrs. Mark Patrick and Sons, of Westminster Bridge-road, from plans by Messrs. Stephen Salter and Adams, of Woburn-place. The cost has been £11,000.

On Saturday Major Marindin made an official inspection of the extensions of the Edinburgh Street Tramways Company system in Leith, just carried out from plans by and under the supervision of Mr. Carter, the company's engineer.

A fatal accident, the first which has occurred in connection with the extension of Marischal College Buildings, Aberdeen, occurred on Friday. William Reith (20), apprentice joiner, was engaged along with others removing the scaffolding from the central spire of the Mitchell Tower. A thin planking on which he stepped gave way, and he fell inside the tower, a distance of nearly 80ft. Death was instantaneous.

The Prince and Princess of Wales will open the new front building of the Royal Free Hospital, Gray's Inn-road, on Monday, July 22. The cost of the new buildings and of various other improvements which have been carried out during the past two years amounts to £30,000, towards which sum £24,000 has already been raised.

The executive committee of the Dean Payne Smith memorial resolved on Monday that the Dean and Chapter be asked to sanction the erection of a pulpit in the choir of Canterbury Cathedral, for which the committee will provide £500. The memorial fund, which is not yet closed, amounts at present to £927.

The Duchess of Teck will, on Tuesday next, at four o'clock, open the new building of the London Homœopathic Hospital in Great Ormond-street, which provides accommodation for 100 patients, and has cost £45,000.

The new chapel at Radley College was consecrated by the Bishop of Oxford on Saturday. The chapel has been erected from the designs of Mr. T. G. Jackson, A.R.A., at a cost of about £12,000. The building is 130ft. long, 32ft. wide, and 40ft. high to the wall plate. The roof is of oak, richly carved, and the floor is paved with squares of white and black Carrara marble. The reredos, a specimen of Early German wood-carving, has been transferred, together with the carved stalls, and most of the seats, from the old chapel. The east window is already fitted with stained glass, and it is hoped in time to fill the other windows in a similar manner. The organ will soon be erected in the western gallery.

WATER SUPPLY AND SANITARY MATTERS.

BILSTON WATERWORKS.—After receiving their supply of water from the corporation of Wolverhampton for a number of years, the inhabitants of Bilston some time ago decided upon providing waterworks of their own, and the memorial stone of the pumping-station at the Bratch, in the parish of Wombourn, was laid on Saturday. The local authority were fortunate in finding at the first boring a plentiful supply of water at the Bratch. A well has been sunk to a depth of 150ft., and the water is now running away at the rate of about 170,000 gallons every twenty-four hours. Parliamentary powers were obtained, and since then contracts have been given out for the erection of the pumping-station, the laying down of the pumping plant, and the provision of a reserve reservoir on a high piece of ground at Goldthorn Hill at Wolverhampton, whence the water will be distributed at Bilston. The floor-level of the reservoir is 342ft. above the overflow of the water in the well at the Bratch, 80ft. higher than the top of Hill-street, Bradley, which is the highest point in the township of Bilston, and 120ft. above the water-meters which will be placed in the Bilston market. The mains to carry the water from the Bratch to the reservoir will be about four miles in length, and the reservoir, which has been completed and is ready for the reception of water, consists of an underground chamber built of concrete, 116ft. long and 106ft. wide, with a water-level of 12ft. deep. The reservoir is covered by a series of concrete arches, 10ft. in span, which are supported by walls 2ft. thick, and archways to allow of the circulation of the water. It is provided to hold 750,000 gallons of water, or a day-and-a-half's supply to the inhabitants. The works at the Bratch consist of the well, engine-house, boiler-house, workshop, and pump-room. The buildings are being erected by Messrs. H. Wilcock and Co., of Wolverhampton, and have castellated parapets and gables. Externally they are of Ruabon red brick, with Hollington stone facings. The height to the top of the turret is 64ft., the chimney-stack will be 90ft. high, and will be built of brick, with stone coping, and will terminate with an ornamental iron railing. The contract for the machinery has been taken from the original contractor, and placed in the hands of Messrs. Thornewill and Warren, of Burton-on-Trent. Two large multitubular boilers, by Roots, will be provided, and Green's economisers will be used. Nearly £3,500 has been expended in sinking the well, and the reservoir has necessitated a similar outlay, while the engine-house and other buildings will cost about £6,000. To these sums will have to be added the expense of laying down the pipes from the Bratch to the reservoir, and the cost of the engines and other items. The engineer who has prepared the scheme is Mr. Baldwin Latham, of London, and it is being carried out under his supervision by Mr. C. N. Wilson, A.M.I.C.E., the engineer to the Bilston district council. The reservoir has been constructed by Mr. Henry Hill, of Maidenhead, and the well was sunk by Mr. John Hughes, of Dudley.

The Westmorland-road Presbyterian Church, Newcastle-on-Tyne, is about to be redecorated and fitted with the electric light. The electric-light installation is being put in by Messrs. R. J. Charleton and Co., and the painting and decorating has been intrusted to Mr. George G. Laidler. The work is being carried out from drawings and specifications prepared by Messrs. Badenoch and Bruce, architects, Pilgrim-street, Newcastle, who will also superintend the execution of the work.

At a recent meeting of the Harwich Harbour Conservancy Board Mr. Peter S. Bruff, of Ipswich, who for upwards of thirty years had acted as their engineer in designing and directing the works at Landguard Point, tendered his resignation of active work. Upon its acceptance by the Board, Mr. Bruff, who is in his 87th year, was appointed consulting engineer; and Mr. Thomas Miller, engineer to the Ipswich Dock Commission, who filled the position of assistant engineer to Mr. Bruff upon the original marine surveys and during the construction of the Landguard groyne and other harbour works, was appointed acting engineer.

The American School of Classical Studies at Athens is at work this season at Eretria, continuing the explorations begun there some years ago. The excavation of the theatre is almost complete, and a gymnasium has been uncovered. Three heads, three inscriptions, and some architectural fragments of interest have been exhumed.

Col. Hasted, R.E., Local Government Board Inspector, held an inquiry at Knaresborough on Tuesday as to an application made by the urban council for sanction to borrow £1,800 for works of additional water supply. The inspector was informed that the waterworks were purchased in 1872 for £12,000. Some opposition was raised to the scheme as being costly, without getting a better supply of water.

STAINED GLASS.

BERLIN.—Messrs. Campbell, Smith, and Co. have just completed the first of the series of stained-glass windows they are executing for the New Memorial Church, Berlin. The window as a whole suggests Triumph over Death, and contains subjects as follows:—Our Lord Triumphant, with the Resurrection Banner; St. Paul and St. Peter; with subjects in the lower lights of St. Paul with Eutychus, Our Lord Raising Jairus' Daughter, Our Lord Raising Lazarus, and Peter Raising Tabitha. There is also an early rendering of the Tree of Life, with the shields of the Emperor and Empress of Germany, and the Prince and Princess Henry of Prussia, and in the two smaller circles of tracery are Jonah Cast Out of the Whale, and the Ark Resting on Mount Ararat, symbolical of the Resurrection.

CHIPS.

Mr. Walter Jackson, for some years past the secretary to the Artisans', Labourers', and General Dwellings Company, Limited, died on Thursday in last week at his residence, Kempton, Prospect-hill, Walthamstow, in his 50th year.

The forty-ninth annual meeting of the Cambrian Archæological Association will be held at Launceston, by invitation of the Royal Institution of Cornwall, on Monday, Aug. 12, and the five following days.

Mr F. S. Button, borough engineer for Burnley, tendered his resignation on Friday to the highways and improvement committee, after a service of seven years.

Structural alterations and improvements have just been carried out at St. Mary Elms parish church, Ipswich. Mr. E. Fearnley Bisshopp, of that town, was the architect, and Mr. William Grayston, also of Ipswich, was the builder.

The national monument to Sir John Macdonald was unveiled in the Parliament grounds at Ottawa on Monday.

The new Welsh church at Penycae was opened on Sunday in last week. It seats 200 persons, and has cost £900.

At a meeting of the employés of the Oldbury District Council, held at the Central Fire Station, on Saturday, the Rev. H. McKean, on behalf of the men, presented a pair of handsome bronzes to Mr. H. Richardson, late surveyor, who is leaving Oldbury to take up a similar situation as surveyor to the Aston District Council.

On Monday afternoon week, July 15, Princess Henry of Battenberg will lay the foundation-stone of the new Free and Parochial Schools belonging to the parish church of St. John at Hackney.

A new Conservative club is about to be built at Millgate, near Rochdale. The architect is Mr. John Stott, of St. Anne's-on-Sea.

The forty-seventh annual general meeting of the Somerset Archæological Society will be held at Bath on Tuesday, the 23rd inst., and following days, under the presidency of Mr. H. Duncan Skrine.

One of the last official acts of Mr. Acland was the sanction of the purchase for South Kensington Museum of the large and valuable collection of woodwork of the Mediæval and Renaissance periods at the Peyer sale in Paris.

At the East Ham sewage pumping station on Monday morning, the chief engineer, Arthur Baker, and three other men, Fred. Mills, Walter Digby, and Robert Tarrant, who went down a well to clean the screen in front of the sewer pipes, were successively suffocated by the accumulation of foul gases, and a fifth, who was rescued in an insensible condition, has since succumbed.

A new wing is about to be added to the Devon and Exeter hospital, from plans by Mr. Cole, of that city. Messrs. Tree and Bolley, also of Exeter, have taken the contract at £6,445.

A new cemetery is about to be laid out at Willenhall. The work, which will include draining, forming roads, laying out and planting grounds, erecting mortuary, chapel, lodge, entrance gates, and boundary walls, is estimated to cost £5,500, and will be carried out from plans by Mr. B. Baker, surveyor to the district council.

The Percival Institute and Church Sunday school at St. Minver, Cornwall, were opened on Thursday in last week. The building is Gothic in style, and is built of local stone, with dressings of buff brick. Mr. W. T. Martyn Mear, M.S.A., of Wadebridge, was the architect, and Mr. T. Williams, also of Wadebridge, the builder. The cost was £500.

The opening of new offices for the Leek and Moorlands Building Society in Stockwell-street, Leek, which have been specially erected for the society from the designs of Mr. John T. Brealey, architect, Hanley and Rudyard, was celebrated on Wednesday week by a dinner at Highfield Hall, Leek, the residence of the chairman of the society.

STATUES, MEMORIALS, &c.

FRESHWATER, I.W.—As a memorial of the late Lord Tennyson, it has been decided to erect, in the place of the perishable and periodically-renewed framework which now serves as a landmark on Freshwater Down to passing vessels, a permanent beacon in the form of a monumental Iona cross. The design has been furnished by Mr. J. L. Pearson, R.A., who has taken into consideration the massiveness of structure and dignity of outline requisite in so exceptional a site, nearly 500ft. above the sea-level. A contract has been entered into with Messrs. Farmer and Brindley, of Westminster Bridge-road, for the execution of the monument in Cornish granite. Its total height will be 32ft., and the cross itself (24ft. in height) will be in two blocks, which are now being quarried. The Trinity House and Board of Trade have agreed to accept the monument as national property under the title of "The Tennyson Beacon," and to be responsible for its maintenance. Three-fourths of the estimated cost, £1,000, have been subscribed.

THE PASSMORE EDWARDS MEMORIAL FOUNTAIN, HAMMERSMITH.—A fountain to the memory of the late Mr. R. Passmore Edwards, one of the Library Commissioners, and a member of the vestry at Hammersmith, has been erected in the centre of the Broadway there, facing the vestry hall. It was unveiled yesterday by the donor, Mr. J. Passmore Edwards. The monument serves to record the opening of Ravenscourt Park to the public by the County Council of London, as the late Mr. Edwards was one of the prime movers in bringing about this great public improvement, now enjoyed by the whole of the district situate round the park. The fountain is executed in granite, and was designed by the architect of the Metropolitan Drinking Fountain and Cattle Trough Association.

A new Presbyterian church at Bromley, Kent, built at a cost of £8,000, was opened on Wednesday week.

The works of excavating for, and laying of new sewers are in progress throughout Stafford, under the direction of the borough surveyor, Mr. Blackshaw.

A new Primitive Methodist chapel, with schools attached, was opened on Friday in Ford-street, Coventry. The buildings have been erected by Mr. J. Worwood, of that city, from plans by Mr. John Wills, F.S.A., of Derby. The style of the buildings is Gothic, and the materials used are red bricks with Bath stone dressings. The chapel is 66ft. by 33ft., and seats 500 persons on the ground floor. At the rear is a schoolroom, 31ft. 6in. square, and four classrooms. The cost has been £2,000.

The Government of New Zealand recently sent a "timber expert" to this country to call attention in the proper quarter to the great value of the indigenous woods of that colony. The hauma is by far the lightest wood in the world, being only half the weight of cork. Another noticeable product is the hinau, an incombustible wood. The export timber trade of New Zealand ought to expand a good deal soon.

In celebration of the commencement of the erection of the Passmore Edwards Free Library at Truro, the mayor, Mr. Silvanus Trevail, gave a dinner to the men employed on the works and others at the Royal Hotel in that city on Monday week. The mayor presided, and the company numbered about thirty, including Aldermen E. G. Heard, Jennings, and Johns, Councillors Blenkinsop and Julian, Mr. R. Dobell (town clerk), and Messrs. M. Clemens and T. Battershill (the contractors).

The technical instruction and public library committee of York have arranged for the opening of the summer exhibition of pictures on Wednesday next, the 10th of July. They report that an interesting collection of works of art has been obtained, the following artists being among the intending exhibitors:—G. F. Watts, R.A., F. Goodall, R.A., W. F. Yeames, R.A., J. Sant, R.A., the late Henry Moore, R.A., Alex. Williams, R.H.A., David Murray, A.R.A., and Madame Henrietta Ronner, R.I.

The members of the Bristol Master Builders' Association had their annual excursion on Monday, when they made an incursion into West Somerset, selecting Bridgwater as their headquarters. The party left Bristol by an early train, and arriving at Bridgwater were conveyed in brakes by way of Spaxton to the grounds of Mr. E. J. Stanley, M.P., and thence to Quantock Farm, through a romantic district. Luncheon was partaken of at the farm, and then there was an excursion to Donsborough Hill and Camp, returning through Holford and and Stowey to Bridgwater. In the evening dinner was partaken of at the Clarence Hotel. The president was Mr. George Wilkins, and among the guests were the Mayor of Bridgwater, Mr. H. W. Pollard, contractor, of that town, and Mr. Stephen Ambrose, president of the Bath Master Builders' Association.

Our Office Table.

On Saturday, the 13th inst., the Society of Architects will hold its 10th ordinary meeting at Waltham Abbey, and as we hear that papers will be read by the Vicar of Waltham Abbey and by Mr. J. Arthur Reeve, whose work on Abbey Churches is well and favourably known, a successful as well as a pleasant meeting may be anticipated. This will be the last ordinary meeting of the current session, but it is probable that an additional meeting will be held in the field at an early date.

Nearly forty members of the literary and antiquarian Masonic body known as the "Quatuor Coronati" visited the City of Winchester on Saturday last, and inspected the buildings of the city, including the cathedral, the college, and the Hospital of St. Cross. Mr. F. A. Powell, F.R.I.B.A., and Mr. H. Lovegrove, A.R.I.B.A., accompanied the party from London, and they were met at Winchester by Mr. Stopher, a well-known local architect. The Dean of Winchester received the party at the cathedral, and ably explained the various portions of the building. The local arrangements generally were undertaken by Mr. Jacobs, a local antiquary, and the day closed with a dinner in the Guildhall.

Three fresh pictures have just been hung at the National Gallery. No. 1436, which is placed in No. 7 Room, is a "Vision of St. Eustace," by Vittore Pasono, an artist not previously represented in the collection. A full-length portrait of "Cardinal Richelieu," in his robes, by P. de Champaigne, has been hung on the staircase. It has been presented by Mr. C. Butler, and is numbered 1449. A Virgin and Child with Angels, by an unknown 15th-century painter of the Umbrian school, has been presented by Mr. J. R. Heseltine, and is hung on the east wall of the vestibule. The picture, which is numbered 1456, contains, in a predella medallion, portraits of our Lord, the Blessed Virgin, and St. John.

The tower of the parish church at Callington, Cornwall, was discovered to be on fire early on Tuesday morning, and only by strenuous efforts were the flames prevented from spreading to the nave. The church had, however, a narrow escape, as the oak screen dividing the tower from the nave was well alight by the time the hydrant was brought into action. Nothing could be done to extinguish the fire in the tower, which burnt itself out in less than three hours, destroying the splendid peal of six bells, cast by Pennington in 1777, and the clock erected by public subscription about thirty years ago. The tower, which is of granite, and about 100ft. in height, surmounted by four pinnacles, is seriously damaged, and the upper portion will have to be rebuilt. It is a source of satisfaction, however, that the church, which was built by Sir Nicholas de Assheton early in the 15th century, and contains a very fine organ and some ancient monumental tombs of great interest, has been saved. The fire, which broke out in the bell-chamber, is conjectured to have been due to a light left behind by some carpenters who had been engaged in restoring the woodwork in the bell-chamber on the previous day.

The collapse of several large buildings in New York city recently, resulting in the killing of a number of persons, has drawn public attention in America to the necessity for the education, examination, and registration of architects. In the case of one of the buildings referred to, a tenement house on Orchard-street, the jury held the owner, the contractor, and the building inspector to be criminally negligent in having used and allowed inferior material and workmanship. The plans also were found to be seriously defective, brick piers in the basement being loaded to the extent of 90 tons to the square foot, while the limit allowed by law was but eight tons to the foot. The architect of the building was practically unknown in the profession. The jury who investigated the circumstances in connection with the collapse of the building close their report as follows: "The most efficient check which could be placed upon practices of the kind which have led to this disaster would be the licensing of all architects, who should be required to undergo a thorough examination as to their qualications to practise an art upon which the lives of so many people depend." A fresh argument, if one were needed, in favour of the Architects' Registration Bill.

The second appeal of Mr. Neelon, contractor for the Toronto City buildings, from the decision of the lower courts, refusing him an injunction to restrain Mr. Lennox, the architect of the building, from interfering with or preventing him from carrying on the work on the building under his contract with the corporation, and to compel the defendants to deliver up possession of the works and for other relief, has been dismissed by the Canadian Court of Appeal, with costs against the plaintiff. The ground on which the trial judge refused the petition of the plaintiff was, as we mentioned in our issue of the 14th ult., p. 863, that under the contract the architect had power to dismiss the plaintiff without the consent of the court-house committee of the city council.

MEETINGS FOR THE ENSUING WEEK.

Monday.—Royal Institute of British Architects. Business Meeting. 8 p.m.

Saturday.—Society of Architects. Visit to Waltham Abbey, where addresses will be delivered by the Vicar, the Rev. F. B. Johnston, M.A., and J. A. Reeve. Train from Liverpool-street Station, 1.50 p.m.

The Society of Architects.

Founded 1884. Incorporated 1893.

The TENTH ORDINARY MEETING of the Society of Architects for the Session 1894-95 will be held on SATURDAY, July 13th, at WALTHAM ABBEY.

Members will be conducted round the Abbey by the Vicar, the Rev. F. B. JOHNSTON, M.A., and Mr J ARTHUR REEVE, who will deliver ADDRESSES on the architectural and antiquarian points of interest.

Members will leave Liverpool-street Station at 1.50 p m, and arrive at Waltham Cross at 2.26. Reduced second-class return fares (1s. 11d.) will be taken for those who notify the Secretary by the 10th inst.

ELLIS MARSLAND, Hon. Sec.

CHIPS.

The committee of the Birmingham and Midland Sanatorium adopted, on Monday, the report of the special sub-committee approving of the acceptance of the gift of the Royal Hotel, Sutton Coldfield, made by Colonel Wilkinson to be used as a sanatorium.

The foundation-stone of a new mission room was laid at Kettlebrook, Tamworth, last week. Mr. C. Starkey, is the honorary architect.

The Peterborough Cathedral Restoration Committee are issuing an appeal for £12,000 to repair the damage done by the storm in March, to secure the safefy of the west front, and to complete the repair of the transept in accordance with the recommendations of Mr. John L. Pearson, R.A. Lord Lilford has given £500, and about £1,500 has been promised.

During some excavations on Mr. Harry McCalmont's estate at Bishop's Wood, Hereford, the labourers came upon a large earthenware jar, not more than 6in. below the surface, filled with small Roman copper coins. On the following day a second vase, also full of similar coins, was found. The majority are of the reigns of Constantinus the Great and Constantius, A D. 338-360.

The reopening of St. Peter's Church, Rendcomb, Gloucestershire, after extensive additions, took place on St. Peter's day. Elaborate fittings in oak have been provided throughout, a new vestry and heating-chamber built, and the floors renewed. Mr. F. R. Kempson, F.R.I.B.A, of Cardiff and Hereford, is the architect, and Messrs. Collins and Godfrey, of Tewkesbury, the contractors.

Extensive additions are being made to the mansion of Mr. Cuthbert Quilter, M.P., at Bawdsey Ferry, on the coast of South Suffolk. Mr. Fred. Bennett, of St. Clement's, Ipswich, has taken the contract, which includes an extension of the main building and a new laundry.

The Royal Archæological Institute will meet at Scarborough, under the presidency of the Archbishop of York, from Tuesday, the 16th inst., to the 23rd. Prof. W. Boyd Dawkins, F.R.S., is president of the Antiquarian Section, and Mr. C. H. Read, F.S.A., is the vice-president. During the excursions visits will be made to Bridlington, Whitby, Beverley, Malton, Helmsley, Pickering, and Lastingham.

Mr. F. H. Tulloch, one of the inspectors of the Local Government Board, held an inquiry at the Church Sunday-school, Darton, near Leeds, on Thursday in last week, as to an application made by the Urban District Council for sanction to borrow £9,000 for the purpose of sewerage and sewage disposal. After hearing the evidence of the engineers, Messrs. Duncan and Pickard, C.E., Leeds, he visited the sites of the outfalls. The process of purification proposed to be adopted is the "carbonised refuse system," combining therewith the disposal of town's refuse with Jagger's patents.

Trade News.

WAGES MOVEMENTS.

Bradford.—The plumbers in Bradford and district came out on strike on Saturday, owing to a dispute with the Master Plumbers' Association, with regard to one of their by-laws governing the relationships of the masters and men. The point at issue is whether the men shall finish work at noon on Saturdays, or leave work in sufficient time to reach their respective shops at 12 o'clock. The masters contend that it would be unjust that they should have to pay for the time the men are walking to the shops, and, on the other hand, the men regard it as so much overtime without pay if they have to work right up to 12 o'clock, and then walk to the shops for their wages. Three months' notice was given by the masters of their intention to insist on the men working until noon, but the men declined to agree, and came out on strike on Saturday.

Glasgow.—At the annual conference of the Master Masons' Association of Glasgow and the Glasgow District of the United Operative Masons' Association of Scotland last week, it was agreed that the standard wages should be raised from 8½d. to 9d. per hour for the next twelve months, commencing from Monday, July 1st. Satisfaction was expressed by the members of the conference that the harmony which had existed for the last eleven years between the two associations remained unbroken. The working arrangement between the two associations was discussed and amended in various particulars.

Greenock.—The Greenock operative masons having asked for an increase of ½d. per hour on their wages, the masters have conceded the demand. The wages will now be 9d. per hour.

The Brine Baths Park at Droitwich, recently laid out for the convenience of the inhabitants and visitors to the baths, has been opened by Mr. John Corbett, of Impney, who has borne the whole of the expense. The park is situate in the heart of the town, on the main road from Birmingham to Worcester; but being in a valley, it is completely screened from the view of any houses or buildings save the towers of two churches. It is eleven acres in extent, is beautifully laid out with bedding plants, roses, &c., and contains lawns for tennis. There are numerous walks provided with rustic seats and chairs, and a carriage drive runs round the centre of the park. The laying-out of the ground was carried out by Mr. Davies, head gardener to Mr. Corbett.

The collection of modern pictures and drawings of the late Sir Robert Palmer Harding, of Wetherby-gardens, South Kensington, and properties from other sources, came under the hammer at Christie's on Saturday. The prices were, for the most part, disappointing, and the biddings very slow. Sir Frederic Leighton's important work, "Greek Girls Playing at Ball," one of the features of the Academy Exhibition of 1889, fetched only 700 guineas.

In order to carry out the proposal of a Protestant Episcopal pro-Cathedral in Belfast, a sum of £20,000 will be required in the purchase and clearing away of houses which stand on the intended site. When the promoters of the project approached the Corporation to ask for the Linen Hall site—far away the best in Belfast—the representatives of the Roman Catholic population also approached the Corporation with a similar request, and pledging themselves, if the site were granted, to erect a cathedral in memory of their late Bishop worthy of the city. The Corporation was thus compelled to refuse both appeals.

The manufacture of bricks, the staple industry of Sittingbourne and neighbourhood, is about to be developed by the acquisition by Messrs. Smeed, Dean, and Co., of 45 acres of brick earth at Highsted. The earth will be washed on the spot, and will be conveyed by means of pipes to the brick-fields belonging to the firm at Murston, a distance of two miles. The same firm have derived their supply of brick earth from Tong for some years, from whence the washed earth has been conveyed by pipes to their fields. In another part of the district it is contemplated to construct a small canal, to enable barges to reach the fields direct, and thus reduce the expense and the wear and tear of carting.

The tablet which has been erected in St. Nicholas Cathedral, Newcastle-on-Tyne, to the memory of Robert Roxby, the fisher poet (1767-1846) was unveiled on Friday. The cost of the memorial has been defrayed by public subscription. It has been placed on the wall at the west end of the cathedral, near the north door, and in the space containing already memorials of James Archbold, who was mayor of Newcastle in 1846, the late Ald. Joseph Forster, and Sir Leonard Greenwell. Mr. Robert Beall was the sculptor.

W. H. LASCELLES and Co.,
121, Bunhill Row, London, E.C.

TELEPHONE No. 270.

HIGH-CLASS JOINERY.
LASCELLES' CONCRETE.
Conservatories & Greenhouses.
WOODEN BUILDINGS.
BANK, OFFICE, & SHOP FITTINGS.
CHURCH BENCHES & PULPITS.

ESTIMATES GIVEN ON APPLICATION.

HAM HILL STONE.

The attention of Architects is specially invited to the Durability and beautiful Colour of this material.
Quarries Well Opened; Quick Despatch Guaranteed; Stonework Delivered and Fixed Complete. Samples and Estimates Free.
Address:—
THE HAM HILL STONE COMPANY,
NORTON, STOKE-UNDER-HAM, SOMERSET.
London Agent:—
Mr. E. A. WILLIAMS, 16, Craven-street, Strand, W.C.

WM. OLIVER & SONS,
MAHOGANY, WAINSCOT, WALNUT, TEAK, VENEER, and FANCYWOOD MERCHANTS,
120, BUNHILL ROW, LONDON, E.C.

The most extensive Stock of every kind of Wood in Planks and Boards, dry and fit for immediate use.

TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender; it adds to the value of the information.

Burghfield.—For studios, for Mr. J. Dews, Burghfield. Mr. J. S. Dodd, Reading, architect:—

Goodchild	£237	0	0

Amersham.—For the erection of a villa residence near Amersham Station, for Mr. J. Sladen. Mr. Ernest Luckett, Aylesbury, architect:—

Sherwin, H. H., Waddesden	£920	0	0
Darlington, G., Amersham	900	0	0
Read, C. W., Watford	869	0	0
Brown, E. J., Watford	845	0	0
Grist, S., Bierton, Aylesbury	798	18	0
Wallis and Sons, Chesham	795	0	0
Grimsdale, Aylesbury	786	0	0
Siarey, Aylesbury	722	0	0

Chepstow.—For building a new boys' school, caretakers' house, offices, boundary walls, playground, &c., at Chepstow, for Chepstow Local Board:—

	A.	B.	C.	D.
Phillips, J., Chepstow	£2,043 12 0	£410 8 0	£721 12 0	£3,175 12 0
Price and Son, Tidenham and Chepstow	1,987 10 0	346 10 0	790 0 0	3,124 0 0
Whalley, W. C., Chepstow	1,997 0 0	358 0 0	670 0 0	3,025 0 0
Bowers, W.	1,987 19 0	408 15 6	599 18 6	2,996 13 0
King, A., and Son, Gloucester	1,927 0 0	400 0 0	667 0 0	2,994 0 0
Williams, J. D., Knighton. Radnor	2,000 0 0	380 0 0	600 0 0	2,980 0 0
Church, W., Bristol	1,900 0 0	373 0 0	593 0 0	2,866 0 0
Hatherley and Carr	1,908 0 0	369 0 0	581 0 0	2,858 0 0
Drew, W., and Bros., Chalford, Gloucester	1,876 0 0	346 0 0	627 0 0	2,850 0 0
Cowlin, W., and Son, Bristol	1,800 0 0	433 0 0	550 0 0	2,783 0 0
Wilkins, G.	1,740 0 0	345 0 0	595 0 0	2,680 0 0
Linton, J., Newport, Mon.*	1,700 0 0	315 0 0	530 0 0	2,545 0 0
Jenkins, J.	1,695 0 0	308 0 0	487 0 0	2,490 0 0
Architect's estimate	1,880 0 0	353 0 0	500 0 0	2,733 0 0

A.—School. B.—Cottage. C.—Drains, Fences, Offices, &c. D.—Total.

* Accepted, subject to the approval of the Education Department.

Colchester.—For proposed shop and premises at No. 4, Wyre-street, Colchester, for Mr. S. Balls, 40, Salisbury-road, Colchester:—

Near, Colchester	£1,130	0	0
West, E., Chelmsford	867	0	0
Dupont, F., Colchester	825	0	0
Beaumont, R., Lexden	816	0	0
Chambers, W., Colchester*	759	0	0

* Accepted.

Chelsea.—For the erection of a new choir vestry to St. Saviour's Church, Walton-place, Upper Chelsea, S.W. Messrs. E. Geldart and J. Randall Vining, of 89, Chancery-lane, W.C., joint architects:—

Foster and Dicksee	£330	0	0

Dartford.—For works of painting at the workhouse infirmary:—

Miller, P. (accepted)	£215	0	0

Deptford.—For new factory, Grove-street, Deptford, for Messrs. A. G. Scott and Co., Ltd. Messrs. Tolley and Son, 20, Budge-row, Cannon-street, E.C., architects. Quantities by Mr. F. H. A. Hardcastle, 5, Old Queen-street, Westminster, S.W.:—

	Scheme 1.	Scheme 2.	Scheme 3.
Waddington & Co.	£1,725 0 0	£3,493	£2,335 10 0
Gould and Brand	1,690 0 0	3,448	2,256 0 0
Bulled and Co.	1,690 0 0	3,420	2,208 0 0
Leney, H.	1,655 10 0	3,347	2,214 0 0
Falkner, J. W.	1,633 0 0	3,316	2,196 0 0
Carmichael, J.	1,615 0 0	3,290	2,162 0 0
Munday and Son	1,612 0 0	3,290	2,171 0 0

Dulverton.—For the construction of Perry-road, according to the plans and specifications of Mr. W. J. Willcox, Bath, Somerset County Surveyor:—

Facey, Taunton	£1,490	0	0
Gunn and Tarr, Dulverton	1,138	15	10
Smith, Minehead	1,275	0	0
Bond and Hitchcock, Taunton*	1,110	0	0

* Accepted.

[These tenders do not include the cost of two steel bridges, respectively of 40ft. and 50ft. span.]

Exeter.—For the erection of a new wing to the Devon and Exeter Hospital, for 75 beds, exclusive of heating, plumbing, according to plans prepared by Mr. Charles Cole, architect:—

Gillard, J. R., Exeter	£9,888	0	0
Trevena, W., Plymouth	9,496	0	0
Lapthorne and Co., Plymouth	8,000	0	0
Julian, J., Truro	7,983	0	0
Phillips, A. E., Woodbury	7,513	0	0
Setter Bros., Exeter	7,470	0	0
Westcott and Austin, Exeter	7,400	0	0
Stevens and Son, Exeter	6,997	0	0
Mudge, E., Exeter	6,957	0	0
Pratt, N., Clyst St. Mary	6,939	0	0
Gibson, W., Exeter	6,800	0	0
Ham and Passmore, Exeter	6,608	0	0
Herbert, G., Exeter	6,508	15	0
Tree and Bolley, Exeter (accepted)	6,445	0	0

Farnborough, Hants.—For new dining-room, &c., at Duns Cottage, for Col. Dorling. Mr. W. Trevena, Farnborough, architect:—

Smith, Farnborough	£530	0	0
Murrell. Blackwater	475	10	0
Kemp, Frimley	473	0	0
Mundy, Basingstoke (accepted)	435	0	0

BURMANTOFTS SPECIALTIES

TERRA COTTA
Buff. Tawny red. Red & Grey colors.
FAIENCE
Constructional & Applique for Exterior and Interior Decorations.
TILES
for all Purposes

GLAZED BRICKS
in Burmantofts Ivory White & a Good Selection of Colors.
SANITARY WARE
HOLROYD'S PATENT TROUCH CLOSET
POTTERY
Pedestals. Vases. Flower Pots. &c. In Majolica. Pate Sur Pate ETC ETC

Produced at the Burmantofts Works
of the LEEDS FIRECLAY Co. LTD.
Burmantofts LEEDS.

LONDON offices and Showrooms
16 Charterhouse St. E.C.

TELEGRAPHIC ADDRESS
BURMANTOFTS LEEDS and
BURMANTOFTS LONDON.

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXIX.—No. 2114.
FRIDAY, JULY 12, 1895.

THE FORTHCOMING A.A. GLOUCESTERSHIRE EXCURSION.

THE architectural interest of the Cheltenham district, which the Association proposes to visit this summer, hardly lies on the surface. Last week we gave a copy of the official programme. To-day some few notes from the district may be interesting. Cheltenham itself is not a place to throw the artist into transports; his natural desire would rather be, like that of Dromio of Syracuse about his supposed wife, to set it on fire and run from it by its own light. With Tewkesbury, Chastleton, and Broadway the case is, of course, very different. The days devoted to them, as well as to Winchcombe, Pershore, and Gloucester, will be well spent; but East Gloucestershire also contains a great many small places worth knowing, and little known. The villages do not show themselves from afar—as those, for instance, of Northamptonshire do. There is no hill, like the well-known one between Kettering and Thrapston, from which thirty towers and spires can be counted, all worth seeing. In the well-wooded west country the churches are often inconspicuous. They are widely scattered, and they are hidden amongst the valleys and the trees. Still more closely hidden are the other structures worth notice which cluster round them, so that a stranger may pass very near to things which he would gladly have examined, and yet may never suspect their existence. We may point out a few such things in the easternmost section of the district now about to be explored.

The very fine old house at Chastleton—well preserved and little altered, if it still remains as it was some fifteen years ago—is sure of its full share of attention. The adjoining church was also at that time extremely interesting. Its flooring tiles alone would have repaid the student for his walk; but if the project which was then talked of has since been executed, he may perhaps now find it difficult to distinguish the new ones from the old. Restoration need not be falsification, though it sometimes is so, and frequently attempts to be. One advantage which arises from these excursions of our future architects must surely be to sicken them with the word "restoration" altogether. The student who comes on a church which has only been repaired by some such harmless person as the village carpenter, rejoices as if he had found great spoil. But this does not happen every day. It is only those of us who are growing old who can realise what the interest of ancient work used to be. The glory has departed from most of it, and the parsons and the architects must divide the responsibility.

Still, it was not every restored church that was ruined. An architect here and there, like the late G. E. Street, had the knack of leaving an old building better worth looking at than he found it: not only because the new which he added had a value of its own, but because he brought the old to light in cases where it had long been hidden. Thus, at Shipton-under-Wychwood, a few miles from Chastleton in the direction of Oxford, there may be seen, since Mr. Street restored the church some 35 years ago, a good stone pulpit, which, it is said, had been boxed up for nearly a century inside the old-fashioned "three-decker." It is of Perpendicular date, polygonal on plan, with a panelled lower stage, curving over to carry the floor; and a parapet or inclosure above, with square buttresses set anglewise at each corner. The buttresses end in gabled and crocketed pinnacles. Between them, on each face of the polygon, is a sunk tracery-panel of two lights, with a crocketed ogee head. The parapet is finished with a moulded coping.

The archæologist who scorns such modern things as these has not far to go for something older. Near Long Compton—three miles or so from Chastleton in a north-easterly direction—he will find the ancient circle called the Rollright Stones, and he may try whether the local belief is correct, that it is impossible to count them twice alike. There are from 90 to 100 fragments embedded in the soil; but being much split and cracked, what looks like one stone from, say, the north side of it, may be reckoned as two or three when it is seen from the south. In a field not far off are several much taller blocks, called the "Whispering Knights." The highest of all, according to local tradition, would have been King of England, if he could only have seen Long Compton village from where he stands. Unfortunately, it is out of sight from this point, though it comes into view a few steps further on. Through this circumstance—as well as through the additional one, that Long Compton had probably not yet come into existence—the unfortunate knight was unable to discern it, and the consequence was that he and his companions were turned into stone. There is a large barrow not far off, and other remains, so that, altogether, the neighbourhood seems to have been a busy one in prehistoric times. At Swell Wold farm, about half-way between Chastleton and Cheltenham, great numbers of neolithic weapons have been found—arrow-heads, spear-heads, scrapers, and the like—often of very delicate workmanship, and little injured by time or accident.

The railway from Cheltenham to Banbury, which crosses the West Midland at Chipping Norton Junction, runs for three miles—namely, from Bourton-on-the-Water to Stow—almost by the side of the Great Roman Fossway, which ended at Bath. Late Roman remains are common here: small coins of Valens, Valentinian, Constantius, and Constantine the Great are often met with. There is an old camp at Bourton, and adjoining it a ground called the "Bury Field," from the number of skeletons which have been dug up there. The gravel soil has kept many of them in wonderfully good preservation; even the small bones of the fingers and toes are often uninjured, and the teeth are remarkable for their soundness. Bourton was formerly a very pretty village, with the Windrush brook flowing rapidly through on its way to the Thames, and four or five bridges across it to connect the houses on one side with those on the other. Before railways came, there was not a brick to be seen in Bourton. The houses were stone-walled and stone-slated. The old Gothic church had, as it still has, one of the oddest and ugliest of quasi-Classic towers, put up about A.D. 1700, with pinnacles and a leaden dome. Internally, there were plaster ceilings and other Italian details, the result, apparently, of a desperate effort to copy Sir Christopher Wren, and to follow what then was the fashion. The church has in recent years been restored by Mr. T. G. Jackson.

Stow-on-the-Wold, the next station on the Cheltenham and Banbury line, has some interesting fragments of domestic architecture. Amongst them is an Early Gothic doorway. The old hoods to the house entrances, too, are noticeable. They consist of projecting flagstones, moulded round the edge, and boldly corbelled out. There is a curious pargetted pattern—though pargetting is by no means common in this rubble district—on a building near the top of the town. Stow is three miles from the Adlestrop station on the West Midland, and very near to this is the disused church of Oddington, with a low Perpendicular tower in the position of a transept. This is not an unusual arrangement hereabouts. The old distemper decorations, the lining-out of the wall-plaster, with suggestions of joints, may still be seen inside, if damp and neglect have not recently destroyed them. Half a mile across the meadows from Oddington is the village of Daylesford, once the residence of Warren Hastings. Its little cruciform church was one of Mr. Pearson's early works. It has a square spire, with a marked *entasis*. Bledington is the village adjoining Chipping Norton Junction, two or three miles along the line from Adlestrop. Its church, considerably out of repair, and full of the handiwork of many periods, including the period of churchwardens, used to be a very interesting one. We hope it is so still; but it has now, we believe, been restored. There was a large distemper figure of St. Christopher on the north wall. There were some good Perpendicular bench-ends, and other old woodwork, with traces of colour on it. The glory of the building, however, was its stained glass. Much of it was damaged and displaced, but some of the upper windows were fairly perfect. They were chiefly memorials of departed parishioners; one, with kneeling figures, commemorated Thomas Andrews and Agnes, his wife, who departed this life in 1470.

Near Bledington is Icomb, where there is a small church with a saddleback tower, and a group of three lancets—well treated internally—in the chancel gable. There is a similar group in the east end of Wick Rissington Church, about a mile off; but here the external treatment of the lancets is odd in the extreme. They have lozenge-shaped panels over them, and the dripstones are contorted round the arches and the panels in a way which is more singular than beautiful. At Little Rissington are the remains of a bell-cot over the chancel arch. Lower Slaughter, on the outer side of Bourton, used to have a saddleback tower. It was pulled down some 20 years ago to substitute a spire of the "pretty-pretty" type, quite out of place in the neighbourhood. Upper Slaughter, a mile beyond, has much interesting detail of the 12th century or "Transitional" date. Besides the church, there are some houses worth notice there. All these villages, compared with Chastleton, are more or less in the direction of Cheltenham. Near that town is Charlton Abbots, where there is one of the smallest churches in the county, and a fine mullioned and gabled house, now attached to a farm. The larger rooms, not very many years ago, retained their carved and panelled wainscot lining, of great beauty. But it did not please the bucolic mind, and it was torn out and cast away, that there might be a dining-room papered and corniced in the "modern" style. A little taste, like a little learning, "is a dangerous thing."

The last skirmish in the Civil War of Cromwell's time took place at Oddington, near Adlestrop. There was also fighting at Slaughter, though the name of the village does not seem to have resulted from any battle of that period. There is a tradition that after some great fight, nobody knows when, a man in armour rode into Bourton-on-the-Water, still sitting upright on his horse, though his head had been cut off. Memories of the Danes, too, linger in the neighbourhood. A farm called "Woeful Lake" is said to get its title from the tinge of blood in the water there after some great encounter. Not far from it is another which bears, from olden times, the name of "Starve-all," suggesting, as also does a third called "Empty Cupboard," that agricultural distress prevailed in much earlier centuries than the 19th. These uninviting titles, however, belong to the hills. There the oolite is close to the surface, the ground is shallow, the trees are few, and the fields have dry (i.e., mortarless) rubble walls instead of hedges. In the valleys the case is very different.

Each has its trout stream, bordered by rich meadows with abundant foliage. We are in Shakespeare's country, for Stratford is only sixteen miles from Chastleton, as the crow flies. It is not only Master Shallow, "in the county of Gloucester, justice of the peace and Coram," who belongs to the district and speaks its dialect—it is really a Gloucestershire valley, and no Bohemian one, that forms the back ground to the comedy and poetry of the "Winter's Tale." The clown and the shepherd, Mopsa and Dorcas, converse in the language of the Cotswolds. Eyes still living have seen Autolycus, disguised, it may be, as a morris dancer, it may be as a "Cheap Jack," and even Perdita herself—"too noble for this place," though looked on for the moment as only a "queen of curds and cream"—may have trodden the paths by the Windrush and the Evenlode.

STRIKING CENTRES OF ARCHES.

THE oldest, and probably the simplest, although not by any means the most accurate, method of striking, easing, or lowering the timber centring of arched bridges consists in the employment of wedges. These are driven in under certain parts of the framework in positions which readily allow of their being driven out again when the arch is "turned," the stonework or brickwork thoroughly well set, and the time arrived for gently lowering the whole superstructure down to its permanent bearings. The whole operation was a most delicate one, and demanded a very accurate and precise adjustment of all the parts of the centring to carry it out successfully. Great care and skill were required on the part of all those engaged on the work, from the superintending architect or engineer down to the men who loosened or drove out the wedges with their hammers and beetles. In striking the centres of Waterloo Bridge pendulum beetles were used, which were swung back to give them a sufficient amount of impetus, and then delivered their blows very much after the fashion of the ancient battering rams. Obviously the great object to be aimed at is that the whole of the arch should be lowered at exactly the same moment of time, and to exactly the same amount. It is just here where the principle of the arch comes into play. A partial or small irregular settlement, which would be productive of no permanent damage to an ordinary trussed roof or horizontal girder, might be fatal to an arched rib of metal, rings of brickwork, or voussoirs of stone. Moreover, when the arch is constructed of either of the latter two materials, the rebuilding of it is a troublesome and expensive work. It is true that an arched rib of either iron or steel would not be affected to the same extent, unless the settlement were one of magnitude, as those of stone or brick. This immunity is due to the fact that although the arch of metal depends upon the same principle as all those of a different material, yet iron and steel are both capable of withstanding tensile stresses to which a threatened collapse would expose them.

It is not always possible, in building arches of any material, to obtain supports for the centring except at or near the points of springing—that is, at the piers—if the bridge consists of several independent spans, or at the abutments if there should be only a single span. This led, as the easiest way out of the difficulty when the thoroughfare had to be kept clear under the bridge during the whole time of its construction, to supporting the struts—which were placed in an inclined position, abutting against the horizontal chord of the centre—upon the corbels, footing courses, or any projections which the masonry or brickwork might offer. The centres of the bridge already quoted were supported in this manner; the "striking" plates, as they are termed, were longitudinal, and were carried upon struts of timber, which rested upon the several steps or offsets of the stone piers and abutments. This mode of supporting centres is a vicious one, and it is worth noting that most of the centres designed by so distinguished an architect as Perronet were conspicuous for this grave defect. In spite of the best precautions observed, and all the care taken to avoid unequal and insure isochronous settlement of an entire arch, the two conditions are rarely perfectly attained. It is impossible when the ordinary wedges are used, unless the span of the arch is comparatively small, to insure that they shall be "struck" all in one piece, so to speak. Some of the wedges must have less pressure on them than others, some have not perhaps been originally driven home so tight and closely as others, and again some may have—as they undoubtedly do—become loosened and slack during the progress of the works. They do not, therefore, all require the same amount of violence to ease them, and this want of uniformity in the force required renders the structure liable to shocks of a very uncertain and sometimes of a dangerous character. Before quitting this part of our subject, it should be stated that occasionally it becomes advisable under exceptional circumstances to ease—not to "strike," in the full meaning of the term—the centres of an arch at some particular point and not at others. A judicious lowering at the right moment of this description will frequently do a great deal to preserve the true lines of an arch, and prevent any twisting or unevenness in its soffit, which is very objectionable, particularly in a skew arch built with spiral courses.

FIG. 1.

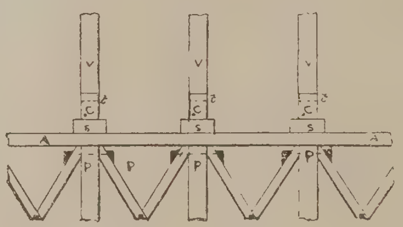


FIG. 2

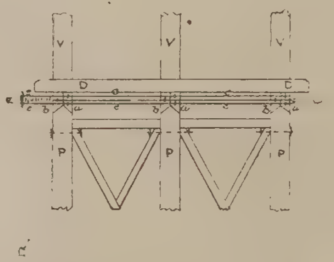


FIG. 3.

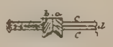


FIG. 4.

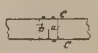
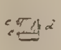


FIG. 5.



A very ingenious plan for insuring the accurate and gradual easing of the centres of an arch was adopted at the building of the bridge of Austerlitz in Paris. The general arrangement of the whole method is represented in Fig. 1, in which P P is a strong timber platform, strutted and braced together in the ordinary manner, and carrying at the top, on the pillars P P P, a horizontal balk or stringer, A—A. The joists and planking framed in between the stringers are not shown in the figure, as they are not needed for further illustration. Upon the horizontal balk exactly over the pillars are fixed circular sockets or discs, S S, and to them are solidly attached the plate iron cylinders C C C, rather more than 1ft. in diameter. Each of these is filled with clean, sharp, pure, dry sand, up to the height shown at *t*, and upon the sand rests the foot of the upright posts constituting part of the framing of the centre. The joint between the foot or end of each upright post, and the interior of each cylinder, is made good by a quick-setting cement. At a short distance above the base of the cylinders there are four holes bored at the same height round the periphery, having a diameter of $\frac{7}{8}$in These holes are plugged with corks during the building of the bridge. When the centres are to be struck, the corks are removed, and the sand gently, uniformly, and very gradually flows out, causing a proportionally slow and easy lowering of the whole superstructure. An advantage of this method is that, should it become necessary to suspend or arrest the striking operation at any moment, it can be at once readily accomplished by the re-insertion of the corks. No doubt the same operation could be also stopped in instances in which ordinary wedges were used, but not to any degree of accuracy and precision approaching that insured by the more delicate sand process.

Instead of placing the wedges in positions which are not readily accessible, it has been proposed to place them as represented in Fig. 2, and effect their lowering by means of a pair of screws working in opposite directions, parallel to one another. The arrangement can be applied to any principle or form of centre, and we have shown it in Fig. 2 adapted to the example in Fig. 1. Upon the top of the uprights P P P, which are themselves cut to the form of a wedge, are fastened a pair of wedges, *a b*, those figured *a* facing in one direction, and those figured *b* in another. The wedges *a* are kept in position by a pair of bars, *c c*, which are connected to the head of a screw at E and to the wedges by the cleats shown in Fig. 2. A third bar or rod, or any other convenient section of iron, is similarly attached to the wedges *b*, and terminates also in a screw at *d*, from which it is evident that the two former bars *c c* are at liberty to slide freely over the wedges *b*, and the bar *d*, placed between the two other bars *c c*, can also slide along the wedges *a a*. On the wedges is placed the cross-beam D, or striking-plate, and upon it the vertical members V V V of the centre, as shown in Fig. 1. During the building of the arch the screws will be tightened until the opposite wedges are in close contact. It is evident that if now the screws be slackened, the bars *c c*, which are attached to one of them, will move the wedges *a a* in one direction, and the bar *d*, which is attached to the other, will move the wedges *b b* in the contrary direction. They will be thus separated from one another, will slide down the chamfered shoulders of the uprights, carrying the striking-plate with them, and will very gently and gradually allow the whole centre to subside. There are a double set of bars or rods, one on each side of the wedges, as shown on plan in Fig. 4. A longitudinal section is given in Fig. 3, and a cross-section in Fig. 5. Manual labour is all that is required to manipulate the screws, so that a uniform and simultaneous lowering of the centres can be accomplished with facility, and in cases where necessary, the operation can be suspended at any one time and renewed at another. There is no doubt that either of the two methods described and illustrated allows of the workman having a command over the whole striking of the centres of a bridge, which he cannot have under the old system of the employment of a large number of wedges, which depend altogether, in the first place, for their adjustment, to a succession of violent blows; and in the second, to their final position, to the same rough and uncertain agency. Both the sand process and that subsequently described are inexpensive, and the whole operation is conducted in a quiet, scientific manner, which contrasts favourably with the violence which it was absolutely indispensable to have resort to when centres and the striking of them were designed and built half a century ago.

Under the old "contract system," which had a widely different signification to that which pertains to the same phrase of the present day, the engineer or architect had little or nothing to do with the means employed by the contractor to execute the work included in his contract. For the time being the contractor was master of the situation, and so long as he carried out the works intrusted to him in a proper manner, and in accordance with the provisions of the specification and the contract agreement, he was at perfect liberty to employ any *modus operandi*—any means to the end—that he considered best for his own interests. No doubt, if any of his means to the end—that is, his temporary works—were of a character likely to be dangerous to the safety of the public, the architect or engineer would point it out to him, and request him to either secure or remove it; but there their power ended. An instance came under our own experience: it was before the days of local inspectors, when a contractor put up a temporary wall to carry half the weight of a gantry, the other half, or other pair of wheels, being supported by staging. There is no question but that the wall was too weak even for a temporary structure, and so thought the superintending engineer. He accordingly ordered the contractor to strengthen it or pull it down, which he declined to do, and in justification observed that by the terms of his contract he was liable for all "accidents, injuries, and damages to persons or property during the construction of the works," and that he had accepted the risk. There was no more to be said, and the wall did perform its duty satisfactorily until the termination of the contract. It is quite certain that we should never have had such men as Brassey and others, who made the name and reputation of the English contractor famous throughout the world, had there not been conceded to them a tacitly admitted *carte blanche* respecting the means they might employ in carrying out their gigantic undertakings.

NOTES FROM EDINBURGH.

BUILDING operations, though somewhat retarded by the unusually long and severe frost, have not suffered from the weather since, which has been unusually fine. Plasterers have had a slight advance, and the mason's wage is from 9d. to 10d. per hour. The transactions of the Dean of Guild Court do not indicate that much is doing in the best class of dwellings; but the increase in tenements for the labouring and middle classes is steady, and there has been the usual amount of alterations in the last six months. The Caledonian Railway Station, which is all but completed, looks out on the western extremity of Prince's-street, with imposing magnitude; but the alterations of the east end, for which preparations have been making for some time, will eclipse it in many ways, and some people of lively imagination think that the new hotel will ruin the aspect of this part of Princes-street by throwing the Register Office, Post-Office building, and even the Calton Hill into the shade.

The North Bridge, so long associated with the New Town, must go to make convenient room for the increasing railway traffic, though as sound as when it was built 150 years ago. In room of the fairly conspicuous portion of the street at the north-west extremity, another and a much more ornate building, still loftier, will take its place, having the offices of the N.B.R. company below street-level, and a hotel which will, by all accounts, surpass all the other large hotels of the city, both in the extent and splendour of its accommodation. The cost of the new bridge, estimated at £80,000, is to be defrayed partly by the railway company to the extent of about £30,000—not considered a very fair or good bargain for the city, which, at great cost, widened the bridge about twenty years ago. It is, however, a small figure compared with the large expenditure of the company on the station, offices, and hotel, only many think that this is not the last or least of the sacrifices which will be made to satisfy the contingent necessities of the N.B.R. traffic. Already a scheme for the reconstruction of North Bridge-street on the south, to match the wider bridge, has been roughly estimated, and if it can be made to yield anything like a reasonable return, it would doubtless be a desirable improvement.

Another and more necessary improvement scheme, and one which appears to be in a fair way to be carried out before long, is the reconstruction of the Municipal Building. Since 1886, when competitive designs were invited for new buildings on the present site without any practical results, some slight improvements have been made in the interior arrangement, and old adjoining property on the west side of Exchange-square has been purchased by the authorities with a view to future extension. The Lord Dean of Guild and the city architect have been considering the case, and have succeeded in putting into shape a plan by which, at a cost less than that of any of the many competitive designs, sufficiently good accommodation can be provided. The principal details, with plans and elevations, are submitted for private circulation in a volume issued by the city council. This contains also a history of the city municipal offices and their migration from the earliest date till they found a decent habitation in Exchange-square. This is compiled from ancient records, and is illustrated by views of ancient buildings, and is probably the fullest account existing of the very curious and generally inadequate accommodation provided for the transaction of the city affairs. Whilst the main object of the scheme has been the providing of more ample and necessary additional accommodation, the architectural aspect of the whole has not been neglected. The new wing, forming the west side of the square, gives office accommodation on the ground floor, and a good council-chamber, about twice the size of the present one, above. The style of the High-street front, which is Palladian, with pilasters and large pediment in the centre of the south front, is retained for the Square. The north elevation, which is conspicuous in Cockburn-street by reason only of its great altitude, has been substantially built, and is retained, but with alterations externally which alter it greatly for the better, the uniform monotony of the fenestration being broken up, and a tower erected at the eastern extremity. The Classical features of this elevation are not so pronounced as to be inconsistent with the altitude and style of the surrounding buildings of Cockburn-street, and probably nothing better could be devised along with economical retention of the existing walls. The cost is estimated at £50,000.

The Prudential Assurance Company have obtained a warrant to take down the London Hotel, a large edifice at the south-east corner of St. Austin-square. The architect for the new building is Mr. Waterhouse, R.A., and the work is proposed to have an exterior carried out in terracotta details. If so, it is to be hoped that the colour will be something more consistent with the grey stone around it than the usual brick-red. The tenements of this square have been in great parts altered from the original design, which was, like that of Prince's-street, very commonplace, with exception of the Royal Bank. There are fine specimens of Classic architecture in the Scottish Widows' office and the British Linen Bank, and there is some regret that the new addition should be erected in other material than stone. But as the plans have not yet passed through the Dean of Guild Court, it is premature to criticise, and the name of the architect is a kind of guarantee that the interests of the city architecture will be safe enough.

The co-operative system has been a potent factor in the matter of building operations, and has been making advances which have been making themselves appreciated as one after another of their large buildings are erected. Generally they are conspicuous, not only by reason of their magnitude, but also by their respectable appearance as additions to the City. The Chancellor Flour Mills is an effective sample of massive and well-ordered design; and the new Stores at Tollcross, costing £80,000, are a great improvement in that quarter. These are the property of the St. Cuthbert Association, which has also some rather ornate buildings in Fountainbridge and Spittal-street.

The Northern District Association is also flourishing, and has recently purchased for £14,000 the small property of Patriot Hall, where they are erecting a large bakery, and stores for that department, with all modern improvements. The edifice is in brick with hollow walls, lined inside with glazed white bricks, and stands behind the street, where there is ample and convenient building space for the erection of the shops and stores, at present inconveniently housed in St. Stephen-street.

The installation of the electric-light has at last been carried out, and the number of electrical engineers is already vastly multiplied. The light has not yet found its way into the churches or any public halls, where, in the interest of ventilation, it would be a very great improvement; but many large business premises have adopted it. The consumption of gas, however, is not diminishing, gas-engines and gas-stoves being more and more appreciated. The price of illuminating gas is still high, being 3s. 4d. per 1,000c.ft.

The new premises of Jenner and Co., in Prince's-street and St. David-street, are all but completed, and have been cleared of the hoarding and scaffolding for some weeks. They form what may well be described as the most ornate building in the city, always excepting the Scott Monument, which still holds its own. Dilettante critics, whose ideal of fine architecture is formed on the Parthenon and the proportions of the Early Renaissance of modern Athens, have dubbed the new addition "horrid," and have included in the criticism the new hotel, which apparently is in the same florid style; but there is much more to approve in the addition than such critics can find to censure. The whole is, at least, a splendid specimen of masonry, in one of the best and most beautiful freestones, and the skill and perfection with which walls so cumbered with ornamental detail have been completed, is an enduring monument which speaks for itself. The large amount left to be expended in the ornamental on this edifice places the architect nowadays at some disadvantage, as the chances of serving any apprenticeship in architecture if such costly erections should become general are few and far between. The most conspicuous defect is the lack of unity in the arrangement of details, and, indeed, of artistic design. The ornament follows, as it ought to do, the lines of the flooring and the window openings; but the building at a distance, where detail has disappeared, is as commonplace as any in the street, and even more so than its neighbours. The pillar and pilaster decoration is overcrowded on the Princes-street and corner, leaving great portions of the long St. David-street frontage so plain as to give it the aspect of a different edifice altogether; and a more equable distribution of these details, and some variety in the windows, would have secured a more consistent and imposing whole. The pillars are heavy, and the podium too slender, and weaker in appearance still by being carved over the surface, and generally the surface-carving is of the vapid Elizabethan kind, suggesting nothing beautiful in earth or sea or sky. Heraldic without the heraldry, and put on without special need where-ever the plain surface is left, or as if, as Mr. Gladstone once put it, it were not decent to leave a square foot of surface naked. The projecting stairs on the St. David-street side are bald, and finish with solid and clumsy square tops; and there is a very original form of turret crowning the corner, compounded of chimneys, Tudor pinnacles, flying buttresses, niches, and figures, which is intended to be seen to advantage only on the front. These eccentricities, however, are pardonable from their novelty, and the edifice is erected as a sample of street architecture—not to edify the public or improve the public taste, but to make them gape and stare at the grand advertisement. The interior detail is much more consistent. No expense has been spared in the grand saloon, which is, both in material, decoration, and convenient arrangement, far the finest in the city.

CLASSIC DETAILS AND THEIR APPLICATION.[*]

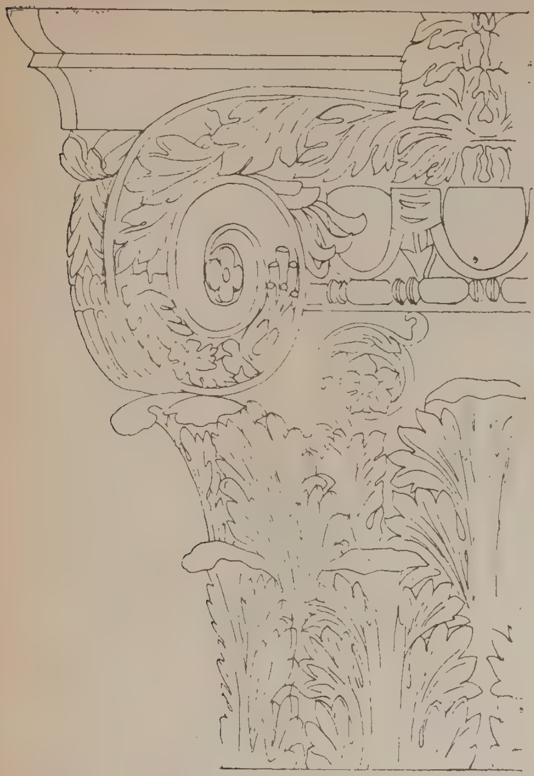
By G. A. T. MIDDLETON.

III.—CLASSIC TIMES: THE CORINTHIAN ORDER.

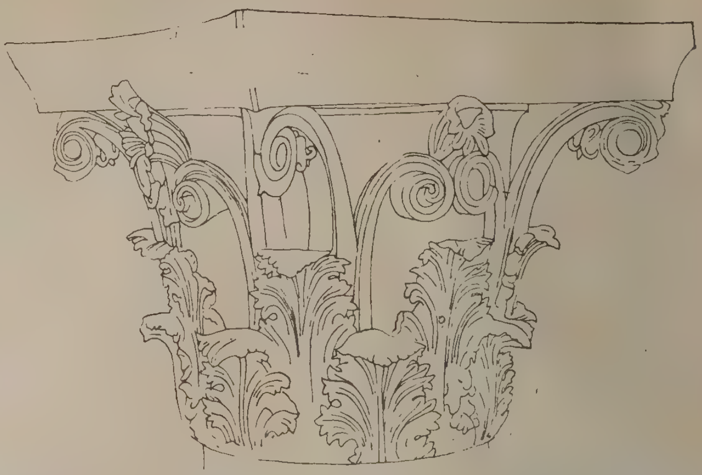
ALTHOUGH the Corinthian Order differs from the Ionic in little else than the capital, its origin is apparently distinct, and can be much more readily traced. In the cases in the Konyunjik Galleries in the British Museum there are several carved ivory ornaments of distinctly

---

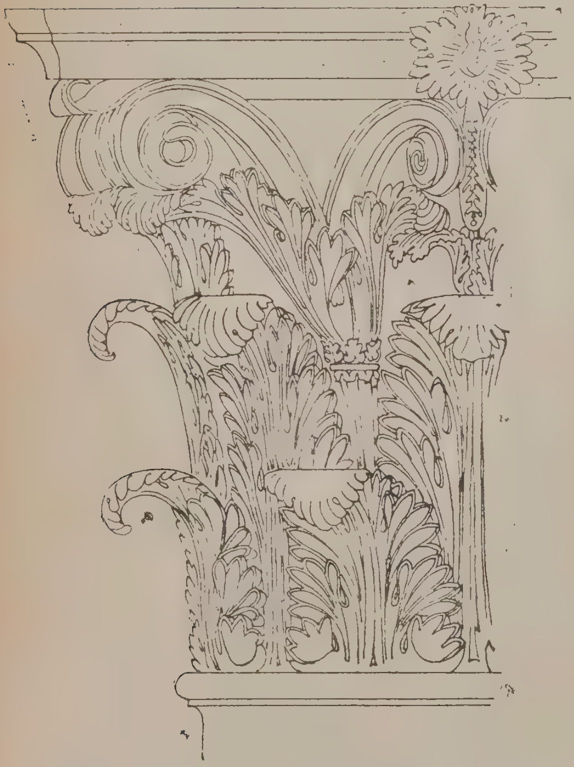
[*] All rights reserved.



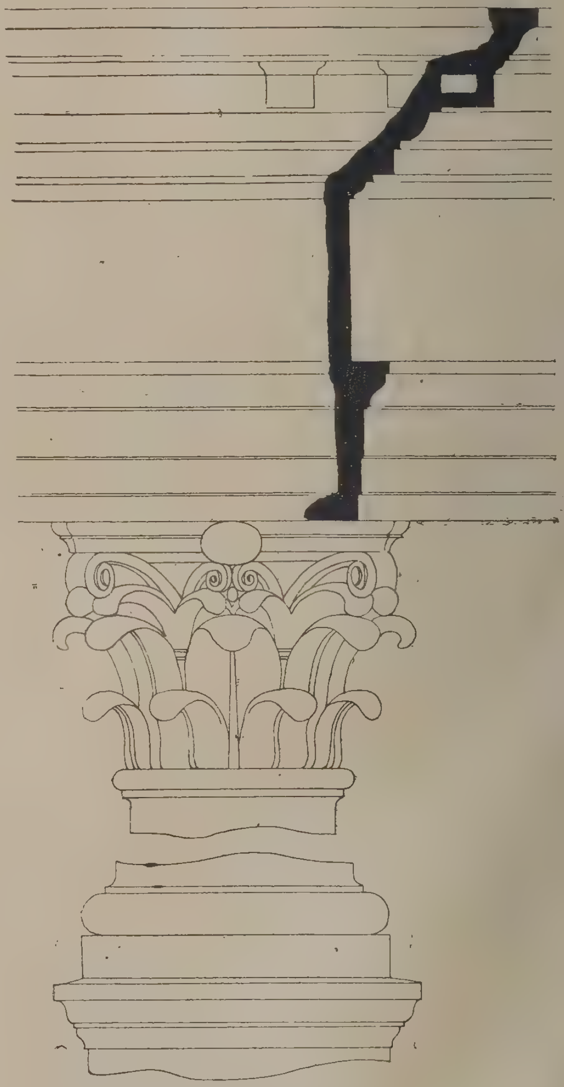
HALF OF COMPOSITE CAPITAL, ARCH OF TITUS, ROME.
(From TAYLOR and CRESY.)



CORINTHIAN CAPITAL FROM THE THOLOS AT EPIDAUROS.
(From a Photograph by Mr. R. E. SMITH, published in the R.I.B.A. *Transactions.*)



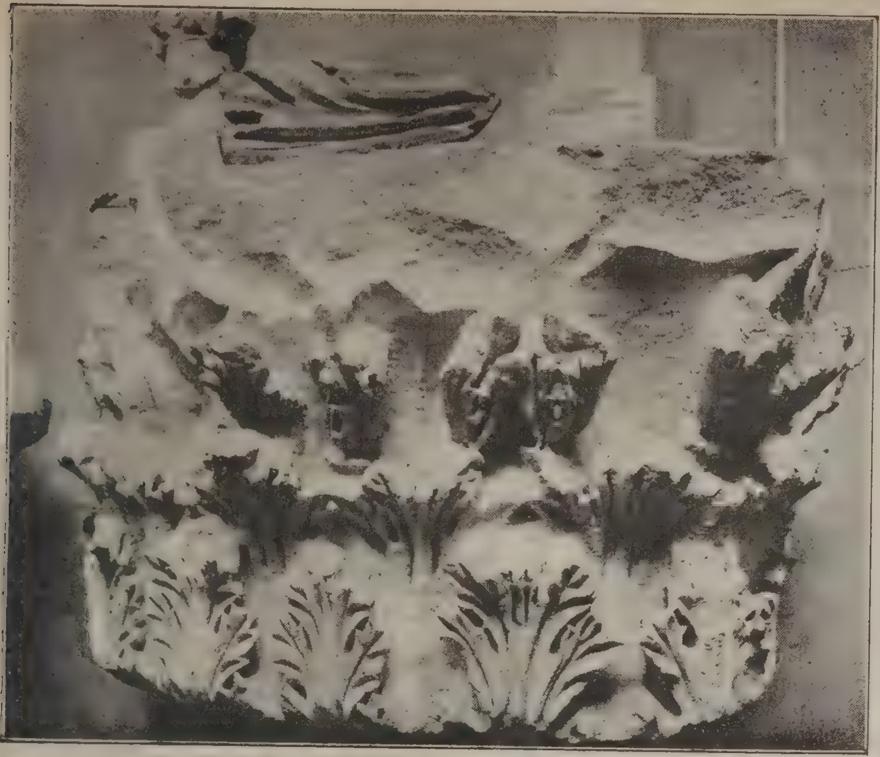
HALF-CAPITAL OF THE PORTICO OF THE PANTHEON, ROME.
(From TAYLOR and CRESY.)



CORINTHIAN ORDER OF THE COLOSSEUM.
(From TAYLOR and CRESY.)

proto-Corinthian type, brought from Assyria by Sir Henry Layard, and which may be approximately ascribed to 800 B.C.; but further back than this there is the simple palm-leaf capital of Egypt, of which an example in the British Museum is ascribed to the time of Rameses II., or about 1333 B.C., and earlier than this again is the bell-capital, with the palm-leaf painted on it, which can be traced to the earliest Theban times, or, at any rate, to the erection of the palace at Luxor, about 1500 B.C. These, however, must not be confounded with the capitals of distinctly Corinthian type, which are found at Philæ and in most of the other buildings of Ptolemaic Egypt, for the first Ptolemy having been a general under Alexander the Great, his date, and that of his successors, is long subsequent to the building epoch in Greece.

So far as one can judge from the examples left to us, the order seems to have been employed by the Greeks entirely in a subsidiary sense, for we may put aside consideration of the huge Temple of Jupiter Olympus at Athens, the date of which is very uncertain, while most authorities consider



CORINTHIAN CAPITAL, TEMPLE OF DIANA, EPHESUS.
(Now in the British Museum.)

THE NEREID MONUMENT, FROM XANTHOS, LYCIA.
(Now in the British Museum.)

it to have been essentially, if not entirely, Roman. Thus, at the Tholos at Epidauros, where is the earliest known example, ascribed generally to the time of Pisistratus, or about 560 B.C., the Corinthian Order is confined to the inner peristyle, the exterior being Doric; while in the Temple of Apollo Epicurius at Barsæ, at Phigaleia, built by Ictinus about 430 B.C., there is only one Corinthian column, the internal order being Ionic, and the external Doric; and at the Temple of Diana, at Ephesus, there could have been but few, though the exact number is controverted, and, strangely, enough, the example in the British Museum is elliptical on plan, instead of being circular. As to the two better-known and later examples, those of the Choragic Monument of Lysicrates and of the Tower of the Winds, both at Athens, the buildings to which they are applied are themselves but small works, little gems upon which great elaboration of detail might be indulged.

Just as with the Doric and the Ionic, so the Corinthian capital, when it first appears in Greece, is already fully formed. Early as is the work at Epidauros, the capital from thence is as beautiful and as perfect in conception and in execution as are any of the later examples. The fern-leaf of Egypt has given place to the sharply-defined acanthus, with long-drawn, simple lines, deep under-cutting, and absolute precision of workmanship so characteristic of Grecian work, and so unapproached by that of any other people before or since; and, it may be said, so impossible of attainment in any other material than the finest marble. So, too, we find the tendril volute and the lily-bud, springing out from the bell of the capital which they are there to adorn, having no constructional function whatever to perform.

It will be evident, even from the photograph of a fragment which accompanies this, that the capital at Ephesus was essentially similar to that at Epidauros in the arrangement of the acanthus leaves, the volutes, and the caulicolæ (or smaller tendrils), and this in spite of the difference of place already mentioned; but in the Choragic Monument of Lysicrates there are several noticeable variations. In place of the lowest range of acanthus leaves there is a band of vertically-rising water leaves of the most severe and simple form, and the acanthus leaves of the upper tier are crowded together, each alternate one standing out in front of its two neighbours, and the junction being hidden by pateræ; while the lily of Epidauros is replaced by the anthemion.

As to the capital at the Tower of the Winds, it scarcely deserves to be called Corinthian at all, for it varies so greatly from other examples. The volutes are here absent altogether, the ornamentation consisting only of a tier of acanthus, surmounted by a tier of water leaves; but, as in all other examples, the design and execution are superb.

With its adoption by the Romans a complete change came over the Corinthian Order; and, in fact, few things show more markedly the contrast between the peoples of Greece and Rome than does the treatment of the Orders. The Doric, loved by the Greeks, was too subtle and severe for Roman taste, which was, however, suited admirably by the elaborate Corinthian. Hitherto treated as a very choice bit of detail to be introduced with care and restraint and kept subordinate to a severer whole, it was now adopted with enthusiasm, and made to do duty everywhere, whether intrinsically suited to its position or not. It was subordinate now only in the sense of being used as the topmost of the three Orders when they were superimposed; but most of the greater works, whether temples, baths, or triumphal arches, were of the Corinthian order alone, either in its pure form or in its variant, the Composite.

Used thus largely in great buildings and in small alike, plenty of complete examples exist, the proportions of which can be determined; and it will be seen by the following tables that, governed by the greater height of the capital, a greater proportional height of column to its diameter was necessitated than with either of the other Orders, while the taper was less:—

Examples.	Diameters in Height.	Entablature in Terms of Diam.	Inter-Columniation.	Height of Capital in Terms of Diam.	Upper Diam. in Terms of Lower Diam.
Corinthian.					
Pantheon portico	9·804	2·317	2·092	1·175	·855
Jupiter Tonans...........	10·241	2·069	1·558	1·167	·867
Jupiter Stator	9·820	2·536	1·575	1·08	·891
Arch of Constantine ..	9·661	2·388	—	1·095	·882
Composite.					
Arch of Titus	10·662	2·533	—	1·287	·887
Arch of Septimus Severus	8·260	2·316	—	1·144	·882

The three examples illustrated herewith may be considered to be fairly typical, though great liberties were often taken with the design, especially in later times, figures of animals (the horse, for instance, in the Temple of Mars Ultor) and natural foliage being occasionally introduced. Good workmanship was still the rule, but the simple lines of Grecian work were replaced by more voluptuous curves, and a greater multiplicity of members. The acanthus suffers in particular, its sharply-defined points and arrises being replaced by a form of leaf which is of a rounded character, and which is not always guiltless of a surface-wave, such as a line drawing in elevation can scarcely show.

Owing to their great height from the ground, it was evidently right to leave the Corinthian capitals of the Colosseum with quite plain water-leaves, or merely outline suggestions of the acanthus, and similarly it was right to give greater details to the capitals of the Pantheon portico, in which instance, it may be remarked, the columns were left unfluted, and the richly-carved capitals gained greatly in value and appropriateness in consequence.

Another point to which attention may be drawn is the fact of the ornamentation being designed by the Romans for weight-carrying, the angle volutes being strong in form, and supported by the acanthus foliage underneath; and it seems to have been the desire to obtain greater strength which prompted the combination of the Ionic and Corinthian capitals in the Composite. Strangely enough, though, in the earliest known example of the Composite capital, that of the Arch of Titus, it was employed as an applied order only, with no constructional value, the opening being spanned by an arch!

Clumsy in its very conception, and possessed of no intrinsic beauty of line, this form of capital depended largely for its effect upon the wealth of surface-carving with which it was enriched, and which was often itself of a character which compares very unfavourably indeed with the clear-cut and entirely conventional forms of Greece. Never used very largely, even by the Romans, and never developed to any high degree of excellence, the Composite capital may now be regarded as rather an archæological curiosity than as a form to be largely used, the opportunities for its correct application being extremely rare.

"BUILDING NEWS" DESIGNING CLUB.

A RIVERSIDE BUNGALOW.

THIS seasonable subject furnishes an essentially picturesque problem, and, besides, the requirements of such a building have a special interest all their own, seeing that the designer is permitted a freer hand in working out the details of his plan than is usually allowable in planning an ordinary dwelling-house, where more hard and fast conditions are imposed by the necessities of the case. The slope, too, of the site on the river's edge materially improves the chances of success. The conditions which we published for the guidance of competitors were as follows:—A Riverside Bungalow, with a boathouse attached. The site is situated on the northern banks of the stream, where good foundations can be obtained; but, to clear the rise of high tides, the stone or brick walling of the basement must be carried up 5ft. above the ground level, which has a fall of two in ten towards the river, and the 5ft. must be taken in the centre of the building, so that on the water side the elevation will be more, and on the land side less. The boathouse or shelter will run out towards the river, and a billiard-room is to be contrived over it. The accommodation of the bungalow to comprise a living-room hall, about 25ft. by 20ft.; a small ladies' drawing-room, about 14ft. by 14ft.; a writing-room or breakfast-room of similar dimensions; kitchen and offices; and seven bedrooms, four of which may be on an upper floor. Style suited for timber and plaster. Roofs covered with tiles or shingles. A feature to be made of a verandah and the stairway leading to the building. Scale, 8ft. to the inch for elevations and section. The plans may be drawn to a scale of 16ft. to the inch if desired. The drawings must adequately illustrate the design, and a perspective sketch to be included.

We felt no difficulty in awarding the first place to "Sphinx," and "The Dodo" comes in a good second, while "Nyoola" ranks third. We illustrate the two first designs among our plates herewith. "Sphinx" concentrates his arrangements better than "The Dodo," and does not waste space over corridors and passages. The entrance, with its lobby, is shut off from the hall living-room, and the kitchen hard by, is fairly well placed for convenient service. The doorways to the billiard-room, drawing-room, and writing-room rather interfere with the comfortable character of the living-room hall. It is not clear where the flue from the hall fireplace is intended to go. The boat-house is effectively handled, and the drawings are well done, without over-elaboration. The homely character both of the external treatment, as well as of the plan, combine to make this Bungalow a success, though we do not say it is by any means above criticism. The general effect speaks for itself, and possibly it may with justice be remarked that the building looks too much like the clubhouse of some well-to-do boating club, as seen from the river. "The Dodo's" design assumes more the home-like character outside, and within there are several advantages contrived with no little ingenuity, though economy of passageways and gallery space has been somewhat overlooked. Both bungalows would work out well in execution, and reflect credit on their authors. "Nyoola" carries out two tower-like bays at the angles of the entrance front to his house, which have rather an ungainly effect externally, and inside scarcely add to the convenience of the building. Had a balcony been introduced on the river front at the level of the gallery over the hall, some excuse would have been in evidence for the return of the aforesaid gallery, which, as it stands at present, is perfectly meaningless. It is to be feared that the kitchen located in the basement level with the boat-house would be somewhat damp, and in the spring tide season would stand the risk of being flooded. The loggia colonnade in the hall shown by the section does not appear on the plan, the area of which such a contrivance would seriously encroach upon. "Heather" comes next, giving several points of no little convenience. His breakfast-room has a very uncomfortable fireplace, immediately in the draught between two doorways. The arrangement of this room near the vestibule has the merit of giving a room for callers to be shown into without necessarily going into the main living-room or hall. The w.c. close to the main entrance is bad, and, moreover, there would hardly be head room in the closet under the staircase placed as this one is. The gallery over the hall fireplace ingle is too directly connected with the servants' staircase landing to be convenient, or to insure a sufficient protection against eavesdropping. It hardly seems necessary to have a back staircase in such a small house as this bungalow, curtailing the larder and taking up room above stairs where every square inch is valuable. The bedrooms on the other side of the bungalow are far better placed than in some of the other designs, as in "The Dodo's" plan, where they are much too near the kitchen to be free from its smells. Externally, the elevation is fairly good, but the perspective is inky and poorly executed. "Xedra" has a good hall living-room in his bungalow, with an open-timbered roof and high dado panelling. Outside the house looks thin, and is devoid of a sufficiently hospitable appearance. The plan looks more convenient that it really would prove to be, because of the dark lobbies and passages, which go far to spoil the arrangements. "Dodo" (Kettering) has overdone his timberwork, in which respect some excuse may perhaps be found for a Northamptonshire man. The hall living-room quite isolates the drawing-room and morning-room from the main vestibule. A little more thought on the treatment of the entrance-hall would have materially improved the convenience of this bungalow. Outside towards the river the result is tame and characterless. "Canary" is regardless of economy, and he draws in a very sketchy and ineffective way. His plan is crude and comfortless. "Full Back" is troublesome, for ever changing his motto, calling himself "Nemo" this time. If he only would display as much care and energy in improving his work as he does in devising fresh mottoes, the consequence would be of more material value to himself and pleasure to us. To remark in detail on his plan would take more room than we have space for. One or two points must suffice. He brings forward his staircase right in front of the main entrance door, and the dining-hall door immediately in a line with it. Thus, every time anyone goes in or out they would have to pass round the staircase or be tripped up. Upstairs a needlessly vast landing wastes more than one-fifth of the entire area. As to the external design, we can only say that it is exceedingly indifferent. "Pallene" is too ambitious, and needs study. Incongruity marks the plan, and lack of proportion his elevations. If he only learns one lesson by this adverse criticism of so poor an attempt at design, his efforts will not have been wasted. That lesson is not to plan pitch-dark passages again. "Minstrel" is quite reckless in the waste of room in corridors, extending his bungalow, regardless of outlay, to an almost limitless extent. His idea for the privacy of w.c. accommodation is an entirely wanting quantity, as the most public points possible are chosen on both floors for these conveniences. "Norvic" sends a quiet solid-looking house, very unlike a bungalow; but in execution, with care in detailing the building, would work out very well. It is not, however, correctly speaking, a bungalow, and the most is not made of the riverview. The drawings, too, are excessively poor. "Bona-fide" sends a sort of suburban tea-garden pavilion, with a belvedere tower as ungainly as it can well be. The building covers a very large area, and has little to recommend it, chiefly because its author has exercised so little thought as to expense, and paid so little respect to the demands insisted on by good taste. "R." in a circle is trivial, with a sort of Moorish minaret over the living-hall, which is treated on plan incorrectly as merely a big dining-room.

AUSTRALASIAN TIMBERS.

IN an article on the timber trade of 1893-94, the "Year-Book of Australia" remarks that the commercial value of Australasian timbers has become recognised only within the last few years. Some of the Tasmanian woods, from the thinness with which they can be cut and the exquisite beauty of their grain, are admirably adapted for veneers. Suites of bedroom and other furniture have been made from Australian timbers at various times in London, where a regular demand would have sprung up had the requisite means of an export trade existed in Australia. As it was, British manufacturers remained unenlightened respecting the probable extent of the supply, and the prices required for large shipments. Consequently, the only colonial timber for which a demand had become created, outside Australasia, was the jarrah of Western Australia, which has always, despite its great weight, been more or less in demand for railway sleepers and piles for bridge and harbour works. There also existed a widely-spread impression that there were only a few kinds of Australasian timbers adapted for industrial purposes, and that of these the supply was limited. On the contrary, the timber forests of Australasia cover many thousand square miles of country, and the importance of systematic forest conservation has become recognised by the various colonial Governments, which have established forestry departments, and also taken steps to prevent the further indiscriminate destruction of growing timber.

Many of the useful timbers of Australasia are species of the Eucalyptus tribe, which seems to thrive in every part of Australasia, imparting to the country a somewhat monotonous aspect. In New South Wales the hardwoods are the most plentiful. Several of these are remarkable for the great size of the beams which may be obtained from them, also for the extreme toughness and durability of the wood, especially the grey ironbark, which has a breaking resistance equal to 17,900lb. per square inch as compared with a mean of 11,800lb. for English oak, and 15,500lb. for teak. All the varieties of ironbark are tougher than English oak. Among the softwoods the red cedar occupies a leading place. It is a beautiful wood, the trees often being of considerable size, as much as 2,500c.ft. of timber being obtained from a single tree. Among other woods are the white maple, rose wood, tulip wood, yellow wood, white beech, myall, marble wood, and mock orange, a few only of the many timbers useful for industrial purposes of every kind. The Moreton Bay white pine grows plentifully in the northern portion of New South Wales and many parts of Queensland. It is said to be admirably adapted for building purposes. There are other varieties of pine, the red pine, which is beautifully marked in the grain, taking a fine polish. Colonial deal is largely employed for house-building purposes. The Queensland timbers are much of the same class as those of New South Wales. Among them are the cypress pine, much used for cabinet work; the she pine, largely employed in joinery; the silky oak from which considerable quantities of staves for casks are made; and the beech, which, being unaffected by climatic conditions, is a favourite material for flooring verandahs, decks of vessels, &c. The wealth of marketable timber in the New South Wales forests, after being neglected for many years, is beginning to be utilised. The Federal Timber Company, formed some few years since for the purpose of expanding the New South Wales timber trade, has undertaken the important work of developing the export trade by placing the more suitable timbers of the colony prominently on the British, European, and American markets. The company has large saw-mills on the Manning River, where operations are conducted on an extensive scale, a tramway, four miles in length, having been constructed for tapping one of the most heavily timbered districts in the colony, and which otherwise would have been unapproachable. The tramway enables logs of immense size to be conveyed to the mills. The Sydney establishment is at Rozelle Bay, Darling Harbour, where the machinery sheds, receiving and shipping yards, wharf accommodation, deep water frontage, &c., are on an extensive scale. The Company's manager, Mr. W. Langley, has been identified with the timber trade for many years, and the success of the undertaking has been largely due to his assiduity and enterprise; also to the able assistance afforded by Mr. J. McSweeney, managing director. The Victorian timbers are much of the same kind as those of New South Wales, the most useful being the red and blue gums. In some places the peppermint or mountain ash attains an enormous height, trees fully 420ft. high having been frequently measured. In South Australia, as in the other colonies, the Eucalyptus tribe is most numerous, but the other kinds of wood found in Victoria and New South Wales are plentiful. The forest resources of Western Australia are enormous, the area occupied by the white gum alone being estimated at about 10,000 square miles. Sandal-wood is abundant, but the principal timber is the jarrah, the forest of which cover an estimated surface of 14,000 square miles. This timber, when properly selected and seasoned, has stood the severest tests, and no limit has yet been discovered to its durability. It is capable of being split into great lengths, and treenails are made with it. Karri is another timber of the same kind as the jarrah, both woods being assigned twelve years by the English Lloyds for use in shipbuilding. The Tasmanian timbers are much the same as those of Victoria, the blue gum being the principal. Among the timbers of New Zealand the kauri occupies the leading place. The kauri is a wood of great durability, well suited for constructive works, house-building, and special purposes. It forms the principal item of timber export from New Zealand, although there are numerous other useful timbers.

In the Australasian timber export trade, New Zealand may be said to have led the way, the first shipments of New Zealand woods being made during the "sixties." In 1870 the value of the timber exported was about £10,000. The progress of the trade since that date is shown below:

NEW ZEALAND TIMBER EXPORTS, 1871—1893.

	Quantity.	Value.
1871	3,214,742ft.	£14,200
1875	5,225,627 ,,	26,914
1881	13,180,280 ,,	65,119
1888	43,474,434 ,,	177,877
1889	42,568,600 ,,	176,608
1890	42,098,863 ,,	181,689
1891	42,824,365 ,,	182,431
1892	22,860,551 ,,	87,581
1893	26,718,046 ,,	101 082

The New Zealand trade is largely in the hands of the Kauri Timber Company, Limited, the Australian head office of which is in Melbourne. It has also an extensive establishment in Sydney, the mills at Blackwattle Bay occupying several acres and having 500ft. of water frontage, with accommodation for three ships unloading at the same time. The kauri is the timber principally in demand, and of this large shipments are received direct from New Zealand, where the company hold several hundred thousand acres of valuable forest land, the trees including the majestic kauri, towering to a height of about 160ft.; the handsome cedar (Pahautea and Kawaka), much used for railway sleepers; the Totara, a most valuable timber; the Rimu, highly prized for cabinet-making: the Pohutu Kawa, unsurpassed for shipbuilding purposes; and other most useful timbers indigenous to New Zealand. The company has about twenty-five saw-mills in various parts of New Zealand, and possesses a stock of 50,000,000ft. of kauri always on hand, the timber—being durable, free from knots, and capable of taking a high polish—being much in demand in place of Baltic pine for floorings, linings, &c., the quantity imported during 1893 into New South Wales alone being 15,000,000ft., of which the company supplied 12,000,000ft.

The Sydney Kauri Pine Agency Company, Limited, recently established in Sydney, has made considerable progress under the management of Mr. J. G. Smith (formerly of the Kauri Timber Company, Limited), in further developing the Australasian timber trade, its operations being principally in kauri timber, of which the company has large and regular consignments direct from the saw-mills in New Zealand. The company partakes much of a co-operative character, the shareholders being mostly the owners of saw-mills in New Zealand, possessing also extensive tracts of forest land, rich in valuable timbers such as kauri, black bird, manuka, cedar, rimu, kowhai, pohutu kawa, &c. The company was formed with a view to enabling producers and consumers to be brought into direct communication with each other, thereby enabling more advantageous business arrangements to be effected. For several years past the exports of timber, principally jarrah from Western Australia, have been comparatively large, amounting in value to nearly £90,000 in 1891. In 1892 the value fell to £78,419, a result of increased demand for railway and other purposes within the colony. The steadily increasing demand in Europe and elsewhere for timbers suitable for railway sleepers and street-paving purposes has naturally had the effect of directing attention to the hardwoods of which Australia possesses such a varied abundance. One result of this was that shipments of hardwood were successfully made from Tasmania, and were followed in due course by others from Victoria, South Australia, New South Wales, and Queensland. The trade thus opened up is capable of indefinite expansion, affording employment to considerable numbers of men. It has been pointed out that timber to the value of £20,000,000 is imported annually into the United Kingdom, and there is no reason why Australia should not enjoy a large share of the business. In New South Wales, as in the other colonies, the initiation of the export timber trade is largely due to private enterprise; Messrs. Scott, Sibbald, and Co., of Sydney, having made several shipments of ironbark, tallow wood, black butt, red mahogany, cedar, rose wood, red bean, beach, and other timbers, to London. They have also sold two lots of tallow wood for export to London, to be used in the construction of railway rolling stock. In addition, the firm has made arrangements for the introduction of Australian timbers into Cape Colony and Natal, to which shipments have recently been made of hardwood railway sleepers. One of the members of the firm, Mr. Gavin Scott, has made an extended visit to the United Kingdom, France, Belgium, and Germany, with a view to ascertaining the full adaptability of Australian woods for wood-blocking, railway rolling stock, parquet flooring, and other purposes in those countries. He has interviewed the managers of the chief railway companies and corporations, and as the result of his inquiries he thinks that there is a good prospect for the Australian timber trade. He has secured several orders for supplies of timber.

The importation of timber into the different colonies is larger than generally supposed, but a considerable portion of the trade is of an inter-colonial character. Subjoined are the latest returns—

AUSTRALIAN TIMBER IMPORTS, 1893.

New South Wales	£13.302
Queensland	6,698
South Australia	165,840
Tasmania	1,927
Total	£187,767

The Queensland timber imports were principally from New South Wales, the United Kingdom, and the United States, the oversea shipments consisting largely of shingles and staves for casks. The Tasmanian imports are principally from Victoria and New South Wales. The Western Australian figures are not available.

AUSTRALIAN TIMBER EXPORTS, 1893

New South Wales	£55,541
Queensland	5,187
South Australia	48,249
Tasmania	18,090
Total	£127,067

Of the New South Wales exports, £25,664 went to Victoria, and £821 to the United Kingdom. The Queensland shipments to the United Kingdom represented £901. The Tasmanian exports were principally to South Australia, Victoria, New South Wales, and New Zealand, from which considerable quantities were re-exported to other countries.

In New South Wales considerable attention has been given to the subject of timber export. Not only has Sir Saul Samuel, the Colonial Agent-General, forwarded to the various London municipal bodies circulars pointing out the advantages of New South Wales hard woods for street-paving purposes; but the New South Government has granted a site on the shores of Sydney Harbour on which to erect works for seasoning timber for the European markets. A large wharf is also being constructed for timber-shipping purposes. Colonial timbers are also becoming more largely used in connection with public works in the colony, the New South Wales Government having accepted tenders from the Federal Timber Company and the Kauri Timber Company for large supplies of Australasian timbers, in addition to the customary importations from Canada and America.

A PROMISING INDUSTRY.

MOST of our readers know the firm of Messrs. W. and R. Leggott, of Bradford, and High Holborn, London, manufacturers of fan-light, skylight, and roof-light openers, mortise locks, door furniture, fire-brasses, brass handrails and fittings generally used in the building trades. Architects, especially, have long been aware that everything is made and fitted on the premises, starting from the raw material to the finished article. The firm has earned a well-deserved world-wide reputation for goods. All the details are watched by practical men. In the foundry, the machinery rooms, fitting-shops, the polishing-rooms, the lacquering and japanning-rooms, the annealing room, and the warehouse, honest work and skilled intelligence control everything. The men employed in the factory have nearly all been brought up and trained from boys in the works. At four o'clock every afternoon the men are all supplied with tea at the firm's expense. The shops are well lighted and ventilated, and the comfort of the workers is studied throughout. For the past ten years the business has been steadily increasing, the receipts to June having been much larger than any previous year since the business was first established. Messrs. Leggott have just turned their business into a limited company, but, as in the majority of cases where the business is a really good thing, it is not offered to the general public; all the shares are in the hands of the proprietors, employés, and friends. The share capital is £30,000, in £5 shares. The business is still capable of further development, as ample room is at the disposal of the firm to cope with the increase of business that is sure to result.

OBITUARY.

THE death is announced, at the age of 77 years, of Mr. JAMES RENWICK, one of the leading architects of New York. Born in that city in 1818, James Renwick graduated from Columbia College (in which his father was a professor) at the age of 17, and became a student of engineering and architecture. A year later, while engaged in field work on the Croton Aqueduct, Renwick won in competition and carried out a commission for a Gothic church at the corner of Broadway and South-street, New York. After an interval, during which Renwick superintended the construction of the distributing reservoir on Fifth-avenue, he entered the competition for the Roman Catholic cathedral on Fifth-avenue, and won this also with a design which is still regarded as an honour to American architecture. These great works brought him many commissions. In New York alone he built the Stock Exchange, Booth's Theatre, and the Young Men's Christian Association building, the Foundling Hospital, and the Ward's Island Lunatic Asylum, besides St. Bartholomew's Church and the Church of the Covenant, and a multitude of smaller buildings, and he was also much employed in other parts of the country. When his business became too large for him to manage by himself, he took a partner, Mr. Sands, who died a few years later, and the late Colonel Auchmuty was for a time a member of the firm, under the style of Renwick, Auchmuty, and Sands. For the past ten years the business has been carried on by the firm of Renwick, Aspinwall, and Renwick.

THE LONDON BUILDING TRADES.*

THE appendix to this work relating to population classified by trades has just been reissued by the publishers as a separate volume, forming the fifth of the series. It is edited by Mr. Charles Booth, who has made a very complete use of the occupation returns of the Census for London of 1891. In an introductory chapter Mr. Booth shows that in the Metropolis in April, four years ago, there were 630,570 occupied tenements of less than five rooms, of whom the largest proportion, just over 60,000, were single rooms let to a single person, another 55,766 being two-roomed tenements in one occupation. The only occupancy at all approaching these in numbers are those where two persons occupy a couple of rooms, which number a little over 46,000. There were at that date in London nearly a million families, averaging in size 4·33 persons, and of these 80·1 per cent. are without servants, and of the remaining fifth 11·3 per cent. keep one or more servants, the remaining 8·6 per cent. being servants and inmates of institutions. Another mode of classification shows that 30·7 per cent. live in poverty, about 8·4 of these being regarded as very poor, and the remainder were divided into 51·5 per cent., comprising the comfortable working class and servants, 12 per cent. lower grade, and 5·8 per cent. middle and upper classes. Although differing among themselves, there is a startling similarity in the percentages between the crowded and not crowded classes and those divided into "in poverty" and "in comfort." In completing the social classification of London, Mr. Booth has not only been assisted by the Registrar-General, but has come into direct communication with the sub-registrar and enumerators, while in dealing with the trades, he has approached many employers, trades-union officials, and individual workmen, so as to gain a fair description of the working of each trade and the wages earned.

The volume before us is divided into three sections: Part I., by Mr. Ernest Aves, deals with "The Building Trades"; Part II., for which Messsrs. G. E. Arkell, G. H. Duckworth, and Esmé Howard are jointly responsible, treats upon "The Wood Workers"; and Part III. relates to "Metal Workers," and for this Mr. Jesse Argyle is responsible, a supplementary chapter on "Workers in Metals other than Iron and Steel" being added by Mr. G. H. Duckworth. The trades and occupations of London are grouped in the census into eighty-nine sections, of which the first nine comprise the building trades, leading off with architects (and engineers), and followed by builders (a very ambiguous title in returns), masons, bricklayers, carpenters, plasterers, painters, plumbers, and gas-fitters. The wood-workers constitute the next four sections—viz., cabinetmakers, carriage builders, coopers, and shipwrights, and the metal-workers a third group of four sections. Of the 91,162 heads of families in the Building Trades group, 3,680 described themselves as architects or engineers, 6,871 as "builders"—an elastic term ranging from master contractors to handy men and labourers, 4,750 as masons, 14,330 as bricklayers, no fewer than 24,805 as carpenters and joiners—the most numerous class, 5,111 as plasterers and paper-hangers, 22,982 as painters and glaziers—another numerous class, 5,141 as plumbers, and only 3,492 as locksmiths and gasfitters. Of the entire number 39·2 per cent. belonged to the crowded class, 31·8 per cent. to the central, and the remainder to the upper class. Figures in tabular statistics are not, however, absolutely reliable. On Mr. Booth's system of classification, for example, the architects would be all grouped near the top of the last class, whereas, from the professional standpoint, the ranks of this section are notoriously "overcrowded." A curious fact is brought out by the returns, that whereas there was from 1861 to 1881 a continuous growth in the Building Trades group—from 87,300 in 1861 to 108,500 in 1871, and 133,500 in 1881—the last Census reveals a sudden drop to 129,500, doubtless due to the fact that as regards building the Metropolis has outgrown the limits recognised by the Registrar-General. The trades have continually moved outwards, and this centrifugal action has now carried many of those engaged in it beyond the Census boundaries. An obvious difficulty in the tabulations is that all branches of the building trades are closely interconnected, and many carpenters, bricklayers, and painters are working under masters in other trades. Excluding architects from the returns, the proportion of employés to employers is, on the whole, one in thirteen. Mr. Aves remarks that the building trades of London supply the most conspicuous example of a great industry carried on in almost complete dependence on a local demand. The fixity of the article produced was one of the essential and peculiar features of the trade; but if incapable of extension by export, it is also free in a hardly less remarkable way from the competition of outside products. Joinery may have been made in a country town or in Norway, stone may be fashioned in the quarries, and granite and marble quarried and polished in Scotland or Italy. But these were exceptions, and even a largely increased use of iron girders and columns would trench comparatively little on the labour expended on the spot. It follows that in London there is always so much work to be done that the building trades must form its most important industrial group. In exchange for the work done away from London in the preparation of materials, the professional skill of the Metropolis is largely appealed to from outside. The London architect or master builder may design, advise, and specify or contract for work that is to be executed in the provinces or in other countries, and from London firms clerks and foremen were sent to all parts of the world. This exchange of services involves in every case some loss to the unskilled and low-priced English workman, and the trained artisans above them reap the advantage. In few instances is the complexity of modern industrial relations more completely illustrated than in the operation of the building trades. The great and rapidly-increasing variety of specialities in the trades—many of them based on patent rights—tends to complicate every transaction, and to cause the original contract between client and builder to cover an increasing number of subsidiary bargains. In London the great concentration of demand differentiates many branches of trade into well-organised departments, in which workers either possess highly specialised skill, or do work with the least possible exercise of personal skill or individuality. In the village and the small provincial town every builder's operative tends to be an all-round man; but, while general knowledge is often great, first-class workmen are rarely found. It is just the reverse in London, which is unrivalled as a finishing school, but a bad training ground. Specialisation of skill is characteristic of London, and a large number of persons, moreover, are entirely employed on processes and products that exist under conditions of monopoly or quasi-monopoly.

Taking the sections in order, a feature of that devoted to architects is the relatively large proportion to the entire population who are over 65. The number in the profession reaches its maximum at 25 to 35 years of age. Passing to the next group, the builders, Mr. Aves points out that the popular association of the speculative builder with the jerry-builder is often misleading; many of the best and most fashionable parts of London have been opened out by the speculative builder. Uniformity of style and a resulting architectural dulness is the charge to be laid to his door, rather than inferior workmanship or the use of bad materials; but it must be admitted that the worst work of all is done by members of this very mixed class, and it probably sinks to its lowest level in many outlying cottage estates. Still, those who do the worst work are simply men of straw, the puppets of the capitalist, who may be the ground landlord, the building company, or the money-lending solicitor. The important part played by subordinates in the building trades, though inevitable, has its bad side: it secures more efficient control, but master and man remain personally unknown to each other. The shifting character of the employer and the payment by the hour tend to accentuate this state of things. The ranks of clerks of works are recruited from many sources,—draughtsmen in architects' or builders' offices, young architects, carpenters and joiners, and operative masons, and bricklayers. The salary paid ranges from £3 up to £10 per week for very exceptional men. The responsibilities are great, and the temptation to swerve is greatest when the need for vigilance is greatest. The general foreman takes the place of the employer in finding, employing, and keeping the right men in the setting-out, and in the apportionment of the labour to the work. The great majority of builders' foremen have been trained in the country as carpenters and joiners. The popular idea of the builders' labourer, as that of the man who serves the bricklayer, is yearly becoming less and less adequate, as the extended use of machinery and of iron and steel is displacing mere labourers. Most classes of labourers now specialise, because of some particular preference or aptitude; but the specialisation, as far as it exists, is purely voluntary so far as trade-union regulations are concerned. Men often follow up some particular branch; but if work fails in that they can, and will, at once try for work in some other branch. Differentiation of the labourers' and the artisans' work is, however, sharply defined, and rigid rules in several trades emphasise this. Passing over the masons' and slaters' sections, Mr. Aves points out that the bricklayer is the recognised "stock hand" of the builder. His sphere of work is wider than any other section of the group, and to him the most miscellaneous work is given. Indeed, his position is now numerically, and, with regard to the offices performed, next to that of the carpenter, the most important in the building trade. In the next section, that of the carpenters and joiners, there is a rather larger proportion of boys than in the other building sections. On the whole, the members rise steadily to 30 or 35 years of age, indicating the establishment in London of men trained in the provinces. After 50 years of age the members fall off rapidly. Many men trained as carpenters becoming caretakers, handy-men, or jobbing builders as they grow old. This class is the best conditioned in the whole group, and are often called "the top hats of the building trade." They form the élite of the trade from the character of the work, from the fact that most of it is done under cover, and from the forethought necessary in acquiring the valuable tools. While, as a rule, men either work on the job or in the shop, there is a considerable amount of interchange; but it is rare to find a first rate joiner excels as a fixer or *vice versâ*. The tendency, therefore, is for the man to specialise, and to work habitually either in the shop or out of it. On the whole, employment is more continuous in the shops, and it is to them that the best men tend.

We cannot afford space at present to give further details from Mr. Booth's valuable compilation, which is, so far as we have tested, accurate in its general statements, and brimful of information of interest and value to the trades, and capable, as will be seen from the points we have summarised, of affording reliable information to the general reader. A commendable feature of the work is the copious and well-arranged classified index at the end of the volume.

---

* Life and Labours of the People in London. Vol. V. London: Macmillan and Co.

Sir W. H. Flower, in writing to the daily Press, makes the timely suggestion that to the statue of Erasmus Darwin in the Natural History Museum, and Brock's statue of Sir Richard Owen in the present Academy exhibition, and soon to be placed in the same hall, a third statue should be added, that of Huxley, completing the trio of the great naturalists of the century.

A picture by Constable, "The Mill at Stratford, on the Stour," included in the collection of the late Mr. C. F. Huth, which was sold by Messrs Christie, Manson, and Woods on Saturday, Monday, and Tuesday, realised the high price of 8,500 guineas. The picture is 50in. by 72in., and was shown at the Academy of 1820. The water-colour drawings and pictures in this collection brought in a total of £27,547, and the miniatures another £2,806.

The first section of the Duke of Clarence Memorial Church at East Llandudno was opened on Sunday. The portion completed is the nave, and on its cost a debt of £2,000 is outstanding. A lady in the county has offered to erect the chancel, at a cost of from £1,600 to £1,800, providing three other ladies will join her in the completion of the church by adding the two other aisles and the tower. Should anyone prefer to give the chancel, the lady in question will build an aisle or the tower. This offer is to remain open a year. The church is being built from designs by Mr. J. Oldrid Scott, F.S.A., and is in the style of the middle of the 13th century. The walls are of local limestone, with dressings of Bromesgrove stone, and for the interior local limestone and Bath ashlar are used, the columns being of Frosterley marble. The completed portion seats 450 persons, but eventually 950 sittings will be provided.

Engineering Notes.

EDINBURGH AND CORSTORPHINE DOUBLING.—The inspector for the Board of Trade, Major Marindin, has just completed a minute inspection of the double relief lines which have been constructed by the North British Railway Company between the Waverley Station at Edinburgh and Corstorphine. Associated with the construction of this doubling of the old lines were the duplicating of the Mound and Haymarket tunnels, an entire rearrangement of the signals to the west of the Waverley Station at Corstorphine and other parts of the line, the widening of several bridges carrying the railway over the Water of Leith and public and private roads, and the extension of the bridge which carries the Caledonian Granton Railway over the North British lines. Accompanying the Board of Trade inspector in this examination were Mr. David Deuchars, superintendent, and Mr. Bell, assistant engineer of the North British Railway. The two new lines which have been made diverge from the main line at Corstorphine, and are carried into the Waverley Station. They will be also continued to Abbeyhill at as early a period as possible, and for this purpose important works are in progress on the east side of the Waverley Station. The Corstorphine Station was reconstructed in connection with the opening of the Forth Bridge, and needed no further alterations. From Corstorphine to Haymarket the new lines are laid on the north side of the railway, and the bridges enlarged towards that side are those over the Water of Leith, over a farm road at Saughton Hall, over the public road from Gorgie to Corstorphine, over a farm road at Damhead, and over a new road at Roseburn. This bridge is of steel girders, resting on brick abutments. The sides of it facing the roadway are lined with white enamelled brick, and Hayward's patent roof lights have been introduced. The Water of Leith Bridge now consists of a span of 50ft., with two side spans of 15ft. each, constructed entirely of masonry, with brick and cement arches. The Caledonian overhead bridge is of steel girders, and is now in two spans instead of one as formerly. New engine sheds have been erected at Murrayfield capable of "stabling" forty-eight engines, and on the north side is a range of workshops. The Haymarket Station has been entirely renewed and enlarged. Nothing, indeed, remains of the previous structure but the old booking-hall, which was part of the original terminus of the Edinburgh and Glasgow line. The new station consists of an island platform and two side platforms, over 600ft. in length, and on the north-west side a small dock. On the island platform, which is 25ft. in width, are blocks of waiting-rooms; and waiting and other rooms have been formed on the south platform. The new Haymarket tunnel, constructed on the south side of the old tunnel, from which it is separated by a block of 25ft., was at the same time inspected and passed by the Board of Trade inspector. It is 1,000 yards in length, 27ft. in width, and 18ft. 6in. in height from the rail level to the top of the arch. It is constructed of six concentric rings of brick grouted with cement, and at points where it passes under buildings it is of the thickness of eight rings. The tunnel is ventilated by two large open shafts at Torphichen-street and St. Cuthbert's-lane. Over the widened railway in the West Princes-street Gardens three new foot-bridges have been thrown. Two of these are of 96ft. span, and the other of 104ft. span. Two are 6ft. in width, and one, the westmost, is 10ft. New single-line tunnels have been pierced on each side of the old Mound tunnel. These are 120 yards in length, and 18ft. 6in. in diameter. They constitute a complete iron tube, the face of which, with its boltings and flanges, is incased in concrete. Many difficulties were connected with the construction of the northmost tunnel, through a mound of made-up earth, and underneath a heavy building like the Scottish National Gallery. The west end of the tunnel has been treated in ashlar work, and with its simple Classical architectural lines appears to form, from the garden, a base for the National Gallery. The new lines, tunnels, &c., will be brought into use in the course of this month. The contractors for the Haymarket tunnel were G. Lawson and Son; for the widening of the lines and engine sheds, James Young and Son, Edinburgh; and for the Haymarket Station, G. and R. Cousins, Alloa. The whole of the works were carried out from designs by the company's chief engineer, Mr. Carswell, under the supervision of the assistant engineer, Mr. James Bell.

LOSTWITHIEL.—The opening of the new viaduct at Milltown and the double line from that place to Lostwithiel took place last week. Two years ago the double line from Lostwithiel to Bodmin-road was opened. Not long afterwards, another section was opened, that from Bodmin-road to Liskeard, and later on the railway company opened a double line between St. Austell and Par. The only thing then required to have an uninterrupted double line from St. Austell to Liskeard, a distance of 20 miles, were two sets of rails from Lostwithiel to Par. That, however, could not be until Brunel's old wooden viaduct at Milltown, about a mile west of Lostwithiel, had been replaced by a stone structure. The excavations for this viaduct were commenced in October, 1893; and the double railway from Par to Milltown was opened on the 19th December last. The new viaduct, which completes the widening, has been built by Messrs. Relf and Son, of Plymouth, Mr. W. H. Blackall, of Liskeard, being the engineer. Mr. G. Westlake superintended the work, whilst Mr. C. H. Pickford watched the work on behalf of the railway company. The viaduct is 434ft. long, 26ft. 6in. wide, and is 70ft. high. It has five piers of granite, with two abutments, and there are six arches of label brick. The spandrels, string-course, and coping, are of granite, whilst the parapet walls are of brick.

Building Intelligence.

BEBINGTON, CHESHIRE.—The new Wesleyan school-chapel at Bebington was opened on Thursday last. The work has been carried out by Messrs. W. H. Bleakly and Co., of Birkenhead, from plans prepared by Mr. T. Taliesin Rees, A.R.I.B.A., also of Birkenhead. The contract was £930, furniture and fittings £100. The building is faced with red pressed bricks, relieved with white Storeton stone dressings; woodwork pitch-pine. The windows are filled with cathedral lead lights. The design is Late Gothic. The accommodation includes school-chapel for 300 persons, two vestries, kitchen, w.c., lavatory, heating-chamber, &c. The above is the first portion of a large scheme, the plans of which have been prepared by Mr. Rees, and includes a large chapel, vestries, &c., to cost about £3,000.

DALRY, N.B.—The new baths erected at Dalry by the corporation of the city of Edinburgh will be opened in the course of a week or two. The building is constructed of bricks, with a stone front to Caledonian-crescent. The entrance-hall is laid with tiles. The swimming-pond is 75ft. by 35ft. The plunge-baths are 40 in number, 28 second and third-class on the gallery upstairs, and 12 first-class in a separate part of the building. There are also spray and needle-baths, and foot-baths, and a laundry. Most of the pipes used are of iron, and the whole of the metal fittings are nickel-plated. The plumbing, sanitary, and gasfitting work has been carried out by Messrs. Wilson, Morrison, and Co., Edinburgh. The estimated cost of the building, exclusive of site and furnishings, is about £9,000.

EMPINGHAM.—On Thursday in last week the parish church at Empingham, near Stamford, Rutland, one of the largest and most important in the diocese of Peterborough, was reopened after much-needed restoration. The work of restoration has been carried out under the superintendence of Mr. J. C. Traylen, of Stamford, the diocesan surveyor, and the contractors were Messrs. Edmund Roberts and Son, of Weedon, Northamptonshire. The cost, about £2,000, has been defrayed almost entirely by Miss Cooper. The church was built in the 12th century, and was partially rebuilt in the 13th and 14th centuries. The south transept, windows, buttresses, and mouldings, as well as a great deal of the painting on the walls, belong to the Early English period. To this Decorated period belong the northern arcade of the nave, the chancel arch, and the south doorway and porch. The present restoration was necessitated by the rotten condition of the roofs throughout. The crushed and insecure state of one of the pillars rendered imperative its renewal on a new foundation. Other pillars and the remainder of the fabric have been made secure. In the windows every scrap of the old glass has been used up, including bits of stained material and coats of arms. The plaster also has not been scraped, but retains its ancient face, with scraps of wall painting thereon. New oak roofs, with thick lead covering, have been put up, the pattern of the old ones having been followed as closely as possible. The floor has been laid with stone instead of with tiles. New wood-block flooring covers the seating area, and for the present the worshippers will be accommodated with 300 chairs, supplied by Mr. W. Royce, of Stamford. Hot-water piping circulates round the nave and chancel, the heating arrangements being carried out by Messrs. J. L. Bacon and Co., of London. The tower and spire have been pointed, the pinnacles have been restored, a lightning conductor has been supplied, and the parapets have been attended to. The chancel has not been touched. Outside, the ground has been lowered round the north side.

RYDE, I.W.—The new pavilion on the pier at Ryde was opened with much ceremony on Thursday in last week. The pavilion occupies a portion of the open space that exists between the promenade pier and the railway pier. It is carried on 39 iron columns, framed together with steel rolled joints and circular tie-rods, each tie being adjusted by means of a right and left-handed screw coupling box, the foundations for these columns being bell-shaped castings sunk below the surface of the ground. The building consists of an octagonal concert hall and annexe. The former is 65ft. in each direction, capable of seating 700 people on the ground floor. In the concert hall, 14ft. above the ground floor, there is a promenade gallery 10ft. wide, carried by ornamental columns. The stage accommodates 25 performers, and has two dressing-rooms. The annexe contains on the ground floor a public refreshment-room, a private refreshment-room, ladies' and gentlemen's retiring rooms, entrance hall, and board-room, and on the first floor a room for the Royal Victoria Yacht Club with a private staircase, a second room with a large balcony over the porch, and a reading-room with a balcony. Round the base of the dome and on a portion of the annexe roof there is a promenade. The interior decorations are carried out in cream and yellow with terracotta canvas panels. Messrs. Grace, of Southampton, were the contractors.

WESTMINSTER.—Further details have been published as to Mr. J. F. Bentley's finally-approved Early Byzantine design for the R.C. Cathedral, from which it appears that, while the interior will be of common yellow brick, to be cased with marble and mosaics, for the exterior red brick, terracotta, and stone will be used. Generally, the external aspect will be one of plainness, depending rather on broadness of treatment and carefully-studied outlines, than on an exuberance of detail; but it is intended to make the entrances a great feature. The one at the western end will be surrounded by a composition measuring nearly 50ft. in height by a width of 30ft., and the great tympanum formed by the inclosing arch is to contain a seated figure of Our Lord flanked by the Blessed Virgin and St. Peter, considerably over life size. Near to this doorway will rise a campanile to an altitude of 300ft., capped with a belfry-story with domical roof. Little will be seen of the roofs, excepting those that cover the apsidal end over the Monks' Choir, and the two easternmost chapels of the Blessed Sacrament and Our Lady. The total sum promised towards the £150,000 required is £75,492, of which £42,870 is virtually in hand.

* * *

Mr. L. A. W. Rind, Deputy Conservator of Forests in the Central Provinces of India, died on Sunday at St. Stephen's-road, W., aged 46 years.

Among the measures which received the Royal Assent on Monday were provisional orders authorising the London United Tramways to construct additional lines at Hammersmith and Acton, another empowering the Corporation of Windsor to undertake the electric lighting of Windsor and Eton, and a third empowering the London School Board to acquire 73 additional sites for educational purposes.

The town council of Rochdale are seeking powers to borrow £40,000 for works of sewerage and sewage disposal. In connection with one section of this undertaking they have appointed Mr. G. F. Deacon, C.E., of Liverpool, to act as engineer in the laying of the main sewer under the canal near Well-i'-th'-Lane, a troublesome operation, for which Mr. Deacon will be paid a special fee of £200, in addition to having the services of a clerk of works at a salary of £4 a week. The corporation will have to pay a penalty of £10 an hour should a leakage occur.

CONTENTS.

The Forthcoming A.A. Gloucestershire Excursion ... 37
Striking Centres of Arches 38
Notes from Edinburgh 39
Classic Details and their Application 39
Building News Designing Club... 42
Australasian Timbers 42
A Promising Industry 43
Obituary 43
The London Building Trades 44
Engineering Notes 45
Building Intelligence 45
The Building News Directory ... ... ix.
Our Illustrations 46
Competitions 46
Correspondence... 63
Intercommunication 63
Legal 64
Legal Intelligence 64
Our Office Table 66
Meetings for the Ensuing Week 66
Water Supply and Sanitary Matters... 66
Tenders 67

ILLUSTRATIONS.

"JOHN MILTON AT THE AGE OF TEN," BY JANSSENS.—R.I.B.A. MEDAL DRAWINGS OF LLANDAFF CATHEDRAL.—NEW WAREHOUSE, BELFAST.—DESIGNS FOR A RIVERSIDE BUNGALOW.

Our Illustrations.

"JOHN MILTON AT THE AGE OF TEN."

This picture, by C. Janssens, is now in the collection of Mr. J. Passmore Edwards. It is one of the few, possibly the only, authentic portrait of the great Puritan poet at that early age. It was formerly in the possession of Mr. Thomas Hollis, from whence it descended to the gentleman on whose account it was sold by Messrs. Christie, Manson, and Woods on May 3, 1884, when Mr. Passmore Edwards purchased it. It was originally bought by Mr. Hollis of the executors of Mr. Charles Stanhope, who bought it of the executors of Milton's widow for twenty guineas. Such was the value in which Mr. Hollis held the painting, that when his lodgings in Covent Garden were on fire he "walked calmly out of the house with this picture by Janssens in his hand," leaving everything else to the flames (Tod's "Life of Milton," edit. 1809, p. 142). The picture was engraved by Cipriani in 1760, and a copy of the plate appears in Hollis's "Memoirs" (1780). It was also engraved by Gardiner, and published by Boydell in 1794.

LLANDAFF CATHEDRAL: ROYAL INSTITUTE OF BRITISH ARCHITECTS SILVER MEDAL OF MERIT PRIZE DRAWINGS.

These excellent drawings, comprising a monograph of this the greatest of the Welsh cathedrals, obtained the first Medal of Merit in the late R.I.B.A. competion for the year's prize. Mr. John H. James has sent us the following account of the building. Llandaff is a place of high antiquity, and, if not the first Christian fane erected in this island, was certainly the seat of the first Christian bishopric, having been founded early in the 5th century. The present structure stands on the site of an earlier and smaller cathedral, which was dedicated to SS. Peter and Paul, and founded by St. Dubritius, the first bishop of the See. The smaller cathedral consisted of a nave with aisles and an apse, and remained standing in 1120, but in a very dilapidated state, owing to the wars of the preceeding century. Bishop Urban, (1108-1136) rebuilt the cathedral, but still of small dimensions. The nave, it has been presumed from ancient drawings, was equal in extent to the present presbytery and one bay of the choir, and the choir with the Lady-chapel, and probably had no aisles, but a lateral tower with a baptistery below it, where the vaulted vestibule to the chapter house now stands. The see was utterly impovished at and soon after the Reformation, and the cathedral gradually got into a state of ruin. The decay went on steadily for centuries, and in 1718 Llandaff was in serious danger of being abolished altogether, a proposition having been entertained of moving the see to Cardiff. In 1752, however, sums were collected sufficient to prevent the whole building from going to ruin and an abominable Italian temple was erected inside the building, shutting off the choir from the nave, at a cost of £7,000 used in the most wretched waste. In 1835-6 the Rev. Henry Douglas, precentor of the cathedral, gave the first impulse to the restoration, which has been carried out by Deans Knight, Conybeare, and Williams. Dean Conybeare's well-known interest in the structure has evinced itself in his effort of restoring the fabric which had long served only as a small parish church, to a portion at least of its primitive magnificence, and rendering it available for study as a good specimen of English Mediæval architecture. And although the cathedral church of Llandaff can assert no comparison either in the exquisite richness of architectural beauty or history with such of its English sisters as Salisbury, Lichfield, and Ely, and even less with those of Canterbury, York, and Norwich, it can certainly claim supremacy both in elegance of detail and magnitude, over all other churches of its kind in Wales, and represents one of the finest and most remarkable results of church restorations in the country.

John H. James.

WAREHOUSE, BELFAST.

This building is now in course of erection for Messrs. R. Watson and Co., of Belfast, Ltd., and is situated on a triangular-shaped piece of ground at the junction of Library and Little Donegall-streets. The building is fireproof throughout, and is faced with local red bricks and terracotta. Mr. William J. Fennell, of Belfast, is the architect for the work, which is being carried out by Mr. James Kidd, builder.

"BUILDING NEWS" DESIGNING CLUB: A RIVERSIDE BUNGALOW.

(See description on p. 42.)

◆

The trustees of the National Gallery have just acquired, by purchase from Messrs. Dowdeswell, New Bond-street, a picture painted in 1808—"Smugglers on the Irish Coast"—by Julius Cæsar Ibbetson.

In the statement of affairs issued by the Official Receiver relative to the estate of Mr. Allen Holmes, of the Railway Saw Works, Turner-street, Ashton-under-Lyne, builder and contractor, the liabilities unsecured amount to £3,047, and the assets to £3,392 7s. 8d., leaving a surplus of £345 3s. 1d. The causes of failure are said to be "paying too large a composition in 1892, bad trade, the long frost last winter, loss of credit, bad health."

The Prince of Wales, who was accompanied by the Princess of Wales and the Princess Victoria, visited the Royal Benevolent College at Epsom on Monday, and laid the foundation-stone of the new Lower School. The buildings, which will cost £13,000, are being built from designs by Sir. A. W. Blomfield and Son, and were illustrated in our issue of the 21st ult. Messrs. Dorey and Co., of Brentford, are the contractors, and the clerk of works is Mr. Harding, of Epsom.

A sub-committee of the Lord Provost's Committee of Edinburgh Town Council had before them on Monday a motion for the extension of the municipal boundaries of the city. After examining a plan prepared by the city road surveyor, showing the proposed extension, it was agreed to recommend general approval of the scheme, and to ask a remit to further consider details and report, with a view to proceeding this year for the necessary Parliamentary authority, should that be resolved upon. The proposed extension of the municipality follows the boundary lines of the new city parish, and also includes the burghs of Leith and Portobello.

A stained-glass window has been placed in the south side of the chancel of St. Michael's Church, Bournemouth, as a memorial of the late Captain G. Maxwell Goad. The subject represented is the finding of the child Jesus in the Temple. The prominent figures in the foreground are Gamaliel and Hillel, and immediately behind Christ is Abbas. In the architectural canopy-work above the subject are angels, holding scrolls, on which appears the quotation from St. John xii. 46, and in the topmost piece of the tracery is the emblem of the Holy Spirit.

Sir George Hayter's historical picture of "The Trial of Queen Caroline" is to pass into the custody of the National Portrait Gallery. The picture is a large one, measuring 13ft. 9in. by 8ft., and was painted for the first Lord Dover. It is an heirloom, and so could not be included in the sale of the Clifden properties. The picture has been for some time on view at Mr. Vokins's gallery in St. James's-street. The heads in the picture are nearly all portraits, and its value is greatly enhanced by the key by which it is accompanied.

COMPETITIONS.

Aston Union, Birmingham, New Cottage Homes.—The guardians for this union recently instituted an open competition for cottage homes. Numerous sets of designs were submitted by architects. Mr. William Martin was appointed assessor, and he selected the designs prepared by Messrs. Franklin Cross and J. R. Nichols, of Union Chambers, Temple-row, Birmingham, and awarded them the first premium of £70. The guardians have since resolved to appoint the first premiated architects to carry out the work. The architects' estimate for the homes was £25,200. The scheme embraces homes for boys and girls, probationary home, school, place of worship, infirmary, workshops, swimming-bath, bakery, stores, superintendent s house, fire-engine station, &c.; these will be erected on a site near to the Gravelly Hill workhouse, but will have no connection with that establishment.

Ipswich New Workhouse.—In this competition the Ipswich board of guardians have received a report from the assessor, Mr. Charles Barry, F.S.A., of Westminster, awarding the first premium of £100 to Mr. Percy D. Adams, of Woburn-square, son of Mr. Webster Adams, of Ipswich, and the second premium of £50 to Messrs. Tree and Price, of London. The limit of outlay was £20,000.

CHIPS.

At Weston-super-Mare, Bishop Auckland, and Brechin ½d. per hour extra has been granted to carpenters and joiners, and a code of rules signed by the employers.

The Bristol Corporation have sold the site of the old gaol for £22,500 to the Great Western Railway Company, who require the property for the extension of their siding accommodation in that city.

On Wednesday week Miss Gretton laid the foundation-stone of a new church at Stretton, near Burton, the entire cost of which, estimated at over £15,000, is to be defrayed by her father. The architects are Messrs. Somers Clark and Micklethwaite, of Westminster, and the builder is Mr. Halliday, of Stamford. The church is to accommodate over 400 worshippers.

Business premises in Fore-street, Devonport, have just been rebuilt. Mr. H. G. Luff is the architect, and Mr. Potter, also of Devonport, is the builder.

The transactions last week at Tokenhouse-yard were very satisfactory, the official returns showing an aggregate of £223,640, which is the highest total reached during the present year.

Foundation-stones of the new chancel and north aisle extension, now being added to the Church of St. Mary Magdalene, Rodborough, near Stroud, were laid on Monday.

The new promenade along the sea front at West Looe was formally inaugurated on Friday. It has been constructed from plans by Mr. Joseph Thomas, C.E., by whom the Hannaford Estate, to which it forms a frontage, is being developed. It is proposed to build about 200 villas in two rows overlooking the sea.

The noble parish church of Ledbury will be reopened by the Bishop of Hereford, after restoration, on Wednesday, July 31.

The Grange-over-Sands Congregational Church, now approaching completion, to the designs and under the superintendence of Mr. E. Howard Dawson, A.R.I.B.A., F.S.I., architect, of Lancaster, is ventilated by means of Shorland's patent exhaust roof-ventilators and specially-designed inlet tubes.

Alderman Arthur Hill has offered to present to the town of Reading the facsimile of the Bayeux tapestry which has recently been exhibited in the Reading Town-hall. The Reading Town Council have accepted Mr. Hill's offer, and the production will be hung in the new Art Gallery and Museum now being built at Reading.

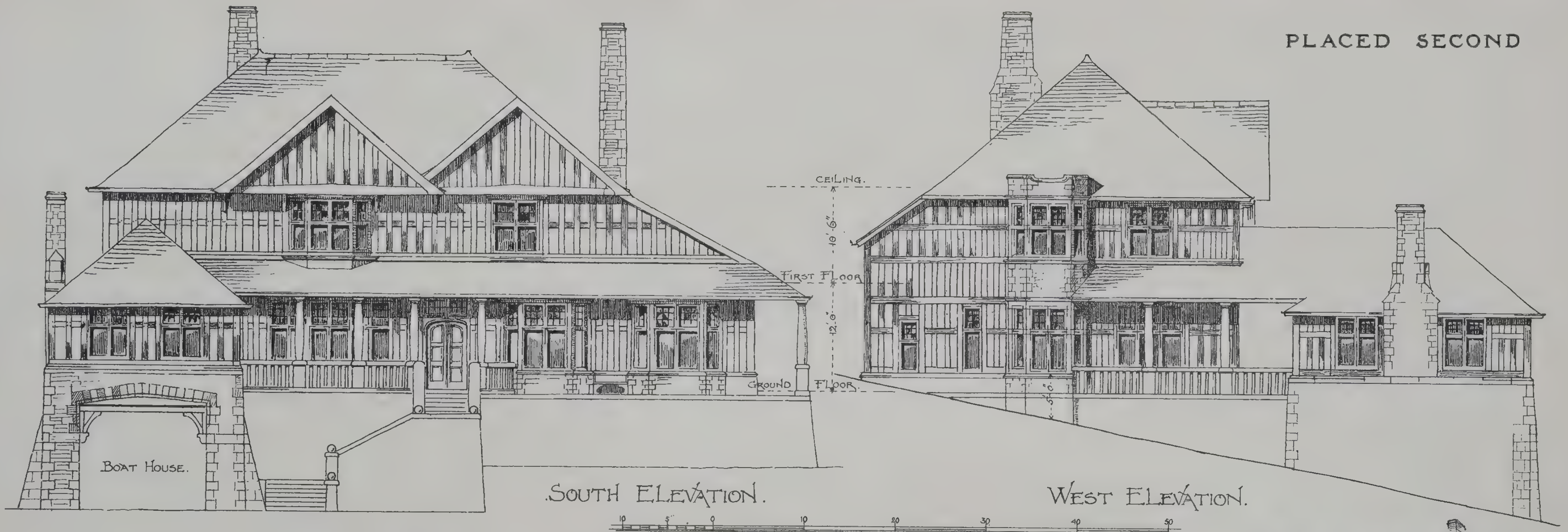
The spire at St. Mary's Church, Devonport, which is in an insecure condition, is about to be restored from plans by Mr. Henry C. Luff, of that town, who has given his services.

The London County Council, on Tuesday, deferred consideration of a report by the Asylums Committee which recommended the expenditure of £9,500 upon alterations and improvements at Claybury Asylum.

The Duchess of Teck visited Bloomsbury on Tuesday for the purpose of opening the new buildings of the London Homœopathic Hospital in Great Ormond-street, which have been erected at a cost of £45,000 (of which £10,000 is still unsubscribed), and provides accommodation for 100 patients. Mr. Alfred Robert Pite is the honorary architect.

UNIVERSITY [illegible] ILLINOIS

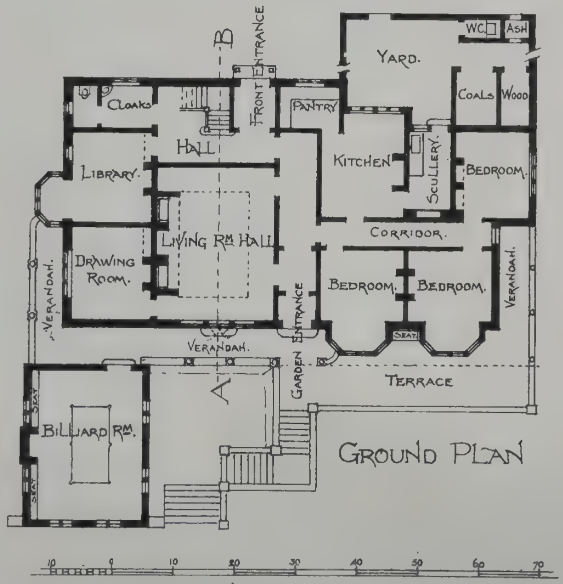
PLACED SECOND



SOUTH ELEVATION.

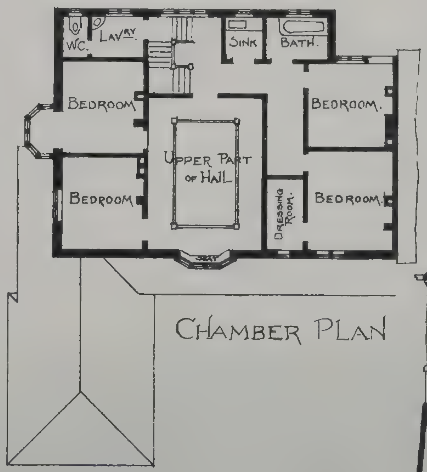
WEST ELEVATION.

SCALE FOR ELEVATIONS.

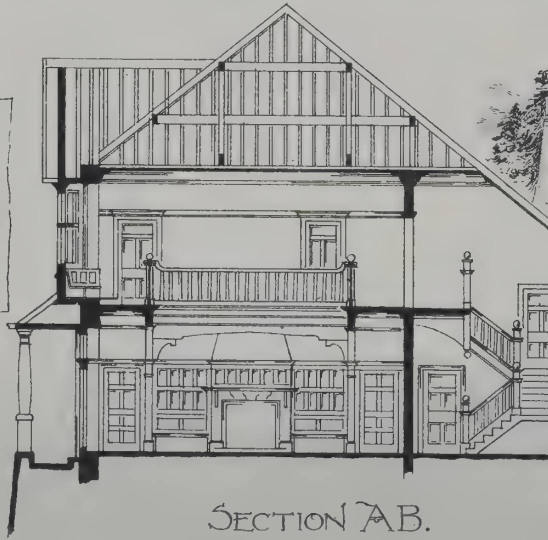


GROUND PLAN

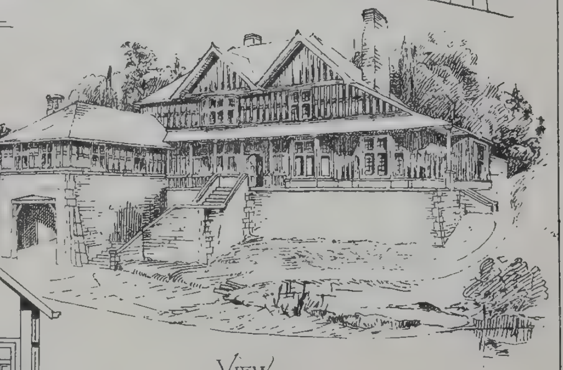
SCALE FOR PLANS.



CHAMBER PLAN



SECTION AB.



-VIEW-

A RIVER-SIDE BUNGALOW

DESIGN BY "THE DODO"

Photo Lithographed & Printed by James Akerman, 6, Queen Square, W.C.

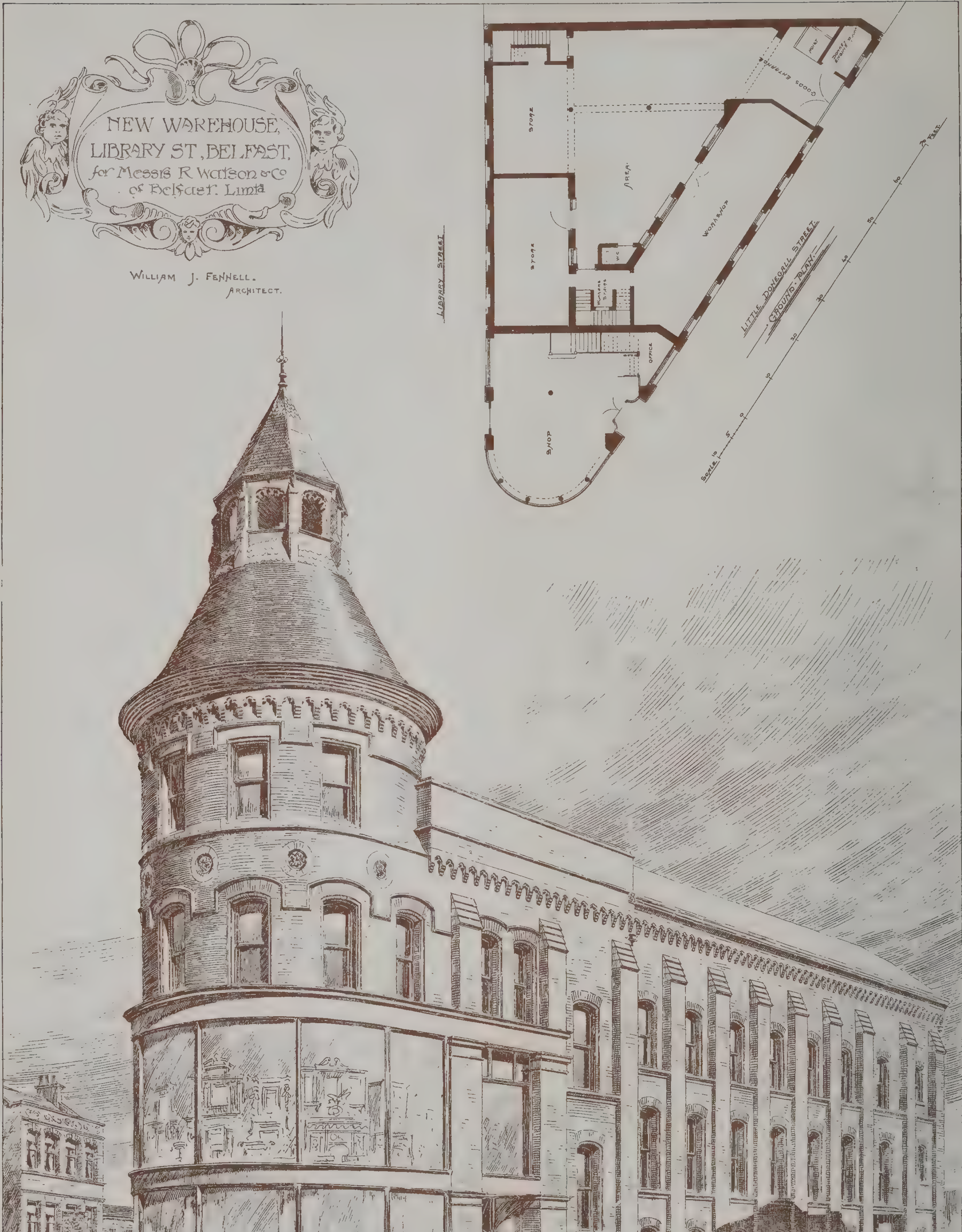


Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C.

THE BUILDING NEWS JULY. 12, 1895.

LLANDAFF · CATHEDRAL - R · I · B · A · SILVER · MEDAL · FOR · MEASURED · DRAWINGS ·

MEDAL · OF · MERIT · AWARDED · TO · J · H · JAMES ·

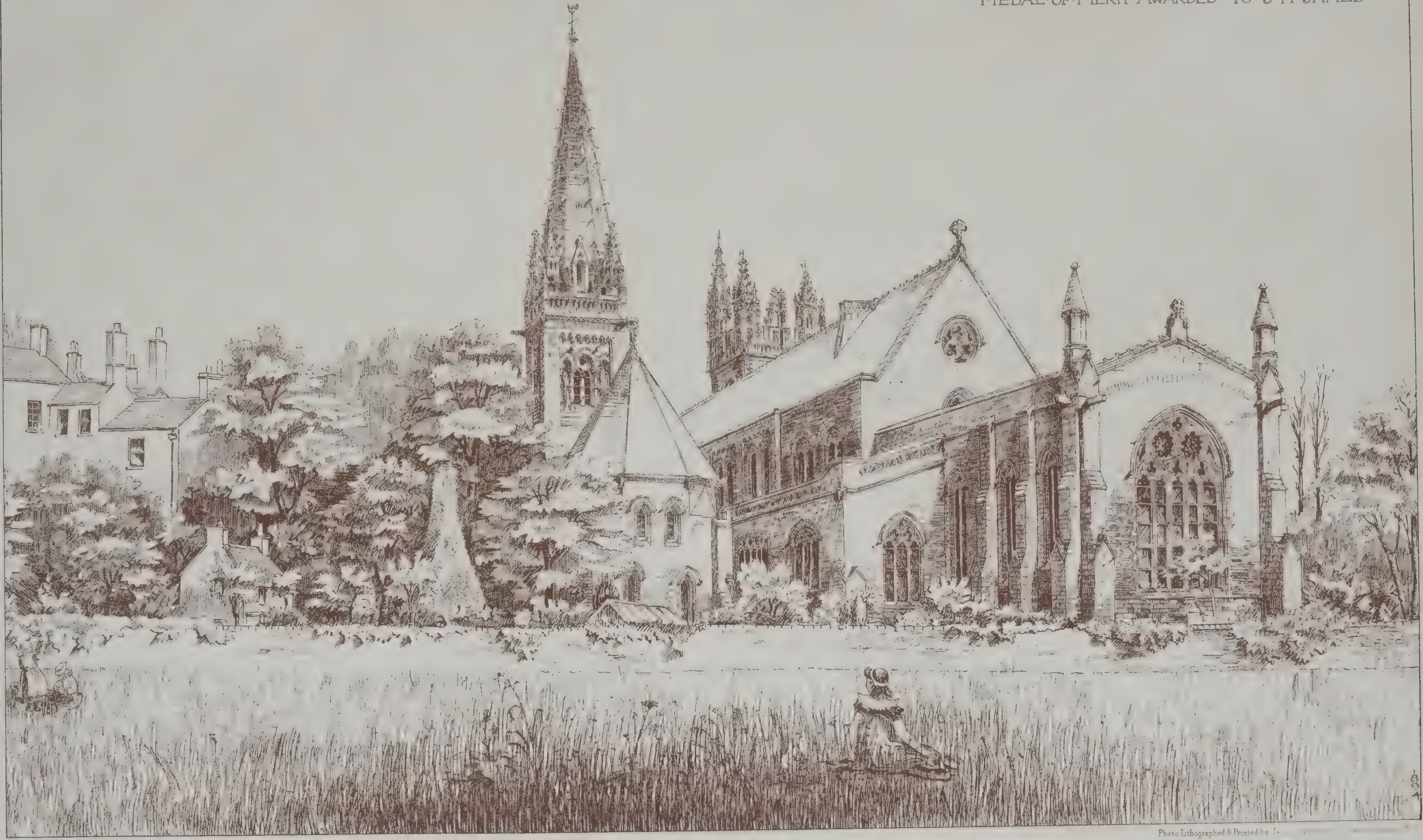
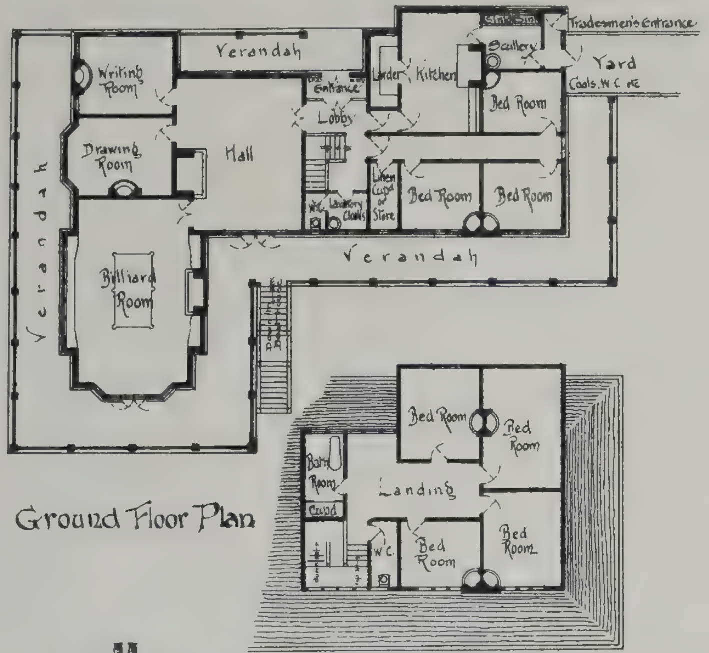


Photo Lithographed & Printed by J

B.N.D.C. A Riverside Bungalow

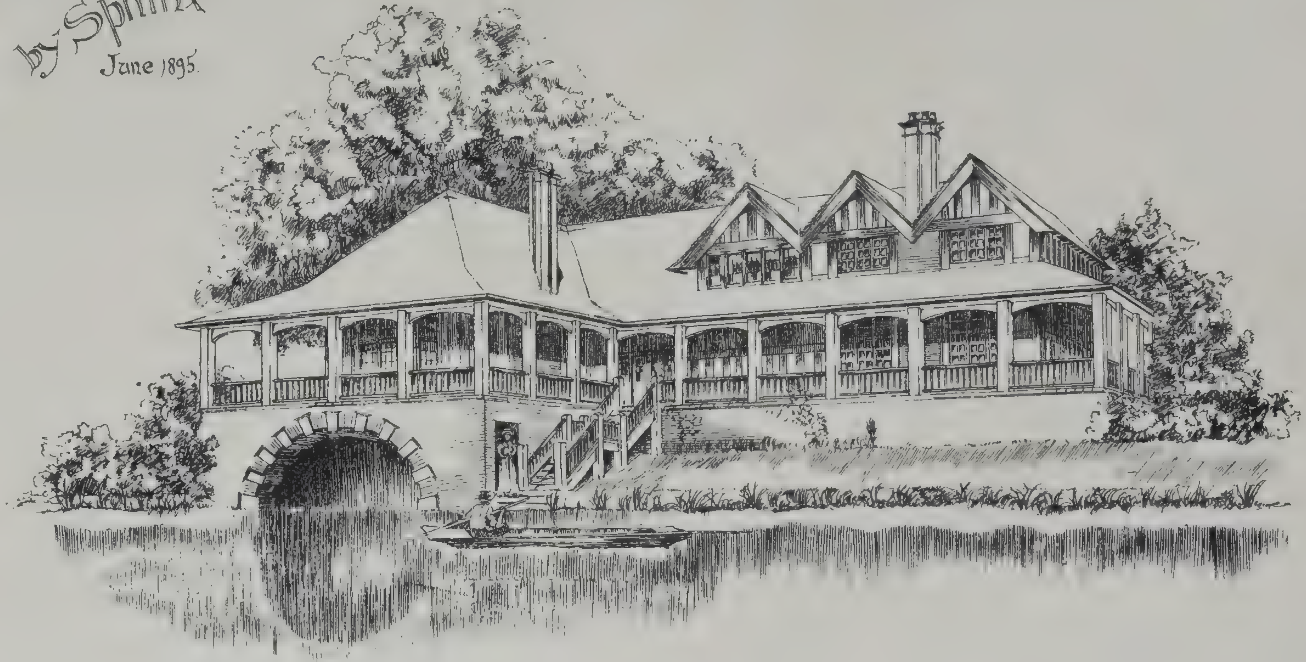
by Sphinx
June 1895.

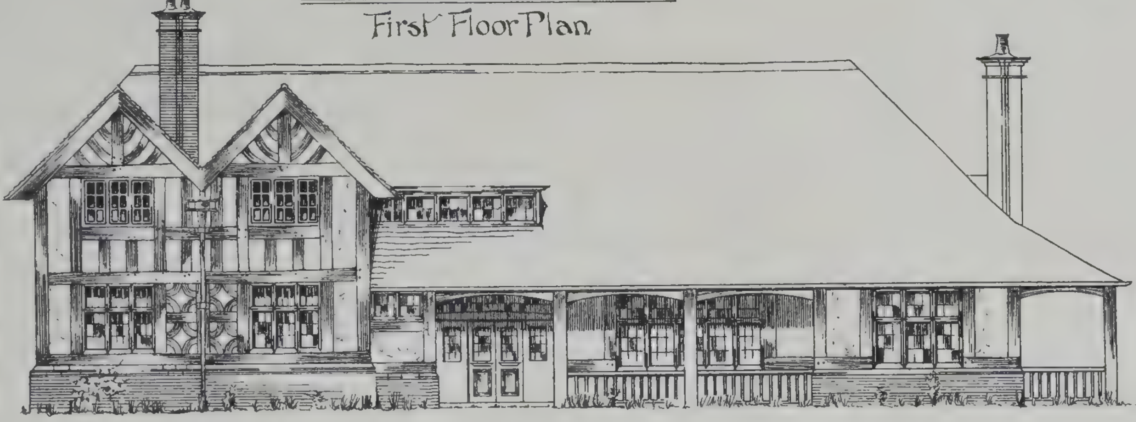
PLACED FIRST.



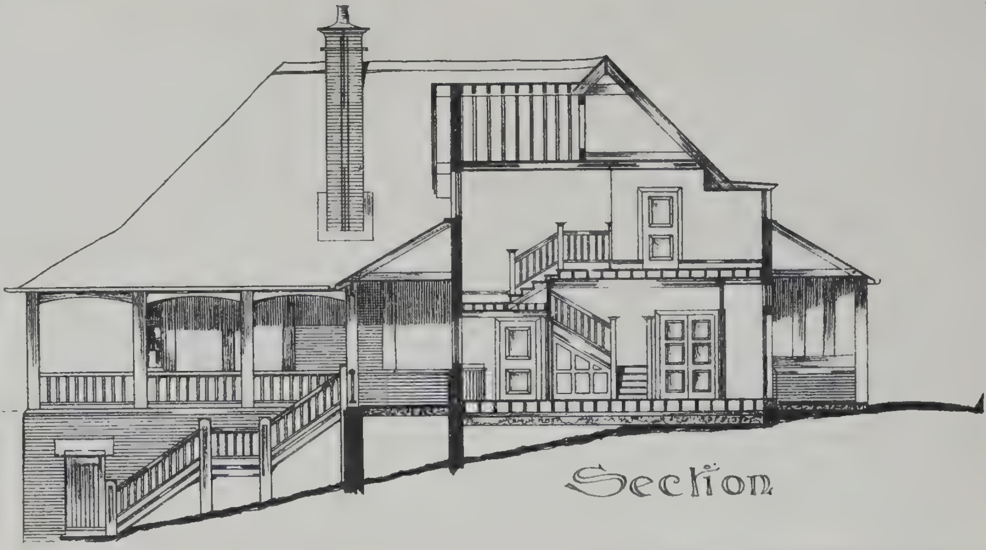
Ground Floor Plan

First Floor Plan





North Elevation



Section

[illegible] Square W.C.

"PHOTO-TINT," by James Akerman · Queen Square London W.C.

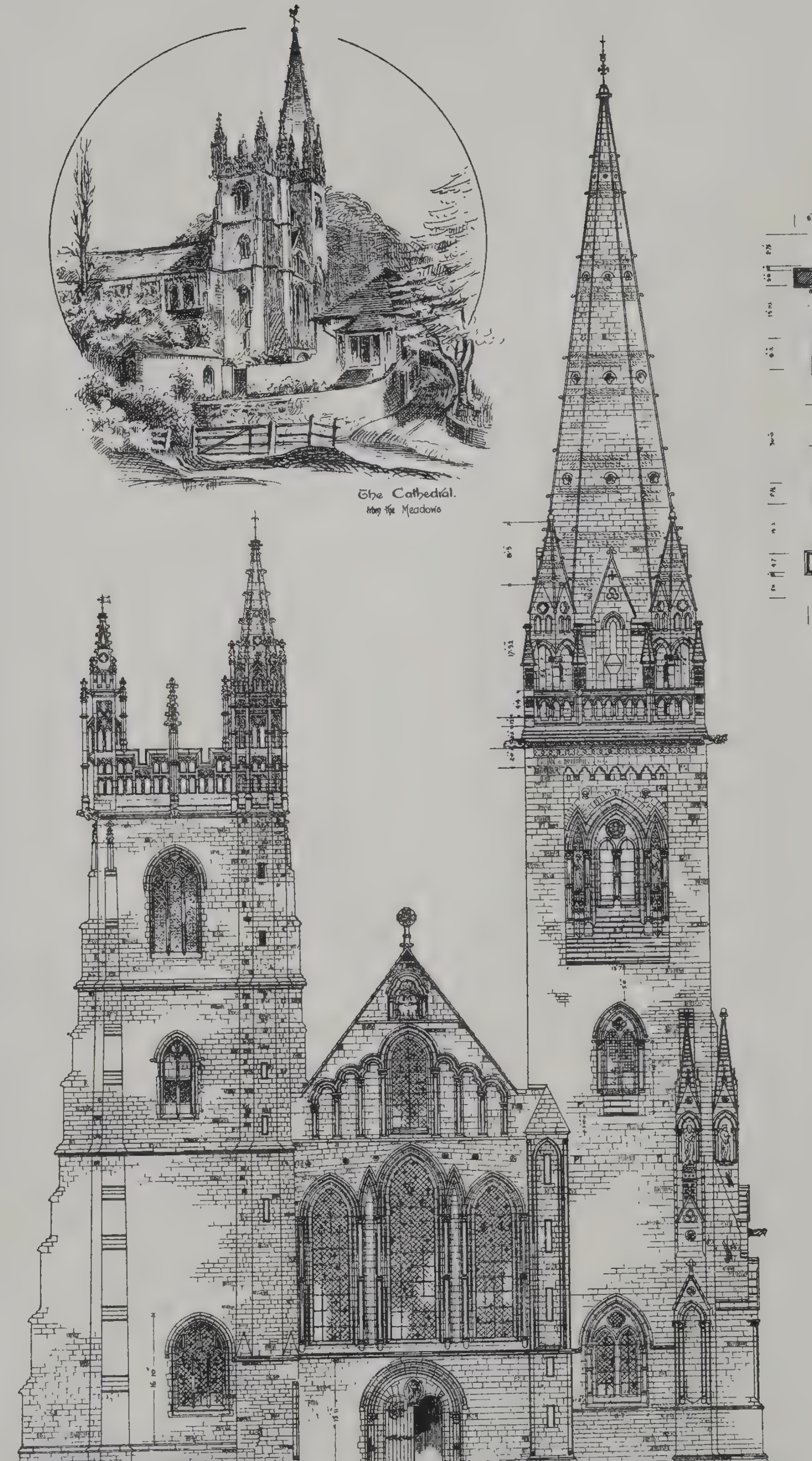
JOHN · MILTON · AT · THE · AGE · OF · TEN · BY · JANSSENS

FROM · A · PAINTING · IN · THE · POSSESSION · OF · MR J · PASSMORE · EDWARDS

R·I·B·A· SILVER·MEDAL

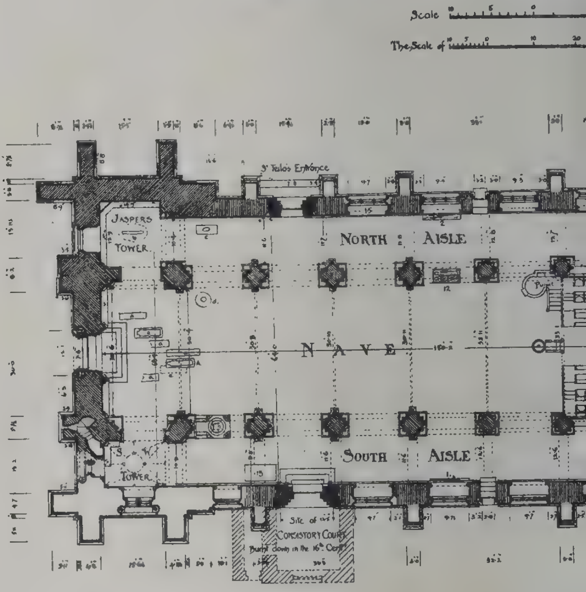
MEDAL·OF·MERIT·AW

THE CATHEDRAL CHURC



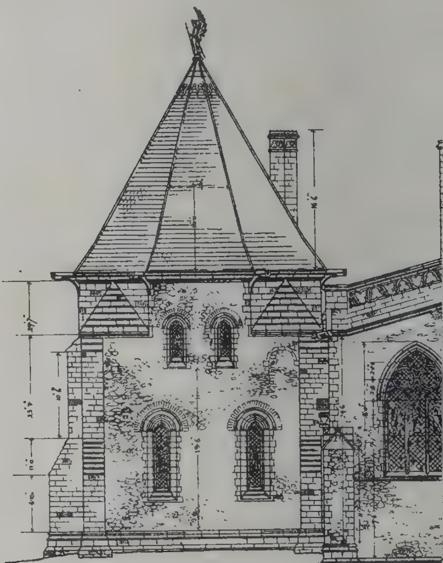
The Cathedral.
from the Meadows

West Elevation.



Effigies & Monuments.
"bcde" Early British graves discovered
"Aaaaa" 13th Century Coffins discovered
1 Bishop Henry de Abergavenny - 1218.
2 St Dubritius died 512 date of effigy about 1220
3 S^t Telo " 566 " " " " "
4 Bishop W^m de Breuse died 1287
5 A 13th Century Coffin lid unknown.
6 Bishop Edmund Brumfield - 1391
7 Lady Christian Audley early 15th cent^y
8 An Emaciated Lady Unknown " " "
9 Bishop John Marshall - 1496
10 Sir D^d Matthew - standard bearer to Edward IV - 1500.
11 Sir Christopher & Lady Matthew - 1500 - 1526.
12 Sir William " " " 1528 - 1550.
13 Benj^n Hall Esq^r Hensol Castle - 1817
14 The R^t Hon: John Nicholl D.C.L. 1838.
15 Henry Thomas Esq^r 1863.
16. Bishop Ollivant - 1882.

a. Stair up to Library
b Hagioscope
cc. " above (Norman)
d 14th cent^y Reredos
ee. Signs of destroyed Arches.
s Stone seats.
◆ Linen Chests.

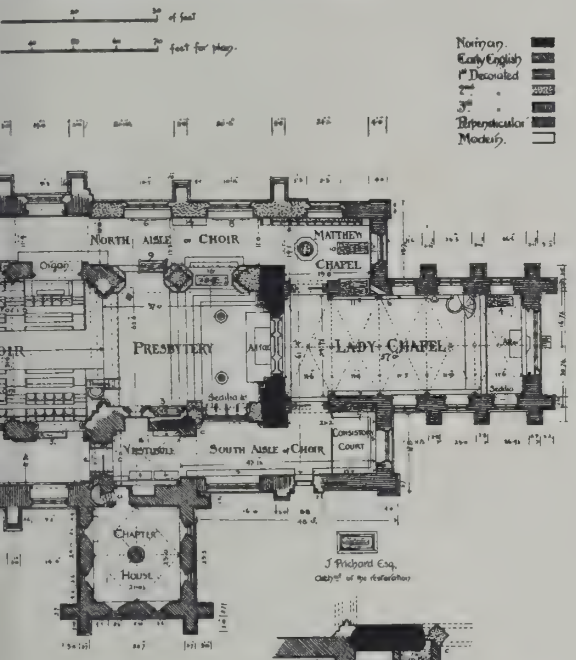


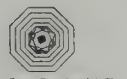
(Measured & drawn on the spot.
except Spire, top of tower & Plan ...)

R·MEASURED·DRAWINGS·

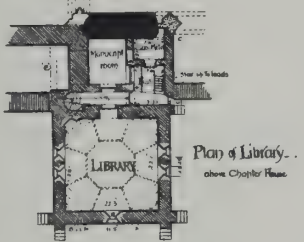
DED·TO·J·H·JAMES·

F SS. PETER & PAUL LLANDAFF.



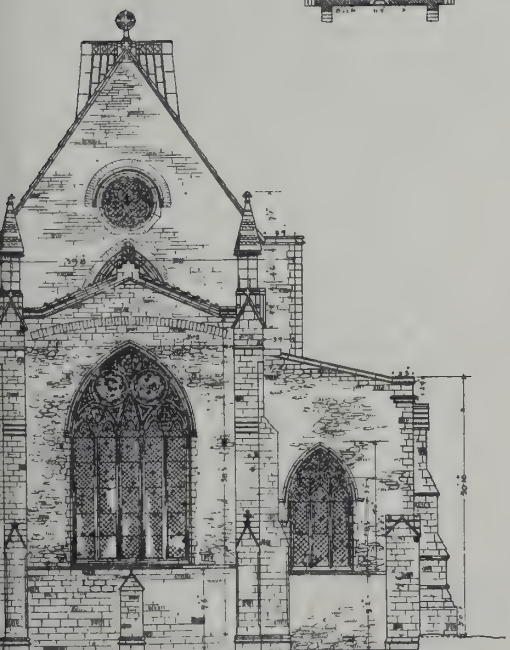


Dean Conybeare 1857.

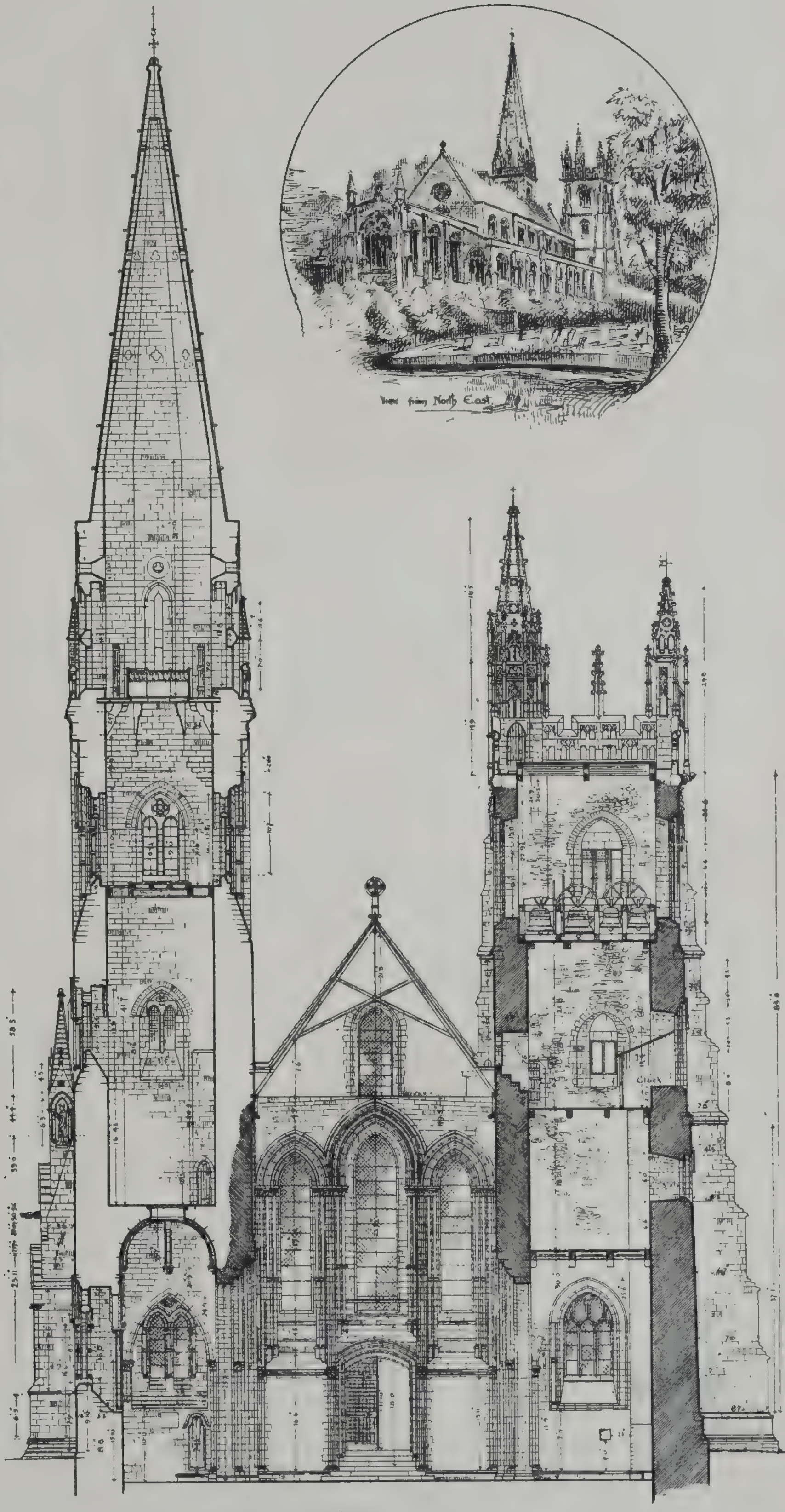


Plan of Library above Chapter House

View from North East.



East Elevation.



Transverse Section looking West.

Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C.

OF THE
UNIVERSITY OF ILLINOIS

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to THE STRAND NEWSPAPER COMPANY, LIMITED.

TERMS OF SUBSCRIPTION.

One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India, £1 6s. 0d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front-page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No Front-page or Paragraph Advertisement inserted for less than 5s.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page Advertisements and alterations in serial advertisements must reach the office by Tuesday morning to secure insertion.

SITUATIONS.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is ONE SHILLING FOR TWENTY-FOUR WORDS, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., LI., LIII., LIV., LVIII., LIX., LX., LXI., LXII., LXIII., LXIV., and LXV. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

RECEIVED.—R. J. Lavenham.—Associate.—N. G. and Co.—J. W. F.—C. G. (Belfast).—M. F. C. Co.

J. T. (Full up for months to come. Why do not you and the rest of the younger men who send these endless series of poor perspectives of houses and churches turn your endeavours to the preparation of decent sheets of *working drawings*—sections, plans, elevations, and the like? You have no idea how much more likely these are to impress builders and clients with a sense of your ability than mere perspectives. Working drawings—even of the most ordinary buildings—are always welcome.)

Correspondence.

SOWERBY BRIDGE BOARD SCHOOL COMPETITION.

To the Editor of the BUILDING NEWS.

SIR,—I note in your last issue the result of competition for new Board School, Sowerby Bridge, Yorks. This competition is notable from the fact that the board offered only 3½ per cent. remuneration for all the usual architect's work, including complete builder's quantities, and there being no clerk of works the architect was expected to take the extra superintendence, and finally the competing architects were expected to take their own measurements of site.

One would have thought that the architects of the district would have shown their contempt for such a glaring attempt at architectural sweating by abstaining from competing; but the sequel has, however, shown such an exalted view of professional prestige, if not morality, to have been fallacious, four firms having responded to the invitation.

I note also in your report, and I have taken the trouble to verify its accuracy, that one of the quartette is an *Associate of the Royal Institute of British Architects* "and another a *Fellow of the Institute of Surveyors.*" I will make no comment upon the action of these gentlemen in competing; but would, however, like to ask for an expression of opinion, if I am correct in my surmise, that both of the institutes named look to their members to uphold the dignity and well-being of their several professions, and if it is the correct thing for members of such institutes to associate with, and lend the countenance of their names in connection with, public competitions for work offered at unrecognised standards of remuneration.—I am, &c., REFORMER.

CHIPS.

A tablet has been erected in Holy Trinity Church, Tunbridge Wells, to the memory of the late Canon Hoare, for many years vicar of the parish.

Sir Frederic Leighton and Mr. Walter Crane have received second-class medals at the International Exhibition at Munich.

On Monday a memorial chapel and vestry were opened at St. Mary's Church, Dover, dedicated to the late Canon Puckle, who died last year after being vicar of the parish for over 50 years.

In the list of receiving orders published in Tuesday's *London Gazette*, the name appears of Henry Vulliamy, of Loftus-road, Shepherd's Bush, W., and Lawrence-lane, Cheapside, E.C., architect.

A Conservative club is about to be built in Fore-street, Devonport, from designs and plans by Mr. H. G. Luff, of that town.

The new bank buildings which Messrs. Wm. Brown and Co. are erecting in Park-row, Leeds, have been intrusted to Messrs. Alfred Waterhouse, R.A., and Son. The ground has now practically been cleared, and the work of building will be proceeded with rapidly.

A feature of the Industrial Exhibition to be held in Berlin is a separate pavilion, covering about 1,200 square yards of ground, to be devoted to modern city improvements. Here will be shown the details of the management of educational, hospital, and benevolent institutions. An exhibit will also be made of sewerage, gas, and water systems, as well as of bridges, markets, and public baths. These will be illustrated by models and drawings, as well as by original objects.

Dr. Whiteside, the Roman Catholic Bishop of Liverpool, laid the foundation-stone on Sunday of schools which are to be erected in connection with St. Charles' Catholic Church, Aigburth-road, Liverpool. The new school premises will accommodate 150 children, the dimensions of the building, which is to comprise schoolroom, classroom, and cloak-room on one floor, being 46ft. by 44ft. Messrs. Sinnott, Sinnott, and Powell are the architects, and the contract is let to Mr. Fogarty, Old Swan, the estimated cost being £980.

At the half-yearly meeting of the London Tramways Company held on Tuesday, it was reported that £50,000 worth of debentures had been issued, the money being required to extend the system of tramways for three-quarters of a mile from the present cable terminus at Telford-avenue, Streatham Hill, to Streatham Common, to build a granary at East Greenwich, and to add to the company's stabling at Camberwell-green.

Mr. Justice Wills on Saturday gave judgment in the action brought by Messrs. Clutton, estate agents and surveyors, of Whitehall, against Messrs. Attenborough, to recover £3,500, the proceeds of a large number of cheques which the defendants had cashed for a man formerly in the employ of the plaintiffs, who misappropriated moneys during eight years. He came to the conclusion that the defendants had received the cheques honestly, and he, therefore, entered judgment in their favour, with costs.

The death is announced, at the age of four-score years, of Mr. John Absolon, the well-known miniaturist and water-colour draughtsman. He was for many years treasurer of the Royal Institute of Water Colour Painters, and to the exhibitions of that body, and of the New Society of Painters in Water Colours, he had contributed during the past 56 years no fewer than 660 works.

The memorial-stones of a Sunday-school for the Primitive Methodists at New Shildon, to cost £1,100, and provide for 350 scholars, were laid on Saturday.

At the last meeting of the Burnley Town Council, the appointment of Mr. George H. Pickles, assistant surveyor, to the position of surveyor, at a salary of £250 per annum, was confirmed. A long discussion took place on the appointment of Mr. Button as consulting engineer to the corporation for a period of two years, at a salary of 100 guineas per annum. An amendment that the appointment of Mr. Button be referred back for consideration, by three committees, was lost, and the recommendation of the committee agreed to. A saving of £350 a year will be effected by the new arrangement.

In consequence of the union of the West and South United Presbyterian congregations in Duns, the church of the former was no longer required by the congregation. It has just been put up to public auction, and knocked down at £170. It cost £2,000 to erect 74 years ago.

Intercommunication.

QUESTIONS.

[11378.]—**Steps in Churches.**—Will some reader interested in ecclesiological matters answer the following query, which can but interest a large number of people, although the point has been more often overlooked than is generally supposed? It is evident, from the lowness of the sills of the east windows of a large number of Mediæval chancels, and also the position of their sedilia, that more than one step at the entrance to the chancel must frequently have been left out, and where they have been erected I fancy these steps are of subsequent date, if not actually modern. At Sompting, in Sussex, and Barfreston, Kent—another very Early church—not to name other examples, there are steps actually down into the choir, and at Sall, in Norfolk, the east window is a specimen of the use of the low-level sill with no steps into the chancel, and I fancy there are none at Blythborough, in East Suffolk. An elevated platform at the west end is a very common feature in our old parish churches, with steps down into the nave. I want to know what was the usual level of the sanctuary as compared with the floor of the nave, generally speaking, in parish churches before the Reformation and also afterwards? Secondly, was the elevated platform at their west ends, as above described, mainly due to the exigences of the churchyard level outside, or was there any other reason? It is not at all an uncommon arrangement to step down into the church, too, out of the S.W. porch, and in such cases the steps are clearly often the original ones, and have not been inserted because of the accumulation which time has raised in the level of the churchyards. Economy of height to avoid expenditure cannot be urged as the reason where outlay of labour and money surely must frequently have been little considered, seeing how rich and elaborate the architecture of our old churches for the most part was. I should be glad of a reply.—LANDED PRROPIETOR.

[11379.]—**Valuations.**—What is a fair charge for making valuations for the purposes of Probate? The valuation in my case was of freehold land and farm buildings in different parts of the country, and amounted to about £40,000.—ARCHITECT.

REPLIES.

[11375.] — **Northamptonshire Churches.** — "Bicyclist" cannot do better than carefully study "Churches of the Nene Valley," by Mr. John Johnson and Mr. A. H. Kersey, which gives sketches and details of the most interesting buildings.—H. L.

[11376.]—**Right of Support.**—If the person making the excavation took all necessary precautions, such as shoring and strutting, he cannot be made liable. It is difficult to decide such a point without seeing the building and knowing the actual facts.—H. L.

[11377.]—**Water Colours.**—For tinting new stonework in elevations, use lignt sepia, raw umber, or very light Payne's grey. Avoid using a tint similar to that used for other materials.—H. L.

The new English church of St. James the Apostle, at Grindelwald, will be opened on St. James's Day, June 25, when the sermon will be preached by the Dean of Norwich. The cost of the church will be about £2,200, and it will seat 300 persons.

With the object of obtaining spring water for brewing purposes, boring operations by means of the diamond drill process have recently been carried out on the premises of the Lion Brewery Company, Pepper-street, Chester, by Messrs. Thom, well engineers, of Patricroft. An abundant supply of good water was found at a depth of 500ft., the whole of the borings—9in. diameter for the first 200ft. and afterwards of 6in. diameter—passing through solid sandstone.

Mr. Laws, the borough engineer of Newcastle-on-Tyne, has issued a report on the proposed sectional scheme of cable trams in that city. They will run out for 12½ miles, and the cost, including engine-houses, engines, track, &c., but exclusive of land, he estimates at £125,000. The widening of Byker Bridge is suggested, and that will cost an additional £5,000. He gives the preference to cables above all other systems.

At Friday's meeting of the Rochdale town council the chairman of the Paving and Sewering Committee reported that the Local Government Board had given sanction to the corporation for the borrowing of £40,000 on condition that extra land could be had at their sewage farm, and that they had permission from the Railway and Canal Companies to make the sewers under the railway and canal. They had obtained the consent of both companies, and had engaged Mr. G. F. Deacon, C.E., of Westminster, to superintend the work required in carrying the Sudden Valley sewer under the Rochdale Canal. Mr. H. G. F. Barham, of Pontypridd, had been engaged to act as resident engineer. The report was adopted.

On Saturday afternoon the foundation-stone of the Victoria Jubilee Technical School at Preston, now in course of erection on a site comprising 5,879 square yards, in Corporation-street, Preston, given by the corporation, was laid by Mr. W. Ascroft, J.P., president of the Harris Institute. The Harris Institute have given grants of £10,000 to the building fund, and £20,000 for the endowment of the schools. Messrs. Cheers, Aspinall, and Smith, of Blackburn, are the joint architects.

Legal.

THE BUILDING LINE.

DISPUTES about building lines are common enough, and there have been numerous cases affecting the matter; yet it is not clear who is to decide what is the line—the architect to the local authority, or the magistrate before whom the case is brought. It is certainly time that this primary point, at all events, was finally settled, and so it may be hoped that the recent case of "Allen v. London County Council" (*Times*, July 2) will be taken to appeal, in order that a clear and conclusive decision upon so important a principle of practice may be obtained. This case arose over some shops which had been built upon land at the corner of Birchington-road, Kilburn, having a frontage of 22ft. in the Kilburn High-road, and of 58ft. to the Birchington-road. The front of the houses and shops in Birchington-road extended 16ft. beyond the building line for that road as determined by the certificate of the superintending architect of the London County Council. The contention of the Council was that his certificate was final and conclusive, and binding on the Court, and upon the summons before him the magistrate had adopted this view, and made an order for the demolition of the houses as far as they were beyond that line. From this ruling the owner now appealed, the point taken, however, being the technical one that the certificate did not sufficiently define the position of the shops affected.

But on the hearing before Justices Wills and Wright, those learned Judges, while following the case of "Barlow v. St. Mary Abbott's, Kensington" (11 App. Ca. 257), did not hesitate to say that this was most unsatisfactory. They pointed out that, although Lord Watson had there held unhesitatingly that the architect was the person to decide the building line, Lord Bramwell with equal emphasis had held that it was for the magistrate; but as Lord Fitzgerald followed Lord Watson, his opinion prevailed, but it still left the weighty judgment of Lord Bramwell the other way. Following these judgments, the Divisional Court now held that the certificate of the architect was binding, and so they confirmed the magistrate's order; but they explained that they did this solely in deference to the opinions of the various Judges, and apparently rather against their own views of the question. The result is that in this case a frontage in the high road of 28ft. is cut down to one of only 12ft., as the houses must be put back 16ft. to meet the building line of the side road. Seeing how much property may be at stake, it seems doubtful whether, apart from the point as to what really is the law, it is fair and just that the decision should lie in the hands of an official of any kind.

Fred. Wetherfield, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

The school board for Harpenden have adopted plans by Mr. Anscombe for new board schools.

The Duke of Devonshire will preside at the banquet of the Sussex Archæological Society, at the Queen's Hotel, Eastbourne, on Thursday week, 25th inst.

At a meeting of Aberdeen Harbour Board, on Tuesday, Mr. William Smith, the harbour engineer, intimated his resignation, and trusted that, in consideration of his services during the past twenty years, an adequate honorarium in lieu of retiring allowance would be granted. Mr. Smith's resignation was accepted, and an honorarium of £1,000 was granted to him on demitting office.

The artists at Newlyn are so well satisfied with Mr. Gregory Jones's frescoes over the chancel arch of the "church of the painters" that he has been commissioned to decorate in a similar manner the whole of the walls. The expense of this will be defrayed by the Rev. R. Peel Yates, the son of the General depicted as presiding in last year's celebrated Academy picture, "Gentlemen, the Queen!"

At the last meeting of the Edinburgh Town Council, Mr. W. N. Colam, M.I.C.E., M.I.M.E., was, in conjunction with Mr. Cooper, the burgh engineer, elected engineer for the construction of 18 miles of cable tramways which are to be laid down at once in the city.

LEGAL INTELLIGENCE.

Powers of Vestries over Sewers.—The Queen v. the Vestry of St. George, Hanover-square.—Mr. Justice Wright and Mr. Justice Kennedy gave judgment on July 4th, in the Court of Appeal, on a rule calling upon the Vestry of St. George, Hanover-square, to show cause why a writ of *mandamus* should not issue directed to them commanding them to comply with an order made by the London County Council, dated December 4, 1894, directing the vestry to construct a sewer therein described, or to execute sufficient works to secure the communication with the main sewers of the Metropolis of the sewer or drain receiving sewage from the premises in the said order mentioned. The question was whether the London County Council has the power of taking the initiative by ordering a vestry to construct specific sewers which the Council in its discretion thinks ought to be constructed.—Mr. Justice Wright, in giving judgment, said,—The question is whether the County Council, as representing the old Metropolitan Board of Works, has the power of compelling the vestry to construct this sewer. By section 135 of the Metropolis Management Act, 1855, the Metropolitan Board of Works was intrusted with the powers over sewers; not an absolute duty, but with powers. The question is whether section 138 authorises the County Council, which now represents the old Metropolitan Board of Works, to make the order in question. Stated shortly, it appears to me that the section does not empower the County Council to take the initiative by ordering specific new works of sewerage. I think if a new sewer is made it must be made in such a way as the County Council approves, but I see nothing which authorises the County Council to take away from the vestry the initiative as to making new sewers, and to replace the discretion of the vestry by its own discretion. I think this view is supported by the case of "The Queen v. the Vestry of St. Luke's, Chelsea," which seems to me to throw some light upon the matter. Mr. Justice Kennedy concurred. Rule discharged.

"New Structure" under the London Building Act, 1894.—Crow v. Redhouse.—Mr. Justice Wills and Mr. Justice Wright gave judgment on July 4th on a special case stated by Mr. Dickinson, one of the Metropolitan magistrates, on an appeal by Samuel Redhouse, under section 150 of the London Building Act, 1894, against a decision by Arthur Crow, district surveyor for the Whitechapel Spitalfields district. The 150th section provides that where it appears from the building notice served on the district surveyor under this Act, that it is proposed to erect any building which may be in contravention of this Act . . . . the district surveyor shall serve upon the builder or building owner a notice of objection, and it gives an appeal to a magistrate from this notice. The case arose out of the following circumstances:—Samuel Redhouse proposed to rebuild a six-story warehouse, No. 3, Church-street, which, in consequence of a fire and of subsequent proceedings, was taken down as dangerous in November, 1894, for more than one-half of its cubical content, so that the proposed rebuilding would be a "new building" within section 5 (6) of the London Building Act, 1894, which defines "new building" as "any building which has been taken down for more than one-half of its cubical content and re-erected, or commenced to be re-erected, wholly or partially, on the same site after the commencement of this Act." A notice of objection was served by the district surveyor on Redhouse. The matters in the notice were, however, remedied with the exception of the objections made to the use, without thickening, of a wall forming the west boundary of the site, as the party-wall between the reinstated building, No. 3, Church-street, and the adjoining warehouse, No. 1, Church-street, the said wall not being in conformity with the provisions of the Act as to new party-walls. Before the fire the party-wall had been the party-wall between No. 1 and No. 3. So far as the party-wall concerned No. 1, which had not been seriously injured by the fire, it had been reinstated in the course of the reinstatement of No. 1. These reinstatements had not amounted to the erection of a "new building" at No. 1. Redhouse appealed to the magistrate on the ground that he was not compelled by law to make the party-wall conform to the provisions of the Act of 1894. The extent to which the party-wall had been burnt and taken down in consequence of the fire amounted only to one-third of its superficial area. The remainder was safe. The party-wall had been erected in conformity with the previous building Acts, but was not of the thickness required by the Act of 1894. In support of Redhouse's appeal to the magistrate, it was contended that, as the party-wall had not been taken down, burnt, or destroyed to the extent of one-half thereof, by virtue of section 208 of the London Building Act, 1894, the proposed use by him of the party-wall was not in contravention of the Act. Section 208 enacts that: "Unless in any case the Council otherwise allow, where a party-wall or external wall not in conformity with this Act has been taken down, burnt, or destroyed to the extent of one-half thereof (measured in superficial feet) every remaining portion of the old wall not in conformity with this Act shall either be made to conform therewith or be taken down before the rebuilding thereof. The surveyor, Arthur Crow, contended before the magistrate that, the proposed re-erection being a "new building" within section 5 (6) of the Act, the party-wall should be so erected as to comply with the provisions of the said Act, and that there was no exemption enacted or implied in section 208. The magistrate thought the contention of Redhouse was correct, and that he could not be compelled to take down, rebuild, or thicken the said party-wall. The surveyor appealed. There being a difference of opinion between the members of the Court, Mr. Justice Wright, as the junior Judge, delivered judgment first. He said: As we are unable to agree upon the proper construction of the Act, I have to deliver judgment first. The question related to a party-wall, and the question is whether it is to be considered as a new structure within the London Building Act, 1894. If this party-wall is considered by itself it has not been pulled down or destroyed to the extent of one-half, and, therefore, if taken by itself, it is not within the section requiring it to be constructed as a new wall. By the Metropolitan Building Act, 1855, section 10, "Whenever any old building has been taken down to an extent exceeding one-half of such building, such half to be measured in cubic feet, the rebuilding thereof shall be deemed to be the erection of a new building; and every portion of such old building that is not in conformity with the regulations of this Act shall be forthwith taken down." If that section is re-enacted in the Act of 1894, either in substance or expressly, the whole of this building comes within it, and must be rebuilt. Now, the Act of 1894 does not in terms contain any such provision. On behalf of the County Council, it was said that the 5th section of the Act of 1894 had that effect. If subsection 6 of section 5 is to be taken according to the usual rules of construction of interpretation clauses, there is nothing in the Act which would apply to the present case. The expression "new building" is not used in those parts of the Act which are material. But is there anything more in the interpretation clause? I think (with great hesitation) that this interpretation clause is an enacting clause, and not a mere interpretation clause. The Legislature could never have intended to destroy section 10 of the Metropolitan Building Act, 1855. But the question is not what the Legislature intended, but what it has done. It is extremely material to observe that this so-called interpretation clause actually does contain one or more enactments—for example, subsection 4 and subsection 7; and to my mind subsection 6 is so expressed that we can come to the conclusion that it is an enacting clause. If the interpretation clause is not to be construed as I have construed it, it seems to me that section 209 would have very little effect at all. I think that Parliament, in enacting the definition clause, did consider subsection 6 of the definition clause as an enactment. Then section 210 appears to me as a mere repetition of sections 7 and 9 of the Act of 1855, and strengthens the ground for concluding that the whole of that group of sections should be considered as included in the present Act. I think the magistrate was wrong. Mr. Justice Wills: It is with great regret that I find myself unable to agree with my learned brother. The expression "new building" is not to be found in the portions of the London Building Act which apply to the wall in question. But I think section 208 governs this case. Supposing that this party-wall had been destroyed to the extent of one-half, the proper course under that section would have been to order the whole to be taken down or to make it conform to the provisions of the Act. It seems to me that, if the wall was not destroyed to the extent of one-half, it is enacted that such liability should not attach. It is said that this case comes under subsection 6 of the interpretation clause. I think there is no foundation for saying that there is a substantial enactment in the interpretation clause. There is a string of expressions which are to have the meanings attached to them. If, therefore, I can find any section which contains the expression "new building," that will meet the present case. Now sections 13, 14, 16, 17, 63, 160, 209, and 210 all contain the expression "new building." It seems to me that the interpretation clause is satisfied by giving the extended meaning to the words "new building" which is contained in the definition clause. I therefore think the learned magistrate was right, and that our judgment ought to be for the respondent. Mr. Justice Wright: My judgment is withdrawn. Judgment for the respondent, with costs.

Successful Appeal against a District Surveyor.—At the Guildhall, on Saturday, Alderman C. T. Ritchie gave judgment in a case in which Mr. Hugh M'Lachlan, district surveyor for the western division of the City, had been summoned to show cause why the decision in his notice of objections in connection with a building, No. 76, Aldersgate-street, should not be set aside. The appellant is Mr. C. E. Lainston, the owner of the building in question. Counsel said that Mr. Lainston was dissatisfied with Mr. M'Lachlan's decision, and he sought to have it reversed. This was the first case that had been heard in the City under the London Building Act of 1894. Before the passing of this Act a magistrate had no power to deal with such a case as this ; but now authority was given whereby he could set aside the objections of a district surveyor. The premises in question were situate in Aldersgate-street, opposite the Manchester Hotel ; the frontage was in Aldersgate-street, and the return in Barbican. Mr. Lainston was reconstructing the building, and in so doing was taking in a very small court at the rear. He contended that by Section 39 of the Act the building was exempt from the requirements of the fifth part of the Act, and, therefore, from the restrictions as to open spaces at the rear of the premises. For buildings generally, the open space or the air-cone was necessary. But where premises were used for offices and counting-houses they were exempt. That was to say, that when premises were in no way used for domestic purposes the air-cone was not required. The appellant had gone to the London County Council with his plans twice, objections being made to them each time, and he now asked for the opinion of the Alderman. As a matter of fact, the alterations now being made would give the whole of the premises more light and air ; but if the recommendations of the district surveyor were carried out, the cost would be out of all proportion. Mr. Percy H. Adams, A.R.I.B.A., 65, Leadenhall-street, put in the plans for the reconstruction of the house in question, stating that there would be no sleeping place in the altered building. Mr. M'Lachlan said there was one matter to remember. The place originally was partly used for domestic purposes. Would it revert back to a dwelling-house? Counsel said, if this were done, defendant could be brought before that court and heavily fined. The Alderman, having reviewed the various parts of the Act, remarked that, believing that under Section 39 such a building was in no way a domestic one, he upheld the appeal, allowing £3 3s. costs to the appellant.

A SEPARATOR PATENT CASE.—DUCKETT v. WHITEHEAD.—This case, which was tried before Mr. Justice Kennedy in February last, and in which Mr. James Duckett, Mr. Alfred Duckett, and J. Duckett and Son, Limited, of Burnley, sanitary ware manufacturers, were plaintiffs, and Julius Whitehead, of Bradford, sanitary pipe manufacturer, was the defendant, came on for hearing of the defendant's appeal against the judgment in favour of the plaintiffs on Tueday, the 2nd inst., before the Master of the Rolls and Kay and Smith, L.JJ. Lord Esher gave judgment for the plaintiff, confirming the decision of Mr. Justice Kennedy. He thought that, comparing the plaintiffs' patent with Sutcliffe's, the plaintiffs' was not the combination of all the same things which were in Sutcliffe's. There was something in the adaptation of the parts in the plaintiffs', which was different from the adaptation in Sutcliffe's ; moreover, that the adaptation of each separate part in the plaintiffs' patent of 1888 was different from the adaptation of all the parts in the plaintiffs' patent of 1887. The plaintiffs had devised a tip which would collect the waste or slops and tip them in such a way that they would fall vertically on to the bottom of the basin, or vertically on to the trap, and so would make the flushing power of that which has to open the trap and go down the pipes much greater than it ever was before. In Sutcliffe's design the chamber and the basin were separated, whereas in Duckett's they were connected, thus causing a certain defect which plaintiffs remedied. Mr. Justice Kennedy's judgment was, therefore, upheld. Lords Justices Kay and A. L. Smith concurred.

NO LIABILITY FOR SANITARY STATE OF FURNISHED LODGINGS.—SARSON v. ROBERTS.—In the Court of Appeal on Tuesday judgment was given by the Master of the Rolls and Lords Justices Kay and A. L. Smith in an appeal from a judgment of Mr. Commissioner Chalmers at Chester Assizes. The action was brought to recover damages for breach of an implied promise that certain lodgings which had been let by the defendant to the plaintiff were fit for habitation. The lodgings were taken by the plaintiff furnished, for himself and family. A few days after they had gone into occupation a grandchild of the defendant, living in the same house, was found to be suffering from scarlet fever. The plaintiff was not informed of this, and continued to stay in the house, and soon after he and his family had returned home his wife and one of his children were taken ill. At the trial of the action the jury found that the lodgings were healthy at the time of the letting, but were not healthy during the time of occupancy ; that the defendant did not inform the plaintiff of the fact of there being an infectious disease in the house ; and that the plaintiff's wife and child contracted scarlet fever from the defendant's lodgings. The learned Comissioner gave judgement for the plaintiff. The defendant appealed. The Court allowed the appeal, holding that it was impossible to read into the contract between the parties an implied covenant that the house should remain in a sanitary condition during the occupancy. The principle laid down in the cases of "Smith v. Marrable" and "Wilson v. Finch-Hatton," that in an agreement to let a furnished house there is an implied condition that the house shall be fit for occupation at the time when the tenancy is to begin, ought not to be extended so as to include such a case as the present. The defendant was therefore entitled to judgment.

SOUTHPORT PIER ACTION.—In the Queen's Bench Division, on Friday, July 5th, Mr. Justice Kennedy had before him the case of the Southport Pier Company (Limited) v. the Mayor, &c., of Southport. This action, which was tried before his Lordship and a jury at Liverpool, was brought by the plaintiffs to recover £500 damages for injuries sustained by the pier in consequence of the rush of water through an outlet or culvert in a new carriage drive. The plaintiffs also sought an injunction to restrain the continuance or repetition of the acts complained of. At the trial the jury found for the plaintiffs, and damages agreed between the parties at £278 1s. 3d. The case now came on for further consideration. His lordship held that the plaintiffs were entitled to the injunction, and entered judgment for them accordingly, with £278 1s. 3d. damages and costs.

A BUILDING AGREEMENT APPEAL.—IN RE THE CADOGAN AND HANS-PLACE ESTATE (LIMITED)—WILLIS'S CLAIM.—In the Court of Appeal on July 5, Lords Justices Lindley, Lopes, and Rigby, gave judgment in an appeal from a decision of Mr. Justice Vaughan Williams, dated April 5, declaring that Mr. William Henry Willis was entitled to prove in the liquidation of the above-named company in respect of a claim arising out of a building agreement entered into between the company and the claimant on the 18th December, 1882. By the agreement in question, underleases were to be granted of the several plots of land delineated on a plan annexed to the agreement for the unexpired residue of a term of 99 years from Michaelmas, 1874, and the claimant was to erect upon the said plots of land dwelling-houses fronting to Lennox-gardens, and stables and coachhouses at the back of such houses fronting to Lennox-mews. The claimant also undertook to pave the roadway to the mews in front of the plots, the work to be done to the satisfaction of the surveyors of the company and of the ground landlords for the time being, and also of the vestry and other proper authorities. At this date Lennox-mews was marked out and roughly formed, although not metalled or channelled. The mews marked out was of the same width and dimensions as at the present time. There was access thereto at one end by Milner-street, and at the other end by Walton-street. The mews at its entrance into Milner-street was not, either at the date of the agreement or at the present time, of the width shown on the plan attached to the agreement, but was less by a small triangular piece of land on the west side of the entrance to the mews, such piece of land being bounded by a wall and used as a back yard to a public-house known as the Australian Arms. The plan attached to the agreement showed the mews to be of a uniform width throughout, and contained no indication either of this triangular piece of land or of the wall by which it was bounded. Prior to the execution of the agreement, a plan, identical with that attached to the agreement, was submitted by the company to and approved by the Metropolitan Board of Works. In pursuance of the building agreement, the company in 1887 procured the grant to the claimant or his nominees of leases of the several plots of land upon which the claimant had erected houses and stables as provided by the agreement. The lease which related to the portion of the mews at the entrance to Milner-street had attached to it a plan which showed the entrance to the mews as it existed in fact—i.e., exclusive of the triangular piece. This lease contained a covenant by the lessee whereby he undertook to maintain or pay for the maintenance of the roadway of the mews until the same should be taken over by the parish or local authority, and the claimant covenanted with his nominee to indemnify him against this liability. The mews was duly made up and paved by the claimant, and an application was made to the vestry to take over the roadway, but the vestry declined on the ground that the mews at the entrance from Milner-street was not of the width shown on the plan approved by the Metropolitan Board of Works. The triangular piece of land in question never belonged to the estate of the company, and the company refused to procure it for the claimant. The result was that the claimant was liable for 99 years from September, 1874, to maintain and repair the roadway to the mews. It was in respect of this liability that Mr. Willis carried in the present claim. The company objected that the building agreement contained nothing imposing any obligation upon them to provide the land for a roadway of the dimensions shown in the plan attached to the agreement. Mr. Justice Vaughan Williams, however, overruled this objection. He held that, though the agreement contained no express words to that effect, the plan, which was clearly incorporated in the agreement, included by implication a warranty that such a roadway could be made on the land of the company. His lordship held, further, that the claimant had not deprived himself of his right to relief by acquiescence or delay. He therefore gave judgment for the claimant, and directed an inquiry, in the event of the parties not agreeing, as to the amount of proof. The company appealed. Mr. Terrell, for the claimant, contended that it was a necessary inference from the agreement that the land in question should be provided by the company, and, therefore, a covenant to that effect ought to be implied. He relied upon the principles laid down in "Knight v. Gravesend and Milton Waterworks Company" and "Thorn v. Corporation of London." The Court allowed the appeal. Lord Justice Lindley said that he was unable to put upon it the construction adopted by the learned judge below. Although it was contemplated that the piece of land in question should be acquired either by the company or by Mr. Willis, he could find nothing in the agreement which bound the company to buy it for the claimant so as to enable him to make a road which would be taken over by the vestry. The appeal should be allowed. Lord Justice Lopes and Lord Justice Rigby gave judgements to the same effect.

CHIPS.

Mr. Hamo Thornycroft's recumbent figure of the late Archbishop Thomson will shortly be placed upon the tomb erected as a memorial to the distinguished prelate in York Minster.

Messrs. J. and J. King, of Norwich, have just completed the painting of a fresco above the chancel arch in the Church of St. Mary Magdalene, Pulham Market. The subject treated is "Our Lord's Ascension," and the figures are life-size. A memorial brass has been fixed beneath the picture, showing that it has been there placed to the memory of members (recently deceased) of the family of the Rev. S. Fellows, rector of the parish.

The Mayoress of Exeter opened on Friday the new classroom erected for infants at St. Sidwell's Church Schools, Exeter. The room is capable of accommodating between 60 and 70 children. The architect is Mr. Jerman, and the contractor Mr. G. E. Saunders, both of Exeter.

At a special meeting of the Ipswich Town Council it was decided to authorise a committee to open negotiations with the Christchurch Park Company for additions to the recently-acquired park of 51 acres. The proposal is to buy the land lying nearest the town, between the Soane-street entrance to the park and the Lower Arboretum, and on which the syndicate now owning the property proposed to build. The corporation offer £960 an acre, having bought the central portion of the ground at £313 15s. ; the syndicate ask £1,125 an acre.

The Rotherham Corporation have applied to the Local Government Board for sanction to borrow the sum of £21,500 for the purchase of land and the erection thereon of police buildings, the purchase of the Mechanics' Hall, and alterations of the municipal buildings. Mr. F. H. Tulloch, M.I.C.E., will hold a public inquiry on Tuesday next.

Special services were conducted in St. Mary's Church, Ross, Herefordshire, on Wednesday week, after relaying of the flooring, to celebrate the reopening of the chancel. Originally the flooring, with the exception of four tombstones near the altar-rails, consisted of plain stone slabs, but these have now been replaced by a vari-coloured marble. The four tombstones have been taken up, and replaced a few inches lower than formerly. In place of the three uneven and worn steps at the altar-rail, there is now only one, three other steps being placed further back. The Communion table has been lengthened by nearly 2ft., and it now rests on a raised ground of coloured marble.

A full-length portrait of Sir Anthony Marshall, Lord Mayor of Manchester in 1893-4, painted for subscribers by Mr. H. T. Munns, of Birmingham, was formally presented to the corporation of that city on the 5th inst. The picture will be hung in the town hall, where portraits of the alderman's predecessors are already displayed.

The council of the Institution of Civil Engineers have reappointed as treasurer Mr. Hugh Lindsay Antrobus, the senior partner in Messrs. Coutts and Co. ; as honorary secretary, Dr. William Pole, F.R.S. ; and as secretary, Mr. James Forrest, who has filled the office for the past 39 years.

At a meeting of committee in Dumbarton, on Friday forenoon, it was agreed to give a commission to Mr. Hamo Thornycroft, R.A., of London, to execute a life-size statue in bronze of Dr. Denny, as also a suitable pedestal for the same. The statue of the distinguished ship-builder will be erected in the burgh of Dumbarton.

Our Office Table.

The unrivalled collection of drawings, etchings, engravings, and prints by the early masters which was formed by the late Mr. John Malcolm, of Poltalloch, and deposited in the department of prints and drawings at the British Museum in 1893, has been offered by its present owner, Colonel J. Wingfield Malcolm, C.B., to the trustees of that institution for purchase at the price of £25,000. It is satisfactory to be able to state that the Treasury, on the recommendation of the trustees, have agreed to the purchase, and a vote for the sum required will be included in the supplementary estimates to be laid before Parliament. No private collection in the world approaches that now purchased in the rarity and value of the engravings and drawings, which number nine hundred, and it is believed by the Museum authorieties that they would fetch at least £40,000 if offered at auction. Among the early Italian works, especially Botticelli's "Study for a Figure of Abundance" and Leonardo's "Head of a Warrior" may be particularised, and many of the German, Flemish, and Dutch drawings are supreme in their classes.

The Prince of Wales presided on Tuesday at a meeting held in St. James's Palace to consider the financial position of the British School at Athens, and described the circumstances under which the school was founded in 1883 and the work that had been accomplished under its auspices under the first director, Mr. F. C. Penrose and his successor, Mr. E. A. Gardner. This work was out of all proportion to the scantiness of its means. While the French School in Athens had an assured income of over £3,000 per annum, and the German School over £2,000, their own school had last year a precarious income of less than £500. Before leaving office the late Chancellor of the Exchequer had taken steps to make a grant of £500, being a portion of the public funds devoted to the encouragement of scientific investigation for the support of the school, which, he understood, the present Ministry were willing to confirm. Several of the Oxford and Cambridge Colleges had voted grants, and the public schools were also moving in the matter. Letters were read from Mr. Gladstone, Lord Salisbury, the Duke of Devonshire, and others expressing sympathy with the object of the meeting. The Duke of Sparta addressed the meeting, expressing the interest which his father, the King of the Hellenes, and himself felt in the work of the school. Resolutions confirmatory of the object of the meeting were spoken to by the Archbishop of Canterbury, Professor Jebb, Sir F. Leighton, Mr. Egerton, British Minister at Athens, Lord Herschell, and the Vice-Chancellor of Oxford University.

A collection of objects found during the excavation of the Temple of Deir el Bahari, brought together mainly by M. Edouard Naville, under the auspices of the Egypt Exploration Fund, is now on view in the rooms of the Society of Antiquaries at Burlington House, W. The remains range in date from the 18th to the 26th dynasty, or about 700 B.C. Some of the exhibits are only to be temporarily in London, and will have to be restored to the Ghizeh museum. There are three mummies and mummy cases of the 26th dynasty, the principal one being that of the prophet of Mentu Zet Thothaufankh. The body was inclosed in each case in three coffins. Many articles of daily life were also found, including knives and hatchets joined to the hafts by narrow strips of skin or leather; boards used for winnowing corn; dolls with the body of a child; little shoes cut into two; rude images and little vases. There are also drawings from the walls of carvings of the "Annunciation" by the god Ammon to Queen Hatshepshu. There is also a representation of the carriage by boat of a huge column or obelisk. A few Coptic antiquities are also shown, including crosses and potsherds.

The question of the additional cost of carrying on works of repaving in the City continuously, and its desirability on the ground of lessening the inconvenience to shopkeepers, was again discussed by the City Commissioners of Sewers on Tuesday, upon the receipt of a report from the Streets Committee, stating that the extra outlay of executing the repaving of Fenchurch-street, Mansion House-street, Poultry, Liverpool-street, and Upper Thames-street, by working during daylight with two shifts of men of eight hours each, between 4 a.m. and 8 p.m., was estimated at £1,257. The accepted tender for working during the ordinary hours from 6 a.m. to 6 p.m., with intervals for meals, was £2,476. The saving of time, if the additional expense was incurred, by working in two shifts would be from five to six days. Mr. Deputy White moved that the work should be done in the ordinary hours, and for the amount of the original tender; and this, after a debate, was carried by a majority of two votes.

The Great Wheel at the Empire of India Exhibition, Earl's Court—a copy of the Ferris Wheel which formed the *clou* of the Chicago Exhibition attractions—is now in working order, having been inaugurated on Saturday afternoon. The wheel was begun early last year, and is built throughout of steel. It has an altitude of 300ft. The axle, which is hollow and 7ft. in diameter, is supported on eight columns, each 150ft. in height. Around the wheel are swung 40 cars, each of which is capable of holding 40 passengers. These cars are 24ft. long by 9ft. wide, and, with a height of 10ft., weigh 5¼ tons each. The design was prepared by Lieut. Graydon, formerly of the United States Navy. The engineer is Mr. John J. Webster, Mr. Basset was the contractor, and Mr. C. F. Hitchens the resident engineer.

A movement was recently inaugurated by the York Philosophical Society for raising a fund for purchasing the properties which now intercept the view of the remaining portions of the ancient city wall of York. The sum of £665 has been raised by subscription, and at their last meeting the city council voted a contribution of £200 to supplement this amount. In addition to bringing into view one of the round towers adjoining Mr. Melrose's property, the two houses at the corner of Marygate will be taken down, and the tower and a considerable portion of the abbey wall will be opened out to view. The street will also be widened at this point. The entire cleared site will be conveyed to the corporation, together with the whole of the walls of St. Mary's Abbey and all the towers. Efforts will be made in the future to prevent any further encroachments on these picturesque souvenirs of feudal York.

At Monday's meeting of the Baths Committee of the Bath Corporation a report was presented by the two members who had been commissioned by the committee to inspect the Roman duct, which has been explored for a distance of 300ft. The report states that here and there, at irregular intervals, it is crossed transversely by massive horizontal stones or lintels, once by a pointed arch, and twice by circular arches. At one point the walls are of very massive masonry. Many of the blocks on their faces being 16ft. by 3ft. The report concludes:—"The absolute uncertainty of what may be the cost of following the duct to its destination—the distance which separates us from the river—the consideration of the further cost of fitting it for permanent service, and guarding against silting up by the action of floods, lead your sub-committee to the conclusion that they cannot recommend any further expenditure upon this interesting discovery." Notwithstanding the plea of the surveyor of works that the work should be prosecuted a little further, the city council have accordingly stopped the work of excavation.

A new and enlarged edition of "Bungalows and Country Residences," by Mr. R. A. Briggs, has just been issued by Mr. B. T. Batsford, with four additional plates, bringing their total up to 39. The volume thus reaching a third edition must perforce supply a want, and certainly several of the designs are picturesquely contrived and conveniently planned with due regard to economic outlay. We have on former occasions favourably noticed this publication, and, as the author remarks in his preface note, we need add no words to what we have already written. A few of the designs have appeared in our own pages; many of them have been realised in execution, and some are to be considered as projected conceptions suitable for country sites. Mr. Briggs has, with no little skill, endeavoured to adapt himself to varying tastes and conditions, so that considerable diversification has been obtained, while at times the work may be described as original and artistically managed.

The last annual report of the Street Department of Boston, Mass., contains a description of some artificial - stonework, which is the first example of the use of this material, on any considerable scale, that the city has yet made. It was put down for a footpath serving to connect two parallel streets about 240ft. apart, but with a difference of level of about 45ft. at the point where it was used. The path is about 138ft. long, and 11ft. 6in. wide. It consists of seven flights of artificial stone steps connected by platforms of the same material, and there is an additional flight of 13 steps at one end. The artificial stone in the walls, steps, and retaining walls cost about 2,123dols. The iron railing and fencework cost about 557dols. The excavation, foundations, stone retaining walls, and wooden fences were furnished by the Street Department, and cost about 2,907dols. The report states that it makes a fine-looking job, and thus far the experience is satisfactory. The contract price for the wall was 36 cents per cubic foot; for the steps, 1·15dols. per lineal foot; for the platforms, 30 cents per square foot; and 10 cents per square foot for surfacing.

MEETINGS FOR THE ENSUING WEEK.

Saturday.—Society of Architects. Visit to Waltham Abbey, where addresses will be delivered by the Vicar, the Rev. F. B. Johnston, M.A., and J. A. Reeve. Train from Liverpool-street Station, 1.50 p.m.

St. Paul's Ecclesiological Society. Visit to Peterborough. Train from King's Cross, 10.15 a.m.

WATER SUPPLY AND SANITARY MATTERS.

Belfast.—A new reservoir is being constructed in the Silent Valley between the Mourne Mountains, and will be completed within another year. This new water scheme will cost Belfast upwards of three-quarters of a million pounds sterling. The catchment area is upwards of 9,000 acres in extent, but it can be added to in the future. It has an elevation varying from 450ft. to nearly 2,800ft. above sea-level, and it consists of high mountain slopes, largely composed of granite and boulders on the surface, free from cultivation, and uninhabited. The Kilkeel river will be intercepted in the Silent Valley, a storage reservoir having an earthen embankment some 520yds. long across the valley, and upwards of 90ft. high over the present river-bed. The top water area will be nearly 250 acres, and the total holding capacity will be 2,850 million gallons of water. The supply will be drawn from this reservoir for use in Belfast through a number of large-geared valves at different levels on the outlet standpipe, which will allow the water to pass through the main outlet tunnel into the main gravitating conduit, which will be formed of concrete, having a maximum carrying capacity of 30,000,000 gallons per day, the size being 5ft. 6in. by 5ft. 6in., and with a regular fall of 18in. per mile. The main conduit will be continued along the mountain slopes to near Newcastle, where it will be carried through Slieve Donard and St. Thomas's Mountains in a tunnel two and a quarter miles in length, with a fall of 12in. per mile, and a maximum capacity of 30,000,000 gallons per day. Some parts of this tunnel will be 600ft. below the surface of the ground. The service reservoir will have a storage capacity of about 80,000.000 gallons, and will be 350ft. above sea-level. While, in 1850, the water for Belfast was obtained from a small place on the Dublin road, in 1865, 1875, and in 1878 further powers were taken to increase the supply, and in 1884 the Stoneyford scheme was adopted, and £750,000 expended.

* * *

In the Queen's Bench Court on Wednesday, before Mr. Justice Kennedy and a common jury, a shoemaker named Gibbons sued Messrs. Mowlem and Co., contractors, for damages sustained by a stumble over a scaffold-pole put down by them round some wood-paving works in Malvern-road, Kilburn, in course of execution by defendants. The jury awarded £40, but execution was stayed.

The Prince of Monaco has sent his physician in ordinary and the head of the Public Works Department to Berlin, to study the hospital system, as he intends to build a hospital for several hundred beds at Monaco.

A committee of friends and former pupils of the late Reginald Stuart Poole has been formed, with the view of erecting some permanent memorial of him, to take the form either of a life-sized portrait medallion or a bust, which might be placed in some building associated with his work.

Among the measures which received the Royal Assent on Saturday were the Great Northern and City Railway (Extension of Time); London County Council (General Powers); Ditto (Vauxhall Bridge); Ditto (Tower Bridge Southern Approach); Birmingham, North Warwickshire, and Stratford-upon-Avon Railway; Manchester, Sheffield, and Lincolnshire Railway; London, Walthamstow, and Epping Forest Railway; and Croydon Corporation and Southend-on-Sea Corporation Acts.

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXIX.—No. 2115.

FRIDAY, JULY 19, 1895.

THE WORKMAN AS A MAN.

THERE must be something very rotten in the state of a country when anybody in it, from the highest to the lowest, is ashamed of the title of "workman." Yet we have lived to see the day when all sorts of affected and un-English names are substituted for it. Sometimes it is Latinised, and then we hear of the "operatives" in the building trade. Sometimes it is avoided altogether. There is no reference to anything so low and degrading as the honest earning of one's own living by labour, and then we get a French term, and are told that John Brown is an *employé* of such-and-such a firm. If this pleases John Brown, he is a great deal weaker in the upper story than we give him credit for being. It is simply a piece of what used to be called in the navy "flap-doodle"—which, as someone explained to Peter Simple, is the stuff that fools are fed on. It implies that the person it is meant to propitiate would rather be thought a useless hanger-on than a valuable member of society. It assumes that he is ashamed of doing his share to keep the world going, and that he wants you to believe his fellow-creatures feed and clothe and provide for him, without his doing anything for them in return.

This, perhaps, has been, and now is to some extent, the lower middle-class idea of respectability. Common people may still be heard to say, "Mr. So-and-So is a gentleman: he has never done anything." It would be more true to say—if this unfortunate being has had his health and the use of his faculties—"Mr. So-and-So is no better than a vegetable: he is what Hazlitt calls a talking potato." Such a creature has never even begun to live; and though he went on to three-score-and-ten, he would only be buried, as Steele says, in the seventieth year of his death. But, on the other hand, it will not do to reckon a man's work by his wages. The highest work is hardly paid at all. It is only by some fortunate combination of genius and independence that it ever gets done. We have all heard of Milton, with his £10 for writing "Paradise Lost." But we do not know how many "mute, inglorious Miltons" may have passed away unknown, because all their time and all their strength were wasted in the daily drudgery without which they could not keep body and soul together. There are all sorts of work wanted in the world—well-paid, ill-paid, and unpaid. Some sorts have to be done by men who get their living by doing them; other sorts have to be done by men who are quite independent of them for daily bread. But this is a mere accident; it is on quite other things that the real honourableness of each class of work depends. It depends on the amount of mind and character which each class of work demands; and the honourableness of each individual workman depends on the thoroughness and skill and success with which his own work is produced.

In what foolish people used to call the "Dark Ages"—because, as some wit remarked, they were so much in the dark about them—this state of things was largely realised. Every workman was proud of his craft; every good workman prided himself on his dexterity in it. The members of the great city companies, whether in London, Chester, York, Coventry, or anywhere else, did not throw off the outward signs of their occupation the moment they left it for the day. They had no false shame about their place in the life of the nation. They would have laughed in the face of anyone who thought to flatter them by calling them "operatives" or "employés." The carpenter was a carpenter, and the mason a mason, and the smith a smith, in season and out of season. Not one of them looked on his work as a sort of degradation—a thing to be done *sub rosâ*, and not alluded to afterwards. Not one of them, when his day's toil was over, and he pulled off his working suit, hastily put on that of some other type of citizen, and said, as he breathed more freely, "Now I'm a man again." The reason was that he never felt so much a man as when he was exercising his skill, his craft, his "mystery." That was what he valued himself, and rightly valued himself on. He did not reckon his own worth, or encourage other people in reckoning it, by the number of shillings per week which it happened to bring him in, and he thus differed—and differed infinitely to his own and to the world's advantage—from his successor, the modern workman.

We have changed a great deal since the 15th century. Much of the change is gain, but not all of it. We seem, for the present, to have staved off great pestilences, as well as great fires. The Black Death has died out; the plague only keeps up a feeble existence in the East; the cholera has apparently met with its match. Great, therefore, is the glorying of the sanitators and the mechanical civilisation mongers. But influenza has lately been as fatal as cholera was in its more recent visits, and medical science is as powerless against it as medical nescience was against the plague of 1665. It defies what to-day passes for sanitation; it attacks by preference the best-lodged, best-fed, best cared-for members of the community. Some new disease may carry the same peculiarities still further. It is quite conceivable—so great is the power which the minutest organisms have of adapting themselves to fresh conditions—that pestilences may arise which can only run their course where what is now imposed on us under the name of sanitation is fairly perfect. Disease-producing germs are already known which can live in fresh water, but not in foul, so that even cleanliness itself, like everything else, turns out not to be an unmixed good. It is earnestly to be hoped that we may be able to retain a pure water supply, and all the other benefits, as far as they are real, which our friends the sanitators have conferred on us. But we had better not whistle till we are out of the wood, and we ought to conquer the influenza before we sneer at our forefathers for not conquering the plague.

On the other hand, the price we have paid for the things which make a modern city differ from a Mediæval one is far from light. We do not refer to the price in money, almost inconceivable though that is. It is the price in the things of the mind—in all that is human, and free and beautiful. The members of the great Mediæval guilds lived in narrow streets—but not in model prisons. They had a house, and not a couple of cells in an "artisans' dwelling. And it ought to be remembered that this very crowding together, which is the thing which strikes us most when we look at the remains of an old city, was not a thing of choice so much as of necessity. If the citizens meant to be safe, they had to build inside the city wall, and so, as the city grew more and more populous, the inhabitants were squeezed more and more closely together. It is not the physical crowding—it is the mental and social liberty of olden times—which makes them worth regretting. "Mental and social liberty!" the reader will reply, if he has been brought up on history as it is now written by politicians, lawyers, and soldiers. "Why, the workman a few centuries ago had no liberty at all. He had no vote—he had no Hyde Park meetings—he usually died in the rank in which he was born." True; but he lived a man's life in it. He could bring out the ideas that were in him; he could develop his own individuality; he was not merely one screw in some great structure, which, when it rusted away, would be replaced in a moment by another screw just like itself. He was not one of 500 "hands" in a shop or a factory, differing no more from each other than 500 bricks, and ordered, when wanted, in much the same way. He was Nicholas the carpenter, or Thomas the mason, or Giles the smith, who, within certain well-agreed on limits, could deal with his timber or his stone or his iron exactly as he saw fit. Each of them, within these limits, could try his own experiments on his work, put his own fancies into it, and get credit for them, when, as it often happened, they turned out to be good ones. So that, incredible as some people may think it, and degrading as it may seem to others, the workman actually rejoiced in his labour. He was not always thinking, as the modern machine-slave inevitably thinks, how he could get his daily slavery shortened to something progressively less and less; because it was not slavery at all, but liberty to him. His liberty had his boundaries—as we have said; whose liberty has not? The greatest architect does not have unlimited sites to build on, or unlimited sums to expend, and his power would very soon leave him if he had. A little bit of material is enough for the highest genius to reveal itself in—a Greek coin often shows as much power as a Greek statue. Pope's poems, written on the little scraps of waste paper, which he hoarded up as if they were banknotes, have outlived libraries full of luxuriously-printed books, where "a rivulet of rhyme meandered through a meadow of margin," and so the little scraps of stonework or woodwork or ironwork in which some artisan of olden times enshrined the best thoughts he had, are worth whole palaces of the modern type—all labour, without love or life in it.

Good people in plenty are doing their best to improve the material condition of the working classes. There is urgent need for it, and we wish them all success. Other good people are trying, in like manner, to raise their mental and moral level. Yet their idea of the way to do this is a rather odd one. They seek to catch the working man when he has done his work. All day long they leave him alone, to grind and be ground in some dismal mill of our soulless, mechanical civilisation. It does not occur to them that anything can be done for him there. But when he comes home at night, tired and worn out with monotonous toil, such as no free man would ever bind himself to for long, they seize upon him. He is lectured and instructed, reproved and exhorted, drilled in classes and evening schools, played to and sung to, and generally treated as a grown-up baby on whom every well-meaning person may try experiments. It is time he was made into a free man again, the essence of whose life lies in his worktime, and not in his playtime. Society will never be stable while human beings are only used as a cheaper kind of machines, and are set to do, from year's end to year's end, nothing but what levers and cogwheels can do as well, or better. We shall yet have to go back to olden times, not for their exclusiveness in politics, not for their oppressiveness in religion, not for their almost unavoidable neglect of many conditions necessary to health, but for the system which made an "artisan" into a craftsman, and a "hand" into a species of artist.

THE AMERICAN ROMANESQUE IN AUSTRALIA.

[WITH PHOTO-LITHOGRAPHIC ILLUSTRATIONS.]

IN the palatial Office of the New South Wales Branch of the Equitable Life Assurance Society of the United States there has recently been opened in George-street, Sydney, one of the most noteworthy buildings ever erected in the Australasian colonies, or, indeed, in any portion of the Southern Hemisphere. It is not so much on account of its size that this edifice claims special notice, for there are larger ones in most of, if not all, the Southern capitals; neither is it in consequence of the adoption of the American Romanesque as the style of its architecture, for this has been seen repeatedly in Australia for some years past, not only in important competitive designs, but in buildings actually carried out. The points which commend this remarkable and unique structure to the attentive consideration of architects are rather: firstly, the mode of construction employed; secondly, the extent to which the structural features are made visible and decorative; and thirdly, the dignity imparted to the building by the architectural character of the design. These may be regarded as the purely utilitarian, the utilitarian-æsthetic, and the purely artistic features of the work.

The architect of the building under notice is Mr. Edward E. Raht, the Equitable Society's Chief Architect and Administrator of Buildings, who has already erected for them offices in America, Vienna, Berlin, and Madrid, and who is now engaged in the completion of yet another branch building —that for the colony of Victoria—in Collins and Elizabeth-streets, Melbourne.

The method of construction adopted in the Melbourne building (which is considerably higher than the Sydney edifice, though in my opinion scarcely so artistic in design) is *almost* the style of "steel construction" now so widely employed in America, and of which an example may be cited close at hand, in London, in Mr. J. Wolfe Barry's new Tower Bridge. I say *almost*, since in the Victorian edifice, as I learn from the architect, the objectionable feature of the American method of construction is avoided—viz., the entire disconnection of the inner steel construction and the outer masonry, so that the one stands completely independent of the other on a common foundation The architectural details of this design can certainly not be characterised by the French epithet of *appliqué*, although the only connection between the masonry and the steel constructive work is that afforded by the sliding anchors which permit the extension and contraction by heat and cold of the inner and outer parts to take place without destructive effects. This is an exception well worthy of note, since the local climatic conditions are such that, under a temperature of 105° in the shade, with the wind blowing at the rate of forty miles an hour, the temporary displacement of the continuous columns as they exist in the Melbourne building, of 165ft. in length, would be as much as half an inch—an effect that would certainly be disastrous if showing on an outside covering of masonry, as it doubtless would do if the entire weight of the masonry were "hung" to such movable supports. However, I am glad to be able to record that in the Sydney edifice not even this method of construction has been adopted, since the climatic conditions of this city, and also the lesser height of the building, do not necessitate such a precaution.

The massive façades in George-street and towards Martin-place are of solid trachyte (a volcanic stone of exceeding density and strength, of drab-grey colour, taking as high a polish as granite, and quarried at Bowral, some 82 miles to the south-west of Sydney); while the wall at the rear is of brickwork with trachyte dressings, and that on the northern side is of plain brickwork. The edifice stands upon the solid (drill-tested) sandstone rock on which Sydney is built; the plan is slightly oblong, and the rooms, upwards from the ground floor, are all arranged around inner galleried corridors, which give upon an open quadrangle ceiled with a stained glass skylight and constituting the main hall and staircase. The external dimensions of the building are: Width in George-street, 93ft.; width towards Martin-place, 100ft.; height from the pavement to the top of the cornice, 115ft.; and depth from the pavement to the cellar floor, 19ft. Above the ground floor are six stories, and beneath it is a basement, with cellarage below. The walls of the quadrangle, the divisional walls, and the floors and ceilings are supported entirely upon steel columns and girders, the latter built into the external walls at the points of junction, and within the inner walls the whole construction of the galleries and staircase is of ornamental steel and marble. As far as is possible to human skill, the structure as a whole appears to be completely fireproof; but as every room in an inhabited building is, of course, liable to small local conflagrations, the principle that has actuated the architect (to whose courtesy I am indebted for a mass of detailed information) has been to cover up the metal in such a way as to protect it from the effects of excessive heat wherever there is any possibility of fire, and to leave it completely exposed where there is no such possibility. Thus, in the open staircase and balustrading of the corridors, where there is scarcely an atom of woodwork, the whole of the ironwork is seen, down even to the nut-heads; all the constructional forms being treated ornamentally, with legitimate decorative features added (such as turned, twisted, and other wrought work to the finials and pendants of the newels, the bands of the shafts, &c.), and the whole being finished in aluminium and gold bronze. But everywhere else the supporting columns are incased in terracotta, the fire-resisting properties of which were practically and scientifically demonstrated some time ago in a series of tests made specially for the Equitable Society, at Denver, U.S.A. The weight of the building within the external walls is mainly carried upon eight huge piers so incased (the four more important ones being placed practically at the corners of the quadrangle; and to these the main roof girders are all tied with rollers under their wall ends, to allow for the expansion and contraction under the great and sudden changes of temperature to which these parts may be exposed. The internal walls are composed of hollow terracotta lumber 4in. thick, with $\frac{3}{4}$in. of plaster on both sides. The advantages of this method of construction are, not only that of a minimum of weight, but that these porous walls are fireproof, damp-proof, and sound-proof; they can be cut about, nailed into, and so forth, with a facility unknown in the case of ordinary walls; and they can be removed entirely, to enable two or more rooms to be thrown into one, without the slightest detriment to the stability of the structure. In the construction of the floors, the spaces between the steel joists are filled in with the hollow terracotta lumber, above which, at the level of the upper flanges, is placed a layer of concrete, and upon this a thin bed of molten asphalte, in which is laid, without either screws or nails, a tallow-wood flooring an inch thick. This wood, which extensive municipal experience in Sydney has shown to be the best and most durable of all the Australian hardwoods for the purpose of wood-paving, is cut into 24in. lengths, 3in. wide, and laid chevron fashion; so that a certain amount of pattern in the flooring is obtained, combined with a solidity and durability unapproached by any other mode of flooring I am acquainted with. One other great advantage of this flooring is its verminproof quality, which in this warm climate is very essential.

The steel columns employed throughout the building are those known as the "Phœnix" columns, manufactured, on their special system, by the Phœnix Iron Company, of Philadelphia, U.S.A. The system consists in rolling the shafts in so many sections lengthwise, so as to enable the parts to be examined and tested for flaws before they are riveted together. There may be as many of these sections (from four upwards) as are required, according to the size and character of the columns, and by this mode of manufacture there is a large gain in lightness, security, and strength, but especially in security. The metal used in the staircase and galleries comes from the establishment of L. Mannstaed and Co., at Kalk, near Cologne, where the wrought iron is rolled into decorative mouldings, which can be cut to any length, and are sold by the ton. To these mouldings, put together as a framework, are fixed large slabs of marble for the whole of the plain surfaces; the beautifully veined *rouge royale*, polished on both sides, forming the vertical panels of the balustrading, and Sicilian, polished everywhere excepting the gallery floors and staircase treads (which are simply pumiced), being used elsewhere. The effect of this treatment, which seems entirely novel, is extremely striking, and nowhere more so than in the soffits of the gallery floors and treads, and the backs of the risers, with their fields of mirror-like white marble framed in aluminium-finished steel. Everywhere throughout the building the cornices are hollow, and the soffits screwed up in lengths, and in these are located the horizontally-running gas and water pipes and electric wires, those running vertically being placed in chases in the walls, with cedar coverings, so that they are all readily accessible at any moment. Electric wires are laid to every portion of the building, for the purposes both of lighting and telephonic communication. As regards the former, the pendants and brackets of ormolu, that abound in every direction, are so arranged as to utilise either gas or electricity, or both; while, as to the latter, another novelty is the establishment, by arrangement with the Post Office authorities, of a special telephone exchange for the whole of the building, which is worked from the main hall. Here, also, will be placed a central letter-box, with shoots from every floor, which will be cleared regularly, at stated hours, by the Post Office officials. The fireplaces in the various offices are adapted for burning either gas or solid fuel, and every room is furnished with a fitting of polished cedar, which answers the double purpose of a desk and meter case. Ventilation is amply provided for, the roof around the skylight being fitted with extracting louvres of copper, while, by means of a very simple mechanism beneath every window, the supply of fresh air directly from the outer atmosphere can be adjusted to a nicety. Besides internal Venetian blinds (which are infinitely rarer than they should be in this land of everlasting blinding sunshine), the windows are all fitted (as a protection against fire outside the building) with Clarke's revolving iron shutters, working externally from cases constructed either in the inside cornices or in the thickness of the walls, without the windows having to be opened, while on every story are hydrants ready for instant use.

Passing to the design of the building, the two principal façades of the exterior are constructed of solid trachyte, as has already been said. They stand upon a simple canted plinth, the deeper colour of which, obtained by polishing, imparts to the whole structure an appearance of immense stability. Above this the whole of the walls are rough-hewn, the adamantine stone being worked to a face only in the main cornice, the columns, the string-courses, mouldings, and other subsidiary portions, and further polished in the massive columns of the great front arch, the fifth-floor shafts and the principal fascia. This arch is the most imposing feature of the George-street elevation. Its span is 40ft., and it embraces the ground and first floors of the central portion. Recessed back from it are the main entrances—the central one giving access to the interior of the building, and the side ones to spacious separate offices—and over these are seen the windows of the board-room, in deep shadow. This arrangement has been the subject of some adverse comment; but, apart from the striking effect obtained, the treatment was advisedly adopted in order to secure the maximum of coolness in the board-room during the afternoon, when that apartment would otherwise have been subjected to the scorching rays of the sub-tropical western sun. A plainly-moulded stringing divides the ground floor from the first, while above the latter is the polished fascia bearing the name of the Society in gold letters. Over the great arch now rises a triple arcade, likewise recessed and of exceedingly bold character, taking in the next three storeys, the great divisional columns being of polished red Aberdeen granite, with carved trachyte caps. A corresponding arch, only without the recess, is repeated in each (slightly projecting) wing, but instead of columns we have clusters of four slender shafts, with a continuous cap-like impost worked in a peculiarly simple, but effective, manner out of a single plain block of stone. Above these capitals and imposts is introduced—a little needlessly, I think—the Byzantine dosseret, an architectural feature which, at its best, can scarcely command unlimited admiration. The arcaded stratum of the edifice receives its finish with a bold string-course effectively enriched with nothing beyond one simple decorative moulding; while the story above is treated as an attic, in which the rectangular forms of the abundant windows contrast effectively with the arch-heads below them, as well as with the arcaded corbelling above, which supports the widely-projecting and consoled main cornice that crowns the building. In the façade to Martin-place the treatment of the wings is reproduced in one unbroken length, the non-recessed arcading being of six bays, with columns alternately of polished red granite and tooled trachyte. The design is essentially Romanesque, both as to general character and detail; but there is no slavish adherence either to musty tradition handed down from the "Dark Ages," or to modern precedent as furnished by progressive America. The sturdy, virile; but always artistic spirit of creative adaptation which animated the great builders in early Christian times is everywhere apparent, only directed and modified by that practical common sense without which no *fin-de-siècle* undertaking can command complete success. The selection of the hard, intractable trachyte as the building stone was dictated by the desire to render the structure as indestructible as possible; and while the choice of that material has clearly influenced the character of the design, the design and the material have together given a unique and special impress to this exceptionally striking edifice.

In connection with the exterior, the employment of the sparingly-used sculpture must not be overlooked. This consists simply of an heroic-sized bronze group of statuary emblematic of the "Equitable's" *raison d'être*, and a pair of decorative lions' heads boldly carved in stone on the main cornice. The group portrays a standing female figure of benign and noble mien, protecting with her half-extended arms on one side a lad of may be fourteen summers, and on the other a crouching widow with an infant in her lap; raised upon a plinth, it occupies the centre of the principal façade, between the columns of the arcade and over the great arch. It is the work of Professor Tilgner, of Vienna, and was cast at the Imperial Foundry in that city; and it is creditably distinguished by the success with which the artist, in his treatment, has combined the characteristics of the classic and the naturalistic, both as to pose and costume. The lions' heads, which, as they are some 112ft. above the pavement, are really colossal (though they do not appear so), are handled in a truly decorative spirit, and with a masculine force and *verve* as rare as they are acceptable. They display the able craftsmanship of a young German who has lately settled in Sydney, Herr Kretzschmar, and, though totally different in character from, are, in their way, scarcely inferior to Stevens's exquisite little squatting lions on the standards of the dwarf railings in front of the British Museum, to which, by the way, some similarly sized lions placed a year or two ago as supporters at the foot of the electric-light standards erected in front of the Sydney General Post Office (so noted for its famous "carvings") bear quite a phenomenal family likeness.

The three main portals of the building are protected by outer doors of wrought steel, with external panels of polished trachyte, which are raised to their position at night and lowered in the morning by means of hydraulic machinery. Within these are pairs of glazed swing-doors of polished ruddy blackwood, with handsome mountings of wrought golden bronze, and by the central one of these entrances the vestibule of the "Equitable" building is reached. Standing in the vestibule (which is a veritable gem of architectural dignity and purity), and looking towards the main hall and staircase, the visitor finds himself surrounded on all sides by rich metals and richer marbles, not an atom of wood being visible except the cedar doors and the handrails of the staircase. The walls of the vestibule are arcaded on each side with four slightly recessed bays, the whole being of polished Sicilian marble, except the canted plinth (which is of St. Anne's) and the pilasters and square-cut frieze (which are of the almost opalescent, creamy, and richly brown and indigo-veined *Pavonazza*). The capitals are of dead-white marble, delicately carved in somewhat low relief, as are also the archivolts of the great archway dividing the vestibule from the main hall. The *tympana* of the arcading are filled with mosaics of foliated flat design, in low-toned colours on an ivory-hued ground, and the space above is treated as an attic, the compartments of which are occupied by shield-like medallions of beaten and burnished bronze, of a particular description known in Germany as *tomback*. This *tomback* is likewise employed for the highly-enriched but solidly fashioned wrought cornice and ribs of the twelve ceiling panels, which are filled with polished Sicilian marble slabs. Sicilian marble, pumiced, is used, too, for the flooring, not only of the vestibule, but of the main hall, the staircase, and the open balustraded galleries around, which form the corridors on every story.

Perhaps the most striking feature of the whole interior is the metal and marble staircase, with its galleries, which rises out of the hall, and is specially remarkable for the novel system of construction, already explained. A portion of the ground-floor space, belonging properly (on plan) to the inner quadrangle, is thrown into the great lateral offices, the area of the hall being bounded by screen walls, which take up the line of the gallery fronts above them. These walls are entirely of polished marble, Sicilian being employed for the upper portion, *rouge royale* for the high dados, and St. Anne's for the plinth. The wide white marble stairway rises centrally at the back of the hall as far as the first half-landing, whence it branches out on either side to a second landing, and thence to the first floor. The large square metal newels at the foot are surmounted by columnar standards of similar character, each bearing a bronze-zoned azure globe dominated by the American Eagle with outstretched wings, superbly modelled in fine bronze, and executed at Berlin. The stringboards which support the Sicilian treads and risers—all are framed in steel upon the undersides—are of rolled steel, with decorative mouldings (also rolled) and steel rosettes; and the handsome standards (or constantly recurrent newels) with their artistically-wrought finials and pendants (as well as the framework) of the balustrading, are of similar material and treatment, finished everywhere in mat grey aluminium paint, relieved with mat gold bronze. The panels of the balustrades are of *rouge royale*, polished on both sides, and the effect of the treatment is very strikingly exemplified in the balustrading of the second half-landing, stretching across the open area from wall to wall, above the foot of the stairway, and resting on a flat arch, similarly treated, which spans the space from columns corresponding with the eagle-bearing standards. From the first story the stairs are boldly thrown athwart the open area, in straight and simple flights, from gallery to gallery, till the fifth floor is reached, whence the sixth floor and the copper and tiled roof above it are gained by an ordinary circular iron staircase. The first-floor corridor is arcaded, and the walls of those above are divided out by shallow piers, the whole being finished in light sage green, a plinth of Bleu Belge marble, and buff columns, piers, and mouldings, sufficiently brightened by the capitals with their ornamentation in golden bronze on a vermilion background. Steel-framed slabs of Sicilian form both the floors and ceilings of these galleries, the upper surface rubbed for footwear, and the lower polished for the soffits of the panels. A stained-glass skylight, made in Berlin, ceils the whole, supported upon semicircular steel ribs, with spandrels of finely-wrought open work, the aluminium judiciously enriched with vermilion and gold. The design of the skylight is geometrical, the foliated portions being severely conventional, and the colouring is light and delicate, the most salient tints being blues and greens.

An almost startling novelty to the eye in the "Equitable" building—a novelty, at all events, in this part of the world—is the system on which the passenger elevators are worked. The old boxed-up shafts in which the cars usually run—which are so prolific a source of accident, and which form such draught-creating flues in case of fire—are entirely done away with, and the cars travel noiselessly from the basement to the top story, perfectly free and unconfined, and absolutely without a sound, through the open area of the hall, on either side, upon nothing more than 2in. steel guide-rods attached to the columns of the several gallery balustradings at the two opposite corners of the running space. The actual system of working adopted is that known as the "Waygood high-pressure automatic water-saving patent," in which a very cleverly-designed little valve adjusts the amount of high-pressure water supplied to the ever-varying amount of work to be performed from moment to moment by the cars. Each car is suspended by four steel-wire lifting-ropes, each of which is capable of raising the maximum load of the vehicle, with a factor of safety of 10. That is to say, the four ropes are together equal to the strain of 40 times what is likely to come upon them in ordinary working; while in the event of such an occurrence as the severance of a rope, the "safety gear" is so designed as immediately to grip the steel runners, and so arrest the descent of the car. On each floor above the ground floor a portion of the balustrading of the galleries is prolonged upwards in a kind of angle screen of special design, at the two sides of the angles—one of these having a sliding door—to form the equivalent sides of an imaginary cage to receive the car. On the ground story the treatment is elaborated, so that the three sides form, with the well, a complete cage, and the pair of cages (or "stations") constitute a special and extremely artistic feature of the hall. The whole is of metal and marble, and the lower part alone is solid. The standards and other structural features are of steel, treated like the columns and the newels of the stairs; the lower panels are of polished *rouge royale*, and the upper ones of open and beautifully hammered and foliated *découpé* sheet ironwork, the whole being finished in aluminium and gold bronze. [I here take the opportunity of mentioning that the "Equitable" is the only building in which I have ever seen aluminium used satisfactorily. The success of its employment is attributable, I think, partly to the mellow light prevailing throughout the hall and staircase; partly to the extensive use of the metal, so that it becomes one of the ruling factors in a unique but singularly taking scheme of colour; and partly to the fact that (excepting the great upper handrails of highly-polished nickel, with their big discs, which extend above the whole of the staircase and gallery balustradings, and which, by reason of the polish, the eye instinctively associates with the glistening *rouge royale* marble, and not with the rest of the metalwork) there is nothing else of a metallic nature to be seen, save only the gold bronze, the softness of which harmonises far better than gold itself would have done, with the cool silvery grey—much colder in tone than actual silver—of the mat aluminium.] There being no boxing to the elevators, it is only natural that the cars themselves should be open, as they are. They, indeed, are veritable cages, all of metal, the upper portions being formed of an elegant network of wrought and bronzed steel scrolls, while the panels below the line of the top of the seatbacks are of hammered steel, bearing various devices, and bronzed. The whole design and treatment of the elevators are entirely novel in this country, and are certainly as artistic and successful as they are new.

The first floor of the building is devoted exclusively to the Equitable Society's own business, which is transacted in some dozen or so of separate apartments. That these are all fitted and finished in the very best and most approved manner at the hands of such an institution may be taken for granted, but two portions only demand special notice in a professional journal. These are the general public office and the board-room. The former, 60ft. long by 22ft. wide, occupies a considerable portion of the side to Martin-place; access being gained to it by three sets of semicircular-headed double-swing doors in similarly-shaped screens of ornamented steelwork and ground glass, filling the arches of the arcade. Along the whole length of this chamber extends a counter with an imposing front of *rouge royale*, but the most noticeable feature is the manner in which the separate accommodation for some of the officials of the staff is portioned off. This is effected by massively ornate screens of beaten bronze, of thoroughly architectural character, with richly-pedimented doors and hinged grillgates of wrought-bronze scroll-work opening above the counter. The treatment in such connection is quite novel, and has a very fine effect. The wood employed here for the joinery and cabinet-work is the Australian "red bean," which has hitherto found little use, but seems extremely well adapted to this purpose. Possessing a capital red colour, it is of peculiarly transparent grain, suggestive almost of a cherry-coloured satinwood, and seems to work satisfactorily and take an excellent polish, though I have heard doubts expressed about its standing. Particularly appropriate is the treatment of the board-room, with its quiet richness An elongated octagon in form, the walls, about 12ft. high, are panelled entirely in mat-polished mahogany, with fluted pilasters and ornamentally carved cornice. Above this cornice is a deep cove, enriched with leaf and berry and bold acanthus angle ornaments, finished in cinnamon and gold, while the ceiling is plainly tinted a light greenish buff. The massive marble fireplace and mahogany over-mantel with bevelled silver plate are of corresponding richness, as is also the handsome furniture, set off by a fine Persian carpet.

With the exception of the first floor and the sixth, in the latter of which are the caretaker's commodious quarters and the colossal water-tanks, the whole of the building is designed for letting out to tenants. The four spacious offices on the ground-floor (the two front ones with their own entrances), fitted with strong rooms, &c., and in which marble plays a liberal part, are so designed that they can be tenanted either separately or *en suite*, in which latter case they would be large enough for any bank in all Australia. Beneath them, in the basement, are two very large, well-lighted halls, also with front entrances of their own, and below these again, the extensive cellarage, where is located the elaborate hydraulic machinery which operates, amongst other things, two goods lifts from the back street to the cellars, the gratings in the pavement closing automatically as the machines descend. The second, third, and fourth floors, and a portion of the fifth, contain entirely private offices, admirably planned and fitted with every comfort and convenience that skill and ingenuity can devise; while the whole back of the fifth story is occupied by a banqueting-hall, 91ft. long by 31ft. wide and 23ft. high, which, though undoubtedly a fine and striking apartment, is scarcely so satisfactory from either an architectural or a decorative point of view, as the remainder of the building. On every floor are the most luxurious lavatories. wholly constructed (except the doors and w.c. seats) of polished Sicilian marble, with Doulton's latest sanitary ware and polished nickel fittings. The entire erection of the edifice has been carried out on the excellent and too rarely-employed system of a schedule of prices. and (it must be added) in a manner that reflects the very highest credit upon all concerned.

Speaking of the building as a whole, it may be said that if any failing can be found in the design at which the hypercritical may carp, it is in a perhaps slightly excessive virility, which borders almost on the barbaric. The most prominent instance of this occurs in the very large employment of the ruggedly rough-hewn stone. Were the structure situated in a great open space, the ruggedness would be softened to the eye into mere texture; but, unfortunately, the streets of Sydney are so deplorably narrow, and the authorities are so averse to widening them to a proper extent (even where the opportunity occurs), that the Equitable Society's imposing block cannot be viewed from a sufficient distance to do its noble design full justice.

De Libra.

THE PAYRE COLLECTION OF MEDIÆVAL ART.

THERE can be no doubt about the intrinsic merit and genuine character of the Payre Collection of Mediæval French Wood and Metal Work which has this week been opened to public inspection in the temporary annexe at South Kensington Museum. So long ago as 1888 the Art Department authorities approached M. Payre, a Paris architect and decorative designer, with a view of acquiring his splendid assemblage of ancient craftsmanship; but the terms then demanded by the famous collector long continued at a figure above the available means for such a purchase. It remained for Dr. Middleton to complete the bargain, and the entire collection of Mediæval work has now been bought *en bloc* for about £11,000. From every point of view the transaction certainly has resulted in a valuable acquisition, and notwithstanding the long-continued ill-health of the Art Director, Professor Middleton, it is a fortunate circumstance that he has been able, before leaving London again, to classify and arrange all these exhibits, which are well displayed to considerable advantage in three great alcoves, without crowding, and for the most part the objects are arranged somewhat in a well-defined chronological sequence. The work is by no means limited to ecclesiastical examples, and the collection, which includes between three and four hundred specimens, includes many of a domestic and secular origin, characteristically illustrating the municipal and private life of the later half of the 15th and early part of the 16th century. To the architect and decorative craftsman the exhibition undoubtedly presents an immense fund of suggestive design, while the unrestored condition of the greater proportion of the items forming the collection renders it of the highest value to all students of historic workmanship. The following notes will serve to give an idea of the beauty and varied nature of the objects which M. Payre, with unqualified assiduity and mature judgment, was enabled to get together from all parts of the Continent some thirty or forty years ago. Among the earliest specimens is an iron-bound chest elaborated with 13th-century scroll-work very similar to the famous chest at Chester. Somewhat of later date is the English oak door enriched with two arcades having lancet cusped arches, and a row of quaint grotesques ranging along the centre of the door between the two tiers. The example reminds us how very rare instances of contemporary woodwork of so early a period are in this country, and the screen at Stanton Harcourt, in Oxfordshire, is recalled to mind as typical of that date. The 14th-century carved oak beam hanging in the adjoining gallery exhibits but little advance in figure-sculpture, with the Twelve Apostles forming the subjects for half-length bas reliefs continued in a series of arched niches, after the fashion of a frieze. Hard by is a specially rich 15th-century North French coffer chest. with the front elaborately wrought with Gothic traceried work, and at the other end of the same wall we remarked a Flamboyant retable, with a coved cornice canopy, showing remains of colour on the fretwork cresting above, and ascribed to about the year 1480. Below this last is an ornate 15th-century Fleur-de-Lys North French coffer front, wherein the foliated emblem of the Kings of France has not been so greatly mutilated by the iconoclasts of the Revolution who in some specimens almost entirely eradicated the hated symbol. One or two pulpit fronts are shown. That from Brittany of 16th century date is probably the best, with delicate mouldings worked round the panels in true Mediæval style, and having highly-enriched angle shafts to set off the octagon. Coloured figure paintings still fill the panels of the 16th-century altar canopies, and a painted retable of similar date hangs hard by. The carved-oak Normandy door, with the two grotesque beasts at the base of the upper panel, has foliations freely treated, filling the entire surface with leaves patterned and carved in a way which is almost identical with much of the famous woodwork still to be found in the churches of East Anglia. In the post of honour at the end of the first gallery is a magnificent oak rood, supported by SS. Mary and John. The work dates from the 15th century, and perhaps is quite the finest specimen in the whole collection. The Christ is dignified, and well posed in the majesty of power. The Evangelistic emblems are introduced at the ends of the arms of the cross, which terminate in Fleurs-de-Lys beautifully proportioned. The face of the cross too is filled in with delicate tracery of the most elaborate pattern. Age has given a white colour to the surface of the oak, which makes it assume a mature ivory look at a little distance. In the middle of this gallery is a "money-changer's table," with a folding top and quaint leaf brackets, of primitive design well worthy of observation. The second alcove gallery is divided into two by a composition made up of some panelled inclosures said to have formed a rood-loft entry, very charming in design and florid in detail, somewhat like the work at St. Maclou, Rouen, leading to the western gallery there.* Beside these are several exquisite bits of design displayed, too, on either hand of this exhibit, notably a singing gallery front of Renaissance character, with open fret-cut panels, reminding one of much of Mr. Ernest George's characteristic work. On the other side of the room are two series of pinewood medallion panels, very spiritedly executed with the arms of France and an eagle, skilfully managed, while in another compartment St. Martin is depicted on horseback dividing his coat with the beggar. A wide Late 16th-century door with the Labours of Hercules is a remarkable example of its kind, and should be noted particularly for the exceedingly refined and almost Italian-like frieze which is carved along the top rail below the bas-relief of figures in the arched head. The egg-and-tongue moulding is oddly introduced, and the incongruity of scale in the piece enhances its quaintness. The Brittany fireplace hoods in the third gallery are particularly interesting, and are admirably shown in position. The carvings are crude, but nevertheless are full of vigour and "go." The chairs and tables disposed about are well in keeping with the other 16th-century woodwork, and the sketcher might travel half over France without coming upon anything like such good examples of their kind as these. The cyprus wood coffer of 18th-century Italian workmanship is sure to find admirers for its elaborate figure work in low reliefs, and others will not fail to be attracted by the oak and brass chasse for relics, with a painting on the gabled roof of St. Anthony visiting St. Peter. To our taste the large oak retable, dating somewhere about 1525, and shown in the last gallery, merits a closer study for its refined manner in the Early Renaissance, which followed hard upon the last traces of the Flamboyant Gothic, fragments of which are introduced in spirit, if not in precisely correct detail, over the central niche of this reredos, above the group of the Crucifixion. The panels are divided by columns, and the entablatures are picked out in blue, the whole fabric having at one time been entirely gilded. A very considerable portion of the exhibition is composed of exquisite wrought-iron work—such as Mediæval door-knockers, lock plates and hinges, candelabra and standards, keys, bolts, and steelyards, grilles and panels far too numerous and diversified to even enumerate. No one can afford to let this exhibition pass without taking an early opportunity of examining its contents. Eventually the collection will be divided between the South Kensington Museum and the Art Museums at Edinburgh and Dublin.

---

* For sketch of this work at Rouen see Building News, Sept. 23, 1887.

THE CLUNY MUSEUM.—III.

By May Morris.

[WITH PHOTO-LITHOGRAPHIC ILLUSTRATIONS.]

EMBROIDERY AND COSTUMES.

I WAS rather diffuse in my last paper over the excellency of the tapestries in the long gallery built above the garden and the ruins of the Thermes palace. But I am making no attempt at a connected description of the curiosities in this collection — endeavouring, rather, to give you an impression of the museum as a whole: to render the atmosphere of the place, as it were, more than to describe the objects in it. Here, for example, is the room called after François I., that king having received James V. of Scotland in the Cluny Hotel on the occasion of the marriage of his (François's) daughter to the Scotch king. The great four-post bedstead is richly-carved, and its hangings and coverlet are all of silken embroideries. The whole room, too, is hung with embroidery, pleasant in colour, bold and effective, and well-designed as far as it goes. The ground of these wall-hangings is white satin, showing little of this rather difficult material, however, as the design is full and rich; the bigger subjects have been worked separately in wool, and laid on to the ground, while the smaller ornament is sometimes worked in "long and short" stitches directly on the satin, and sometimes cut out and laid on the ground and edged with cords. The borders are on pale blue satin, and are composed of trophies of arms amidst rich fruits. It is quite a family piece, all in the "grand style" of the 17th century, Henry IV. posing as Apollo; his mother, Jeanne d'Albret, as Venus; his wife, Marie de Medici, as Juno; and his father, Antoine de Bourbon, as Saturn! Each little royalty is graced with his or her coat-armour, symbols and crests, and all the rest of it. Very imposing; but somehow I fail to be impressed, and like best the general result of pretty colour, the rather skilful placing of the ornament, the nicely knotted serpents in the badges, the boldly-drawn wreaths and boughs. Indeed, Henry IV., with his laurel crown and his rays of sanctity, looks something very like a fool, and the various members of his family disporting as the Immortals, little better. The actuality of my lady of the Unicorn, with her genial atmosphere of domesticity and repose, is far more impressive. I am lingering in this little room to cast a glance at the rich, flushed surface of the gilded and painted leather that covers what little wall surface is left by the hangings; to have a good look at the fine 15th-century chimney-piece, with its clear-cut little figures clasping hand-in-hand across the massive stonework, its pot-hooks and hangers and iron supports, all nicely ornamented, and its "dogs" on the hearth, two gaunt figures above Gothic niches, holding the brightly-burning logs together. This chimney-piece—in the 15th century, the days are past when the fire was made on an open hearth in the midst of the hall, some of the smoke escaping by a louvre, or luffer, in the roof above—with another still finer piece, was rescued from destruction in an old house in Le Mans by a local enthusiast. The museum authorities, with the good taste that has distinguished the restorations that were inevitable in this charming old house, have placed the old chimney-pieces acquired at different times about the different rooms for practical use, where they take the place of, and are in much the same style as, the original work. But, linger as I may, I must pass on at last (though from a dim ante-room a glint of armour caught through one of the low, blunt-arched doorways had almost tempted me to wander off at a tangent again), and I find myself in the modest little room known as the room of the "Reine Blanche." Mary of England, sister of Henry VIII., third and last wife of Louis XIII., here spent her time of widowhood in the traditional white mourning robes of the Queens of France. She cannot have mourned very hard, though, for my history-book reminds me that she married three months after his death. Her little room still bears painted decoration of the early 16th century, found under many superimposed layers of wall-paper, medallions, cartouches, garlands, chimeric animals, ruins, all in the Italian style, and done by the ancestors of those clever Italian workmen who still cover wall and ceiling of houses in the peninsula, where the "English style" has not yet penetrated, with brightly-trellised roses, flying birds, and an artificial heaven. In this room, as all over the hotel, there were found, when the modern partitions and decorations were removed, shields emblazoned with the arms of the house of Amboise on the ends of the beams and supports, *paly or and gules*, surmounted by the episcopal cross. The White Widow's room is now filled with lutes and viols and theorbas, and musical instruments of strange elegant shapes; a clavichord, an old Venetian spinet, mellow and golden-brown in colour, a *vielle*, or hurdy-gurdy, a harp with perverse fantastic ornament. The little chapel which leads thence was used in Revolutionary times as a meeting-room for the committee of the quarter, was afterwards turned into a dissecting-room, and finally into a printing-room. A singularly unsuitable choice for all three purposes, being small and dimly-lighted by one high window. It contains various bits of carved work, a 12th-century Christ, the Virgin and St. John from an Italian 13th-century Calvary, and various later Mediæval carvings. The construction of the chapel itself interested me; but as we are not concerned with architecture here, I will not weary you with an amateur description of it. What principally struck me was the central isolated pillar which supports the vaulting of the roof. About the walls are elaborately-carved niches, which, until the end of the 18th century, held statues of the various members of the Amboise family. A round stairway in one corner has a very rich semicircular screen or doorway of stone openwork, and descending the spiral of the stairs one comes out into a little vaulted court, leading round into the garden of the old palace. This court, again, being beneath the chapel, has a central pillar to support the richly-ribbed vaulting, and necessary also for the central pressure in the chapel above. The exterior, as I remember the building (for I forgot to make any notes on this little corner, and have to trust my wretched memory), is fantastic, and Renaissance in feeling. Indeed, the richness of the interior of the chapel, into which the architect obviously put his best work, is less pleasing—and less Gothic—than the simplicity of constructive lines in the dwelling-house itself. There is nothing to surprise one in that, even if the chapel was built at the same time as the hotel, and I think it is contemporary. I suppose that at a period of transition in any art, the humbler work often retains many, if not all, of the old characteristics, while that which is more assertive is up to date, or well to the fore in whatever new character the change of time brings.

I have been trying all this time to get into the two courtyards, now roofed-in with glass, where the textiles and embroideries are gathered together, as well as a fine set of tapestries, the history of David and Bathsheba. And here also are some strange and beautiful scraps of early woven stuffs; silk thin as paper, woven with gold so pure that its sheen is as bright and undimmed as the day it was taken out of the loom; webs so delicate, with slim ornament so daintily drawn that one might imagine the accumulated skill of modern science must be required to produce anything so precious and so fine. Yet we have some idea of the simplicity of the machinery that produced these goods. Modern science prefers to denote its energies in this line to the construction of Nottingham laces and Manchester cottons, while the splendours of the looms of Palermo that enriched the treasures of the Sicilian kings and went out, in their renown, all over the world, seem unproducible by mechanical ingenuity. The tombs of bishops in the 11th and 12th centuries have furnished Persian stuffs of priceless beauty, pontifical garments of solid cloth of gold, with hems and borders flowered with silver roses. But there are objects here of other interest. The Phrygian cap of some Doge Grimani, the white-stitched bonnet of Charles V., the black headgear of an Alsatian woman, the stiff corset of a Venetian—these tags and rags, rescued from among the discarded and dingy trifles of personal attire, strike one uncomfortably, for they are faded, and lamentable, and dead, and retain a grave-like flavour of the vanished personality that graced them living. It is only a morbid and lackadaisical mind that pores over these relics intrinsically valueless, that worships before the openworked stocking or the leaf of a fan once belonging to the Empress Josephine, that eyes with sentiment the garter of Louis XVIII., or draws a sigh over the empty embroideries saved from Marie Antoinette's Trianon.

There is a large case in the further of the two textile courts to which a certain interest is attached. It contains the insignia of the Order of the Saint Esprit, founded in 1579 by Henri III., more for feebly political reasons than for pious ones. There is something coarsely handsome and splendid about this work: rough gold on black velvet and pale green satin. I have found it sufficiently interesting to give as my illustrations a mantle of a Knight of the Order, and a piece of the hanging at the back of the altar. I am inclined to think that it was the colour which first struck my eye. The baldaquins, the altar-hanging or mantle, and kneeling cushion are all embroidered on a pale green satin, the flames gold and silver in raised work. The collar of the Order with its pendent cross is richly worked in the same metals, the arms in the centre thereof being worked in silks and gold. The knotted cord of the collar, with its alternate gold rosettes, makes a very pretty ornament, and the border of the hanging, with Henri de Valois's monogram alternating with the French flower-de-luce, and the gold flames cleverly set about it, may not be a highly intellectual piece of design, but is "not without its merits," as the gentleman said of his lady-love. The fringes, too, are excellent, as, unlike our modern ecclesiastical upholstery as possible, being gold thread carefully knotted by hand, rich and even delicate in effect. The cushions that go with this suite of altar furniture—the "chapel" as it would have been called then—have the dove of the Holy Ghost worked within gold rays, a group which is repeated on the baldaquin alternately with the group of the collar and coat armour. The great mantles of the Grand Master and Knights of the Order are black velvet, closely powdered with the flames, with a broad border of groups of flower-de-luces and Henri's initial wreathed in crowns and trophies of arms. They have broad capes of the green satin ornamented in the same way. To tell the truth, they rather remind me of Lord Mayor's Day in England, and strike a jarring note in the midst of this court filled with rare and delicate fragments, the waifs and strays of a far-gone age. However, the art of really *decorative* embroidery, though degenerating, was not yet lost at the end of the 16th century, and as one's eye wanders round the court it catches sight of a few bits of work so really criminally stupid and quite devoid of decorative quality, that one is fain to be reconciled to the rather theatrical splendour of the Order devised by "Henriquet," the Jester's King.

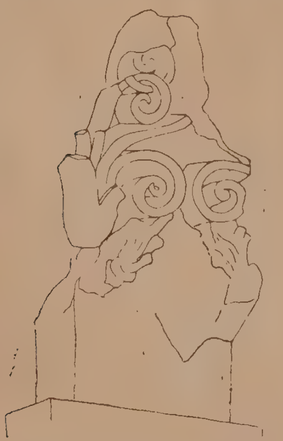
Dearly should I have liked to give some illustrations of a case in this court which has a particular fascination for me, but I have to be content with a few words of description. On the sixth Prairial of the year VII. of the Republic (1796), the remains of Bishop Morard, Abbot of St. Germain des Prés in 996, were brought to light. Whether they laid his body to rest clothed in his best or second-best robes we cannot tell; but they are splendid enough still after the discoloration of many centuries for us to wonder at and linger over. The contents of the tomb were described at the time, and seemed to have been very complete. The skeleton, quite intact, was covered with a large robe of dark violet taffetas. All the seams of this garment were joined by a lace of silver bestarred with gold, a sort of tapestry ribbon very delicate and lovely. Over this was another garment resembling the chasuble of the period. The head, resting on a cushion, was mitred; on the legs were episcopal gaiters of very handsome work, secured below the knee by a cord. The hands were covered with gloves fairly well preserved, and one of the fingers wore a ring with a discoloured turquoise set in the form of a crescent. Some of these stuffs are of the highest interest, and would require a pen better acquainted than mine with the history of early textile weaving to describe them. There is one of Eastern origin made in some tapestry-weaving process; the ground is excessively fine gold, the ornament great Persian letters in blue, interlaced with delicate spiral scrolls of pale pink, a design familiar to us on Early Persian tiles. The tones of colour, though now faded and worn, are most lovely; blue and gold and pale pink, with a thread-like black outline. The quality of the fabric is curiously fine and flat, fragile-looking, and thin as paper.

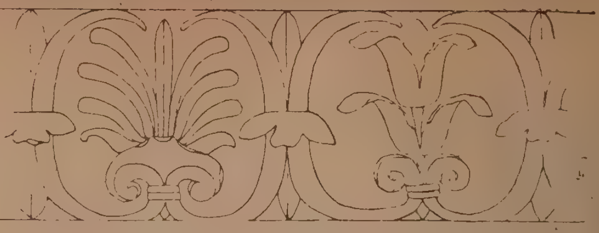
CLASSIC DETAILS AND THEIR APPLICATION.*

By G. A. T. Middleton.

CLASSIC TIMES: THE ENRICHMENTS.

ALTHOUGH an attempt has recently been made to trace the origin of almost every Grecian enrichment to the lotus-flower of Egypt, it can scarcely be said to be fully proved, and it is probably best to accept most of them as we find them, already perfected like the Orders, when first they appear in Greece. Exceptions to this rule are the anthemion and the guilloche, both of which are found in the Sacred Tree of Assyria, of which there are several examples upon the wall slabs in the Kouyunjik Gallery of the British Museum, dating to about 800 B.C., while there is an intermediate guilloche, in point both of date and of perfection, in the Archaic Room, from the Treasury of Atreus. The Assyrian wall-slabs, too, give clear indications that the Sacred Tree was derived from the palm, which is upon several of them treated in a decorative manner, arranged with symmetrical branches at equal distances apart.

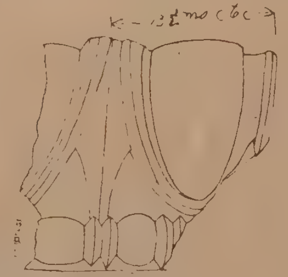

Broken Fragment of Akroterion, Temple of Diana, Ephesus.


Roman Variety of Anthemion (showing irregularities) from Base of Candelabrum in British Museum.

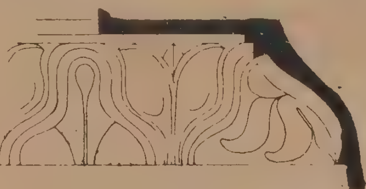
Broken Fragment of Cornice, Athené Polias, Priene.

As the Grecian enrichments are almost entirely confined to the Ionic order, and as each is generally to be found in one position only, it is possible to adopt some sort of sequence in their consideration. Starting from the ground-level, we find the guilloche occasionally used upon the rolls of the base, though it is not confined to that position, and is occasionally employed upon a flat surface, as in the example already quoted—the Treasury of Atreus. An intertwining pattern, of which the circle forms the basis, it is adapted for such a position close to the eye, permitting of no deep cutting, and almost best used as a surface-colour decoration only, as is its rectilinear variation, the Greek fret, which was sometimes employed in this way upon the Doric abacus.

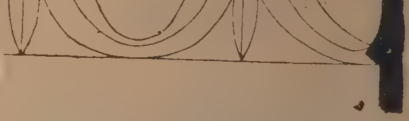
Fragment of Lion's Head, Temple of Diana, Ephesus.


Egg-and-Tongue, and Bead-and-Fillets, Temple of Diana, Ephesus.

Upon the ovolo moulding between the volutes of the capital, and generally where an ovolo-moulding is used, we find the well-known egg and tongue, with generally a bead and double fillet enriching the small roll beneath. The eggs are remarkable both for the invariable beauty of their contour and for the clean finishing which is given to them at all times; rich and graduated shadows being obtained by the equally cleanly-cut eggshell (as it may perhaps be called), and by the tongue.


Leaf-and-Tongue Enrichment, Temple of Mars Ultor, Rome.

The similarly-named leaf-and-tongue is probably but a variant of the egg; but it is employed universally upon a cyma-reversa moulding, and it has been often remarked how well each of these enrichments is adapted to its position, the outline of each being similar in character, though not identical in form, with the contour of moulding which it enriches, and in which it is cut, for it will be noticed that this contour is preserved both in the eggs, the leaves, and the tongues. (See photograph.)

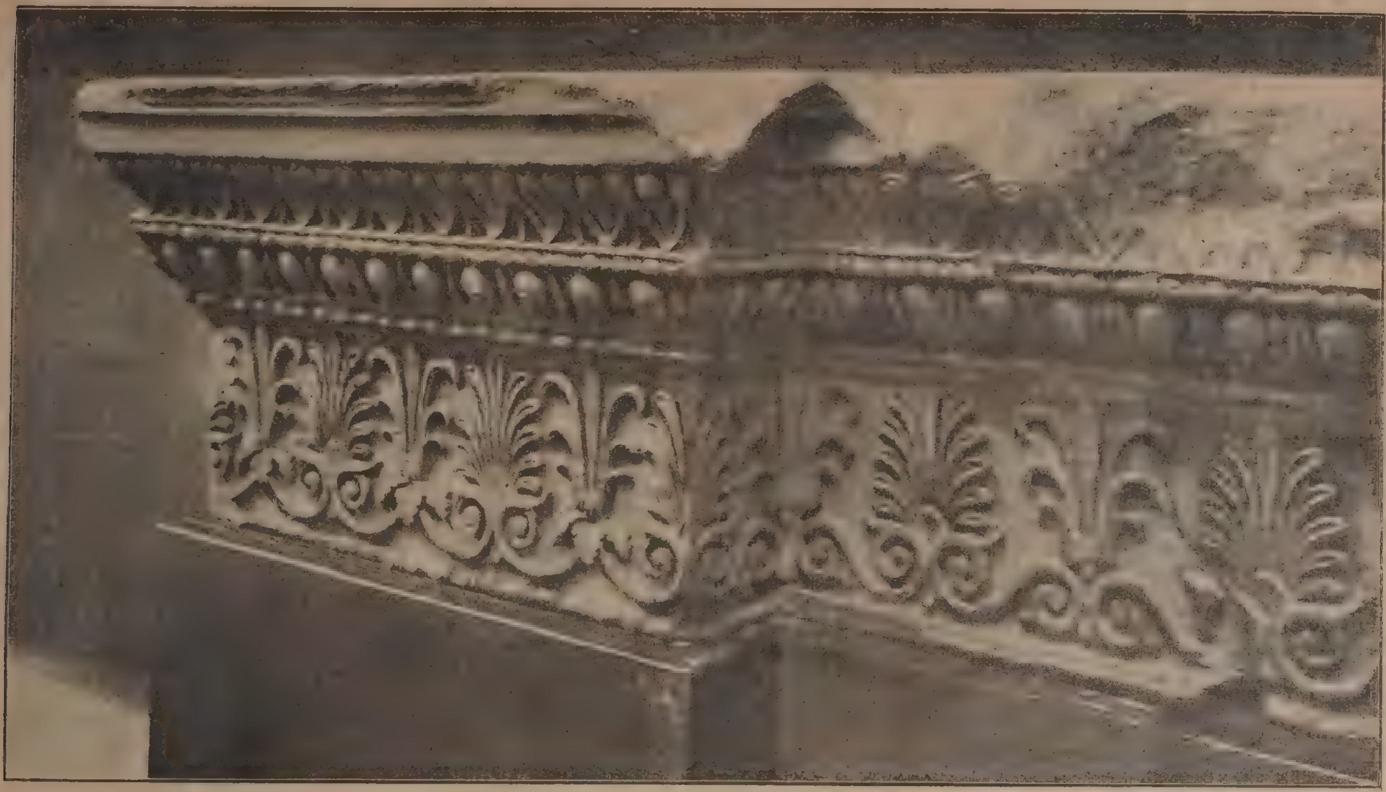

Leaf-and-Tongue Enrichment, Temple of Mars Ultor, Rome.

The cyma recta, which commonly forms the top member of the Ionic cornice, is commonly enriched, as has already been said, with lions' heads, at equal distances apart, forming water-spouts, and between these there is either a scroll of acanthus-leaves and anthemion, or else the anthemion alone in its two variations of honeysuckle and palmette alternately. The anthemion, however, is not entirely confined to this position,

Etruscan Antefix.
(From the South Kensington Museum)

---

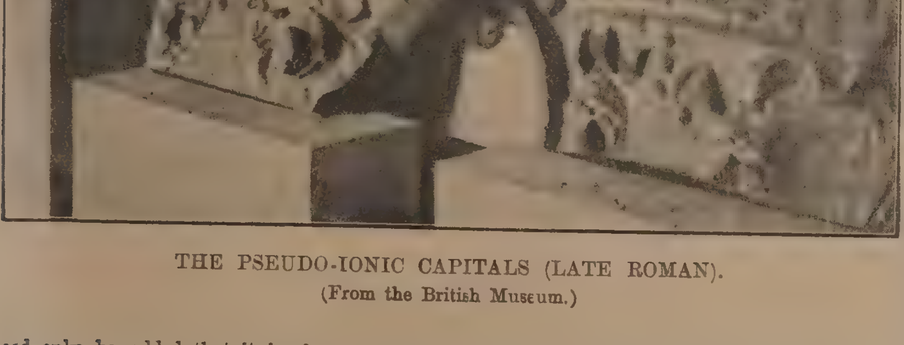
* All rights reserved.



FRIEZE AND CORNICE OF THE ERECHTHEIUM.
(From the British Museum.)

but is occasionally found upon a vertical surface, as at the Erechtheium, both round the neck of the columns and upon the frieze. The photographic illustration of the latter exemplifies two slightly different varieties of the ornament, and shows well the wonderful precision of the workmanship, the beauty of the curves, and the use of only a few principal lines to express the carver's meaning everywhere. The surface curves, too, are restrained and few, adding charm yet scarcely perceptible upon mere casual observation, particularly in the original position of the frieze, far above the eye.

The use of sculpture as an enrichment has already been mentioned; and in this regard it need only be added that it is always confined within proper limits, to embellish the architecture and not to over-ride it, occupying some definite position, as a frieze, or tympanum, or metope, or standing as statuary midway between columns, always framed or in some way cut off from all else, and never on any account mixed up with the conventional foliage ornament of anthemion or acanthus.



THE PSEUDO-IONIC CAPITALS (LATE ROMAN).
(From the British Museum.)

Other enrichments which demand notice are the akroteria and their small relatives the antefixæ—the former being terminal ornaments only, and the latter fulfilling a constructional function. Both are usually devised as variants of the anthemion, in some form or other, as is the deeply-cut and much-destroyed example illustrated herewith, and throughout the best Greek period are always of considerable beauty.

The difference between the enrichments as used by the Greeks and by the Romans is not so much a matter of their form, though the change there is considerable, as in the spirit in which they were applied and worked. The Greeks employed them, with great restraint, to set off and accentuate the beauties of an already beautiful structure; the Romans often, if not exclusively, in a more obtrusive way, in order to draw attention to their own richness and profusion, and to give the effect of lavish wealth. So long as this effect was produced, it seems to have been frequently a matter of comparatively small importance whether the design of each separate part was beautiful, or whether the curve of each individual line was pleasing or perfectly obtained; and as time went on this laxity produced license, and the forms became debased and comparatively crude. Natural leaves and forms of animals were introduced and intermixed, and even in the conventional forms of foliage a crinkled surface became common, destructive of all purity of line.

In these respects the work of the Etruscans, as judged from the cornice recently set up in the British Museum, and from the antefix at South Kensington, is better than that of the later Roman times, and, in fact, seems to be a reflex amongst a less civilised people of the works of the Greeks themselves; and, amongst the Romans, the detail of the earlier period, founded more directly upon the Grecian, and often executed by Grecian artificers, was more pure than that of later date.

Comparing the illustrations of egg-and-tongue, leaf-and-tongue, and anthemion, the change will be at once apparent. Though applied much in the same position as before, the contours of the mouldings, it will be remembered, had undergone a change, and the buildings, too, which they enriched were of a different and more varied character, so that the greater rotundity and voluptuousness is, after all, not to be wondered at, and is, in fact, in many cases more suitable than extreme refinement would have been.

It is natural to find with the debasement of form that the workmanship deteriorated also. The lines are no longer so crisply and so clearly cut, and consequently the few have to give place to the many in order to produce a like effect; and often the setting out is bad, the two sides of a symmetrical ornament being far from coinciding, and the centre-line not truly kept.

As to what happened in the luxurious days of the later Roman Empire, a glance at the pseudo-Ionic capitals illustrated herewith should suffice in place of much description. The idea having become prevalent that the Ionic volute was derived from rams' horns, you find rams' heads used here in their place, and supported, in an æsthetically incorrect way, by yielding crinkled leaves, from which spring scrolls around the bell. Then, from one ram's head to the other there is a large roll, not ornamented by the egg-and-tongue, as in Greece, but by mere surface-carved natural representations of oak-leaves and acorns, and over the centre of this is a human mask. Degradation could scarcely go further, yet it is suitable to its date and to the people who produced it, and was probably, if more were known about it, suitable also to the building to which it belonged, just as were the rich tesselated pavements of the same epoch, adorning the public baths and the houses of the more wealthy of the people, whose wealth was coarseness rather than high refinement or intellectuality.

THE SOCIETY OF ARCHITECTS.

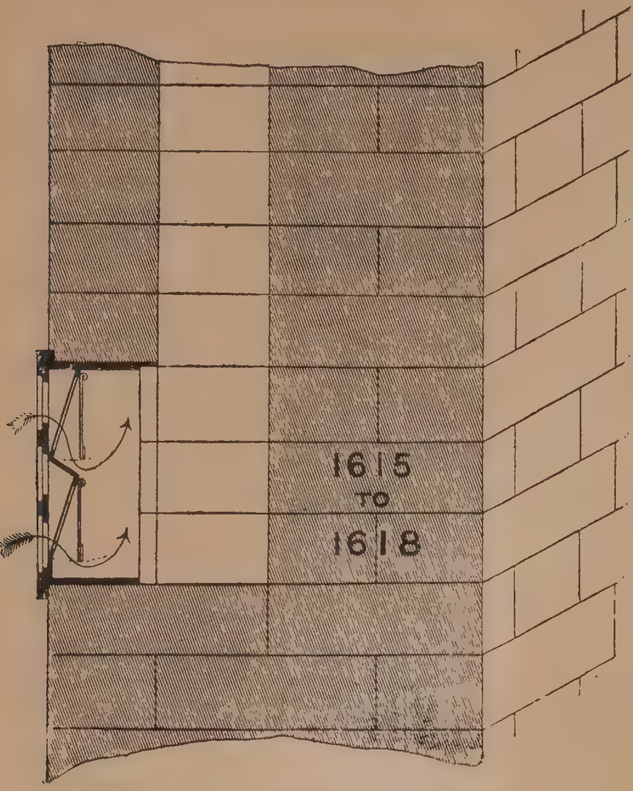
THE tenth ordinary meeting of the Society of Architects was held at Waltham Abbey on Saturday, July 13. The members and their friends journeyed by train from Liverpool-street, and were received at the abbey doors by the vicar, the Rev. F. B. Johnston, M.A., who threw open the buildings for their inspection, and conducted the party to the various points of interest both inside and outside the venerable structure. The society had also the good fortune to include among its visitors Mr. J. Arthur Reeve, who has made a special study of the abbey, and who kindly gave the members the benefit of his researches and conclusions.

In his opening remarks he stated that the party were assembled in what was the nave of the original church. The eastern portion, containing the crossing, the transepts, and the choir, together with the conventual buildings, had disappeared at the Reformation. There were two small fragments of the latter buildings remaining—viz., a vaulted passage, which apparently gave access to the cloister court at the N.E. angle, and a portion of the abbey gateway.

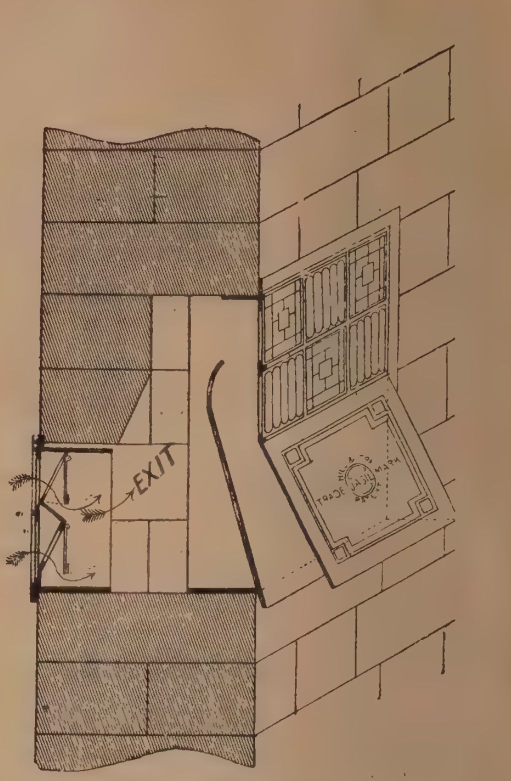
We will now (said Mr. Reeve) proceed to the discussion of the Abbey Church itself. The point of the controversy, in connection with Waltham Abbey, has always been as to whether any portion of the existing building was erected by Harold, or not; and, for some years past, it has been my constant endeavour to show that not only some fragments of his work remain, but; in fact, that the greater portion of the church, as we now see it, was executed by him; and I cannot help thinking that I shall be able to put some facts before you this afternoon which will prove to you that there is a great deal of evidence in support of this theory. It is, moreover, evidence of the very best type, because it is derived, in the first instance, from the building itself, and it is upheld by all the documentary evidence which, as far as I am aware, is in existence. It would take up too much time if I were to discuss this documentary evidence now. I will, therefore, only say that the chief *positive* point in it is that it establishes the fact that Harold did build an abbey here, and that it was looked upon at the time of its erection as a building of extraordinary magnificence. It was probably consecrated in 1059 or 1060, and it was thus raised concurrently with Edward the Confessor's Abbey, at Westminster; its dimensions, however, must have been considerably less, and, consequently, it took a much shorter time to build. But for Harold's church to have been accounted a structure of great note, it is clear that it must have been at least as fine, as far as general treatment is concerned, as Westminster. In discussing this most interesting question it should be borne in mind that as both Harold and Edward had spent a considerable amount of time in the Norman Court, they must have been well acquainted with the style of architecture which was practised there; and both being men of culture, it is impossible for them not to have been much impressed with the grandeur of the Norman buildings. It may, then, be taken for granted that when these two men determined to erect abbeys of very large dimensions, they would gain their inspiration directly from Normandy; and hence there can be no archæological absurdity in attributing a building such as this to a period anterior to the Norman Conquest. I do not, therefore, attach any weight to the arguments which one hears brought forward very frequently as to the impossibility of work of this type having been done in England before the Conquest; there can be nothing *impossible* in it when we take into consideration the two facts—first, that it was being practised at this period in Normandy, and second, that the connection between the English and Norman courts was most intimate. Edward the Confessor was even more Norman than English in his tastes, and he showed his strong predilection for the countrymen of his mother by granting lands in England to many Norman nobles, and it is an historical fact that these men raised castles upon the territories thus acquired. The English of the middle of the eleventh century were, therefore, distinctly in touch with Norman ideas; and hence I argue that for a man like Harold to decide to build a Norman church in England was nothing more than might have been expected; it was merely a bold stroke on the part of a bold man, and it was certainly eminently successful; at all events, it always seems to me that there is something in the proportions of Waltham Abbey which raises it above most of our Norman churches, even in its present curtailed and mutilated state. The theory which, as I believe, accounts for all the phenomena we find here, is simply this: that from the west wall, up to and including the second pier from the east end on both sides of the nave, we have Harold's work—perfect on the south side and perfect on the north side up to the string course below the clerestory; that the two eastern bays, together with the western arch of the original central tower and the remains of the south transept were erected by Henry I. during the lifetime of his first wife, and that the clerestory in the western bays, on the north side of the church, was probably reconstructed by him after his second marriage. The 14-century alterations in the western bays are too palpable to require special notice at present. Let us now consider in detail the evidences which exist in support of this theory, and first allow me to point out to you some of the differences which obtain between the work to the west of the second pier from the east end, and the work to the east of the same, because it is clearly of importance to prove that a change of style actually does take place at this point. In the first place, the whole of the western work is executed with very fine joints, while the eastern bays are jointed throughout in a very coarse manner. It was, I believe, Professor Willis who first called attention to the fact that the jointing of Norman work differed greatly at different periods, and he laid it down as a rule that wide joints denote Early work and fine joints Late work. That such is the case at Canterbury, in connection with which, I believe, he formulated this theory, I have no manner of doubt; but I am certain that those archæologists who have based arguments in connection with the sequence of dates at Waltham Abbey on this theory, have been led into error, owing to their not having given due attention to all the phenomena which exist here; but of this more presently. Another difference is found in the section of the bases: In the western bays the mouldings consist of a shallow hollow and a shallow roll, with a fillet between—the simplest form of all Norman bases; in the eastern bays the mouldings are also shallow, and are of two kinds, those to the respond having a second fillet and a roll added above the hollow, and those to the circular pier having two shallow hollows above the lower fillet and roll. The bases to the nook-shafts of the aisle windows in the two portions of the church also differ from each other in a corresponding manner. Next we come to the capitals of the nave piers. Throughout the western portion of the church these are composed of two courses, while in the eastern bays they are executed in a single course; the abacus mouldings also differ, the western ones being simpler than the eastern*; and here again corresponding variations occur in the aisle windows. The capitals to the responds at the eastern and western ends of the church present another point of difference; in the latter, both the main cap which takes the soffit arch, and the side caps are of the same depth, while in the former the main cap is about 2in. deeper than the subordinate ones. Another change takes place in the manner of working the chevrons on the inner voussoirs of the nave arches. In all the western arches they are worked up and down on the face, and they show very slightly on the soffit, whereas in three of the eastern arches they work up and down on a splay, and in and out on the soffit, and in the fourth they are very similar, working up and down on the face, and in and out on the soffit. The chevron mouldings in the eastern bays are slightly richer in section than in the western bays, and the mouldings in the western arch of the original central tower are very similar, both in section and in working to the eastern arches of the nave. The space between the labels at the springing of the eastern arches is filled by a roughly carved head—no such ornament obtains at this point in the western bays. There is a marked difference between the eastern and western triforium piers on plan, the former having three semi-columns to carry the arch, one towards the nave, one in the centre, which took the soffit arches now lost (for I cannot agree with Mr. Freeman that these never existed), and one towards the aisle; the latter have only two, one towards the nave and the other in the centre. The clerestory also differs greatly in the two parts of the church: in the western bays the columns are built up in courses, and they consist on plan of a cluster of four shafts, between which the points of a star project, while in the eastern bays the columns are monoliths, and they are alternately polygonal and circular on plan, and they are interchanged on the two sides of the church. The sculpture, such as it is, indicates two different dates; the heads, which form the terminations to the pseudo-vaulting shafts in the western portion of the church, are rounded in profile, while those in the eastern bays are square; they are all heads of men, but the former are represented as being quite smooth, whilst the latter have moustaches, and they are also embellished with leaves of early Norman character, the stalks of which start from the corners of the mouth and twist round, so that the leaf itself is made to cover the ear. Other minor differences exist, but I will not weary you by enumerating them all. I will merely call your attention to the structural evidence of a change of date, which is provided by the great irregularity which exists in the jointing above this second pier from the east end, from the sill of the triforium to the ceiling. Now, all of these variations taken together, although many of them are slight in themselves, do conclusively prove that a change of date does take place at this second pier; the next point to be decided, therefore, is, which is the earlier, and which is the later part of the church? A casual observer would unquestionably be inclined to answer this question by saying that the greater roughness and coarseness of the two eastern bays prove that they must be older than the very refined work which we find throughout the western portion of the building; and yet I can place evidence before you which I believe you will admit proves in the most incontrovertible manner that the western part of the church is the older, and that being so, it must also, without the shadow of a doubt, be the very work which was executed by Harold 830 years ago. I have already mentioned the extremely thick jointing of the eastern bays; you will see that this continues right up the jambs of the western arch of the original central tower, and through the arch itself. We may, therefore, safely assume that this archway is of the same date as the eastern bays; but this is merely indirectly interesting. What is of far greater importance is that the jointing of the archway at the east end of the south aisle is of exactly the same character, and all the joints run through in level courses from the jamb of the tower arch, right round the respond of the nave arcade, to the jamb of the aisle arch. It is, therefore, impossible not to believe that the whole of this work was done at the same time. But, strange to say, when we come to this arch across the east end of the aisle, we find an entirely new type of detail introduced, for the chevron ornament is altogether discarded, and very fully developed running mouldings of twelfth century character are substituted—mouldings which I think you will all admit cannot well have been executed before the year 1100. It is also extremely interesting to observe that mouldings of precisely the same character exist on the inner arches of the only two remaining windows belonging to this period, one of which is in the easternmost bay of the south aisle, and the other is in the west wall of the south transept. In other respects, the arches of these windows correspond with the western windows. We have it proved, therefore, very clearly that these two eastern bays of the nave arcade are associated with well-developed running mouldings, which must belong to the 12th century period, whereas throughout the western portion of the church no sign of any such running mouldings is found; certainly, there is a very shallow bead moulding on the edge of the triforium arches, but this is by no means capable of comparison with the mouldings just described; it is nothing more than might easily have been executed with an axe wielded by the hands of a skilful man. As already mentioned, the doorway towards the western end of the north aisle possesses running mouldings, but the jointing of the internal jambs of this door clearly shows that it has been rebuilt. The foregoing evidence is very strong, but there is even a stronger and a much more curious piece of evidence to be described. It will be observed that this second pier from the east end, to which allusion has already been made, has been rebuilt; this work was carried out under the late Mr. William Burges, A.R.A., in 1860, in which year he was called in to report upon the Abbey, and afterwards to carry out the works of restoration which were required. Now, when Mr. Burges inspected the building, the first thing, naturally, which struck him was that this pier was in a most dilapidated condition. It had been grievously cut about above the floor of the church, and owing to various interments which had taken place beneath the floor, it was found that the foundations of the pier had been almost entirely destroyed; consequently, it was, of course, found necessary to reconstruct the pier, and this was done in the most careful manner possible. The arches resting upon it were first strutted up according to advice given by Mr. Burges' father, the well-known engineer, and when the whole of the weight had thus been properly supported, the pier itself was taken down, and it was rebuilt upon a strong new foundation. So perfectly was this work carried out, that not a stone of the superstructure was disturbed when the struts were finally removed; therefore, although this pier has been rebuilt, from the top of the abacus moulding upwards, we have the work in its original condition, with the few exceptions which are apparent where new stones had to be inserted owing to the old ones being in too bad a state to be left. I have mentioned this act of rebuilding simply to meet any objection which might be raised to my argument on the score of the present state of the walls having been produced by the works which were carried out in 1860. Anyone who had studied these bays as carefully as I have done would know from internal evidence that the settlement which runs right up through the third bay from the east end must date from a period anterior to the reconstruction of the pier; but it might possibly occur to the mind of any archæologist who had not gone very minutely into the matter, that the settlement was of late development, and therefore I have thought it well to mention in the first instance that it did exist exactly as we now see it before 1860; of this there is not the shadow of a doubt. It is upon this settlement that the argument in favour of the western portion of the abbey being Harold's work is chiefly based. When I came to measure these two bays with a view to settling, if possible, the question as to the dates of the two portions of the abbey (my drawings to a scale of half-an-inch to a foot are now in the library of the Royal Institute of British Architects), the first thing which I discovered was that the springing line on this second pier is 9in. lower than it is on the piers both to the west and to the east; this, therefore, proved at once that the pier in question must have sunk bodily into the ground to that extent. Now, a settlement of this magnitude is almost certain to take place immediately after the erection of the building; at all events, if we give it fifty years to develop itself, it is quite as much time as ought to be assigned to it. No doubt, if you carefully cut away the foundations of a pier during any portion of its existence, you can make it settle down; but if this be done the settling down is extremely unlikely to be suddenly arrested, as was evidently the case here. Let the foundations of any of the piers of this church be sufficiently destroyed to cause the work to begin to move, and you will find most probably that it would take considerably less than fifty years to bring that portion of the church to the ground. When, therefore, a settlement of this description takes place bodily without the total collapse of the superstructure, you may be tolerably certain that it occurred shortly after the erection of the building, and that the pier or wall went down until the foundation came to a hard bottom. Naturally, as soon as I discovered that this pier had sunk to this extent, I saw that it accounted for the settlement in the arches and wall above it, which is so apparent all through this third bay; it proves clearly that they were all resting upon the pier when it went down. But the extraordinary point is that none of the arches on the eastern side of this pier are similarly affected; the joints of these arches are as true as they were when they were first made, and this notwithstanding the fact that they all spring from a lower level on the west side than they do on the east. Now this incontrovertible fact appears to me to be as conclusive evidence that the arches in the second bay were built after the pier went down, as the crippled condition of the arches in the third bay is that they were built before the pier went down. Further, the string-courses in the third bay and throughout the western portion of the church are jointed in stones of considerable length, and in this third bay the joints are badly broken. This is quite apparent from the floor of the church; but in the second bay these string-courses are jointed in peculiarly short lengths, and they are brought gently down from the higher to the lower level without any break whatever. It is also a curious fact that the course of ashlaring below the string-course between the clerestory and the triforium comes to a feather edge on the eastern side of the arch, not by the arch rising to the string, but by the string coming down to the arch. The condition of the clerestory columns is also significant. In the second bay from the east end they are both vertical, although the western one stands on a lower level than the eastern one. In the third bay, however, they are much out of the perpendicular, and the eastern one, as might have been expected, being more directly over the point of settlement, is considerably more crooked than the western one. To recapitulate, then, we have these facts to deal with:—First that evident differences do exist between the architecture of the five western bays and the two eastern bays, the two latter are clearly associated with the western arch of the central tower, and with the distinctly advanced Norman mouldings at the east end of the south aisle; these much later mouldings also occurring in the remains of two blocked-up windows, one of which stands in the eastern bay of the south aisle, and the other in the west wall of the south transept; the association of all these features—namely, the two eastern bays of the nave, the western arch of the great crossing, the arch at the end of the south aisle, and the two windows—being clearly proved by the particular type of coarse jointing which is found in all of them, by the joints of the south-west pier of the central tower running through in unbroken courses to the jamb of the arch at the east end of the south aisle, and by the profile of the mouldings of the capitals and bases. We also find that the second pier from the east end sank 9in. into the ground after the bay to the west of it was erected, and before the bay to the east of it was built in its present form; and I am certain that if you give due consideration to all these facts, you will be brought to this conclusion—namely, either that the five western bays of this church, as we now see them, were erected by Harold, or else that Harold's church was entirely destroyed, and afterwards rebuilt by William the Conqueror or by his son, William Rufus, before the great works undertaken by Henry I., or more properly speaking, perhaps, by his two queens, were put in hand. But I can hardly suppose that anyone can consider the latter of these two alternatives more probable than the former; for myself, at all events, I am bound to say that the evidence is as conclusive as could be wished, that the western part of the church was built by Harold. In the first place we know that he was well acquainted with Norman ideas, also that he built a magnificent abbey on this spot, and that, in all probability, he was buried here. We also gather from history that William the Conqueror did all in his power to stamp out the memory of his predecessor on the English throne; and it is on record that he treated the canons of Harold's foundation with terrible harshness, robbing them of the chief part of the movable wealth which Harold had bestowed upon them. Therefore, it seems most improbable that he would have taken the trouble to rebuild the one building in England which was more associated with Harold than any other, and in which early tradition says his body was laid. He could not have done so without rendering marked honour to his hated rival, and this seems the very last thing he would have been likely to do. William Rufus, being the man he was, is even less likely than his father to have erected such a building as Waltham Abbey. Moreover, he also is specially mentioned as having inflicted wrongs upon the society; it seems impossible, therefore, not to agree with Mr. Freeman when he says that "no one can attribute the rebuilding to their times"—that is, either to William the Conqueror, or to his son Rufus. Thus, then, I am forced to the conclusion that a large portion of Harold's church does stand, and that the eastern bays of the existing building were re-erected by Henry I., in conjuction with the great works which would seem to have been undertaken by him in connection with the choir. Doubtless it is a curious fact that while dealing with the nave Henry I. should have assimilated his work to that of the older portion of the church; but at the same time several other cases where the same thing was done can be cited; and that it was done here, and done, moreover, in the most intentional manner, is clearly proved by the existence of the moulded arch at the east end of the south aisle, and no doubt the whole of the choir and transepts, as far as they may have been built by Henry I., were carried out in the same advanced style. The western portion of the north clerestory furnishes another very marked example of an earlier type of work, having been executed by a man who would naturally have employed a later style, for the distinct purpose of making his new work assimilate with the older surroundings; but whether it was done by Henry I., Stephen, or Henry II., is perhaps doubtful. It was, however, certainly not done at the same time as the rebuilding of the eastern bays of the nave; and it seems to me rather more probable that the east end of the nave was rebuilt during the life of Henry I.'s first wife, and that the north clerestory was reconstructed during the life of his second wife—for we know that Waltham Abbey became the property, first of Maud, and afterwards of Adeliza, and that they both took great interest in its well-being. As to the choir of Harold's church we know practically nothing, but presumably it was very short. I should be inclined to think there was a transept, with possibly one bay to the east of it, and very likely the church terminated in a semicircular apse. An argument against the church having been built by Harold, as we now see it, is sometimes found in the fact that the western portion has been preserved, because people say that Harold would have begun at the east end, and that he would probably not have completed his church westwards before his death; but this assumption is based upon the supposition that Harold's choir was very long, of which, however, we have no evidence, and it is more reasonable to suppose that it was short; and if so, the whole church might easily have been finished by the founder. Foundations of a large choir do unquestionably exist, but these must have belonged to the work of Henry I. and Henry II., and possibly also to a 13th-century extension; for it is recorded that a re-dedication of the church took place in the year 1242. This probably indicates that the choir was lengthened at this period, and that in consequence the high altar was moved eastwards, thereby rendering a re-dedication desirable: possibly even it might be spoken of as a consecration of the new presbytery. It appears from the foundations which have been discovered that the eastern portion of the abbey church was quite as long as, if not longer, than the existing nave. The design of the west end of Harold's church is almost as uncertain as the form and extent of the choir, but perhaps it is reasonable to suppose, from the treatment of the westernmost bay on both sides of the church, both internally and externally, that the aisles were intended to stop against western towers of small dimensions; for the first piers from the west end are considerably larger than any of the others, and the aisle walls in these western bays are thickened out in just such a manner as might be expected, if they were intended to form the bottom story of western towers, such as Harold would have been likely to build. Added to which, clerestory windows never existed in these bays. It is, however, very doubtful whether these towers were ever erected, and certainly if they were, they have left strangely slight indications behind them. The roof of Harold's nave was of wood, the pseudo-vaulting shafts went up and ended in a capital above the top of the clerestory arches, and the necking of one of these capitals is visible below the present flat ceiling. No doubt heavy beams spanned the church at each pier above these capitals; but whether the ceiling above these beams was flat or barrel-shaped, there is, as far as I am aware, no evidence to show. It is, no doubt, difficult to believe that the aisles of Harold's church were vaulted in stone; but certainly a very definite leaning towards such a treatment did exist, for there can be no question that the vaulting shafts at the back of the piers of the nave arcade are original, and the marks of the corresponding piers against the walls are also plainly visible. Evidently, therefore, transverse ribs of heavy form must have been thrown across the aisles, and if any evidence could be found to suggest that an ordinary Roman vault formerly existed between them, I should not myself hesitate to accept it as

---

* The capital and base of the first pier from the east end on the north side of the nave are similar in all respects to the work in the western portion of the church, but it seems probable, nevertheless, that this pier was rebuilt when the eastern bays were reconstructed.



APPLIED TO AIR SHAFT.



APPLIED TO EXTERNAL WALL.

part of Harold's design.* But perhaps it is more probable that the space between these transverse arches was covered with a flat wooden ceiling, the back of which would have formed the floor of the triforium. Mr. Freeman seems to think the aisles were always open up to the triforium roof, but herein I can hardly agree with him. But whatever form of ceiling may have existed here would seem to have been removed, together with the transverse arches, in the 14th century, when the large alterations to the church were commenced, which fortunately did not extend further than to the second bay from the west end. The man who devised this alteration must have been a very poor sort of architect. His intention was to have thrown the nave arcade and the triforium into one composition, but what he hoped to gain by this treatment it is difficult to imagine. It was certainly not a complete renewal of the design which he contemplated, for he retained the piers of the arcades intact, and by inserting a pointed segmental arch in place of the original triforium arch he introduced the ugliest feature which Gothic architecture ever gave rise to. The most charitable view to take of this work is to suppose that it was undertaken by a madman. Some people think that this work was done by the same man who designed the original 14th-century west end. For my own part, I can scarcely believe that the man who conceived the grand composition of the latter could possibly have perpetrated such an abomination as the former; but undoubtedly the two works were nearly contemporaneous. Unquestionably the 14th-century west end must have been very fine; the south-west and north-west buttresses terminating in massive octagonal pinnacles, being specially worthy of note. It is probably needless to mention that the existing tower was begun in the reign of Queen Mary, and clearly it was built out of fragments of the ruined monastery. Old prints are in existence showing the tower with a battlemented parapet, which presumably proves that Queen Mary's Tower was probably so finished originally; but the upper part having fallen into a state of decay, it was refaced, if not entirely rebuilt, about 80 years ago. This work, as far as the belfry stage is concerned, was done entirely in clunch, and it is now again in a most dilapidated condition. The Lady Chapel is an extremely interesting piece of Later 14th-century work. Mr. Burges once suggested that perhaps it was designed by the man who executed the 14th-century work at the west end during the latter years of his life; and this seems not at all improbable. The chapel was very carefully restored about fifteen years ago by Mr. Burges, and the wooden screen across the arch between the chapel and the south aisle of the church was executed from my own designs, after his death, as a memorial to the late vicar. The composition in the centre represents the arms of the Abbey. Originally, the tracery and arches of the windows in this chapel were executed in clunch, and they had all fallen into a state of decay long before the restoration was taken in hand. Of the side windows no fragments even of the tracery remained, but enough of the large square-headed window at the west end was left to make an exact reproduction of the design possible; and the inner plane of tracery in this window is entirely ancient. The external facing of the chapel is worth looking at; it is a very good piece of 14th-century ornamentation, produced by means of alternating bands of stone, squared flints and bricks. At some period in the 13th century a violent quarrel took place between the monks and the townspeople, which resulted in the complete separation of the choir and transepts from the nave, by the erection of a solid stone wall across the lower portion of the western arch of the lantern; and, I presume, corresponding walls were continued across the archways at the eastern ends of the aisles. The original work remains across the east end of the nave, below the new end put in by Mr. Burges, and the two blocked-up doorways on each side of the altar may be seen on the outside. I believe I am right in stating that this wall was the practical result of an understanding, which was arrived at between the contending parties, to the effect that, from the period of its erection, the portion of the church to the west of the barrier should belong to the parish, while the eastern part should appertain exclusively to the monastery. This division of the church may possibly account for the erection of the existing Lady Chapel in the somewhat peculiar position in which it stands. No doubt there existed an altar, dedicated to the Blessed Virgin, in the eastern portion of the church, from which, after the division of the building, the parishioners would have been cut off. Hence they would naturally desire to have a Lady Chapel of their own, and, presumably, the site chosen was the most convenient position for the noble building which they were anxious to erect.

At the conclusion of Mr. Reeve's remarks, a vote of thanks was proposed by Mr. Lovegrove, and seconded by Mr. Mallet, and supported by Major Leslie and others, to Mr. Reeve for his services, and also to the vicar for throwing open the church. The party were then conducted to the various objects of interest, both inside and outside the building, including a small stone bridge across a stream to the N.E. of the abbey, of 14th century date, having a flat elliptical arch supported by four chamfered ribs.

Later in the afternoon the business of an ordinary meeting was transacted under the chairmanship of Mr. H. Goodall Quartermain. A large number of nominations were read, together with a list of donations to the Society's library, from the Royal Institute of British Architects, the Essex Archæological Society, and a number of architectural and archæological associations throughout the kingdom. Mr. E. A. Mann, of 66, Narford-road, Upper Clapton, was then elected a member of the society, and the business part of a highly-successful meeting was concluded.

After tea, some of the party inspected the Waltham Cross a short distance out of the town.

---

* I find, on further investigation, that distinct signs of arches do exist over the aisle windows in the western portion of the church, and over the great south door; it seems, therefore, necessary to admit that the aisles were vaulted.

A NEW VENTILATOR.

MESSRS. JAMES HILL AND CO., of 100a, Queen Victoria-street, E.C., are placing on the market a new patent in ventilators, which seems to embody one or two new principles. The ventilator is made in two distinct parts, which can be used combined or separately. The inner ventilator may be used for the extraction of foul air in the ordinary way into a flue formed in the thickness of the wall, or if it is desired to ventilate directly into the open air (which in many cases is an obvious advantage), the outer ventilator can be used conjointly with the inner ventilator; while again, if so desired, the outer ventilator may be used by itself.

The advantages claimed are as follows:—Inner ventilator: (1) A perfect flap ventilator under all atmospheric conditions; (2) a back-draught seals the outlet, the silk flaps fitting perfectly against the sloping sides; (3) ventilation always assured, for should the flaps not respond to a feeble outgoing current, a free passage is still secured (see the arrows on sketch). Outer ventilator: (1) Proof against rain and back-draught; (2) an upward current of air impinging on the baffle-plate will induce a suction; while (3) a downward current, even when accompanied by rain, will have free outlet.

The get-up of the ventilator is all that can be desired, and the design of the front is very effective, especially when made in brass. These ventilators have been used in the new Admiralty Buildings, Whitehall.

CONTENTS.

The Workman as a Man 67
The American Romanesque in Australia 67
The Payre Collection of Mediæval Art 70
The Cluny Museum.—III. 71
Classic Details and their Application 72
The Society of Architects 74
A New Ventilator 76
Our Illustrations 77
Building Intelligence 77
Competitions 77
Architectural and Archæological Societies 77
The BUILDING NEWS Directory ... ... xi.
Duke's Self-Lighting Gas-Burner 96
County Lunatic Asylums.—XXII. 96
Our Homes 98
Notes from Paris 99
Correspondence 101
Intercommunication 101
Legal 101
Legal Intelligence 101
Our Office Table 102
Tenders 104

ILLUSTRATIONS.

TONBRIDGE SCHOOL CHAPEL.—MANTLE AND BALDAQUIN OF THE ORDER OF ST. ESPRIT, CLUNY.—HOUSE AT WOODFORD.—EQUITABLE LIFE ASSURANCE SOCIETY'S OFFICES, SYDNEY, N.S.W.—"OUR HOMES" BY R. BARRY PARKER.

Our Illustrations.

TONBRIDGE SCHOOL CHAPEL, KENT.

THE geometrical drawings given herewith show the new buildings which it is proposed to erect at Tonbridge from the designs of Mr. James Brooks, this year's Royal Gold Medallist. That gentleman lent the originals to us for publication on the occasion of the presentation of the medal; but, owing to the tinting on the working drawings, some delay in reproducing them prevented the plates from being given earlier. The chapel is conceived in the style of architecture which marked the end of the 15th century, and its plan is designed after the fashion usually adopted in the Middle Ages for collegiate foundation chapels, the seats being arranged choir-wise. An important feature in the design is formed by the elaborate stone groining of the nave, the roof of which is to be covered with lead. Access to the roofs will be obtained by way of the stair-turrets situated at the east end of the building, and copper will be employed for their spirelets, which assume a Tudor outline in harmony with the fenestration. The chapel is 155ft. long by 36ft. wide, and on the south side the Founder's Chapel will serve for smaller congregations. The seating of the chapel proper will accommodate 450 scholars and 20 masters, with stalls at the west end for 12 superior masters, including the heads of the schools. The minor chapel is arranged for the use of visitors, as well as for early celebrations, and the families and domestics of the masters. The seating here contrived is reckoned at about 84 seats. An arcade of four bays connects the two chapels, and by these means a complete separation is secured for the boys and teachers from the other portion of the worshippers assembled for Divine service. A spacious vestry for the clergy and choir is situated at the west end of the Founder's Aisle. By the longitudinal section it will be seen how the organ is displayed over the cloister on the north side of the choir. The depth of this chamber is delineated on the cross-section, and the plan shows the circular stairway for the use of the organist. This cloister between the masters' house and the chapel furnishes its main approach from the schools. Its walls are arcaded, and fan-vaults form its ceiling. The western portal of the chapel opens into the boys' playground. The stone throughout, outside as well as inside, is to be brown Ancaster ashlar, and the estimated price, inclusive of stalls and furnishings, is stated by the architects, Messrs. James Brooks and Son, to be about £17,000. Ample elevation to the rear of the altar is provided for the erection of a lofty reredos, and it is to be noted that the floor of the sanctuary is only five steps above that of the nave, so that the full advantage of the area for seating has been obtained. In not a few school chapels the altar has been needlessly and inconveniently elevated for effect's sake, which is sometimes a questionable advantage.

CLUNY MUSEUM: MANTLE AND BALDAQUIN OF THE ORDER OF ST. ESPRIT.

A description of these will be found in "May Morris's" article on p. 71.

HOUSE AT WOODFORD.

This house has lately been built at Woodford. The walls are faced with red bricks, and the dressings are of Monk's Park stone. The roofs are covered with Eureka slates. The whole of the woodwork outside has been painted white. Messrs. Sumner and Co., Limited, of Hampstead, were the general contractors. The work was carried out from the designs and under the superintendence of the architect, Mr. R. A. Briggs, F.R.I.B.A.

THE EQUITABLE LIFE ASSURANCE SOCIETY; SYDNEY, N.S.W.

This building is described in our Australian contributor's article on "The American Romanesque in Australia," on p. 67.

"OUR HOMES."

(For further sketches and descriptive article see pp. 97-8-9.)

Building Intelligence.

THE CAMPDEN TECHNICAL INSTITUTE.—On Tuesday afternoon, on a piece of ground adjoining the public library in Lancaster-road, North Kensington, the foundation-stone of a new technical institute in connection with the Campden Charities was laid by Princess Louise. As soon as the institute is completed the evening-classes in woodwork, wood-carving, drawing, dressmaking, and cookery now maintained by the trustees in North Kensington, and at present meeting in different places, will be moved into the new building. The building is to be two stories in height, and in red brick, with stone dressings. The whole of the ground floor is to be set apart for the boys, and the first floor for the girls. The architect (honorary) is Mr. Rowland Plumbe, of Fitzroy-square.

DARLINGTON.—The Bishop of Durham laid the foundation-stone of the new day and Sunday-schools in Greenbank-road, Darlington, last week. The buildings have been designed by Mr. G. G. Hoskins, F.R.I.B.A. The architecture is a simple type of the Queen Anne style. The materials to be used are grey clamp bricks, relieved with red pressed bricks and terracotta. On the ground floor accommodation is provided for 150 infants, and consists of a schoolroom 38ft. by 22ft.; a classroom 21ft. 6in. by 18ft. 9in.; a marching hall, 27ft. 3in. by 24ft. 6in.; teachers' room, a room for school cleaner and utensils, lavatories, hat lobbies, &c. On the first floor provision is made for 200 girls, consisting of a schoolroom 38ft. 8in. by 22ft., and two classrooms, each measuring 24ft. 9in. by 24ft. 6in. By an ingenious arrangement of quite a new description of movable partitions, one on the west side of the schoolroom and the other dividing the classrooms, two halls of different sizes can be formed, one about 50ft. by 24ft. 6in., and the other about 47ft. by an average width of 44ft.

LISCARD.—The foundation-stone of the new Christ Church (Reformed Episcopal), which is being erected on the site of the original iron building in Martin's-lane, Liscard, was laid on Saturday. The new building, which, when completed, will cost close upon £3,000, will seat about 500 adult persons. Space is being provided for vestries, organ chamber, &c. The tower, the lower story of which will be the entrance porch, will be disconnected from the church, and stand outside the second bay of the aisle, with ringing chamber and belfry above. The church is being built of brick, with Runcorn red stone dressings externally, and Storeton white stone internally. The architect is Mr. T. D. Barry, of Liverpool, and the contractors are Messrs. W. H. Bleakley and Co., of Birkenhead.

SHEFFIELD.—The new town hall at Sheffield begins to wear a finished appearance so far as the exterior is concerned. There is much bold, effective carving which no atmospherical conditions can obliterate. This is particularly noticeable at the main entrance, over which there is a large carving of the city arms, with its supporters, Vulcan and Thor. The figures, which are 11ft. high, stand out in bold relief. Mr. Mountford's design is the more appreciated the more of it is seen in execution, and Sheffield is to be congratulated on the possession of public buildings of such an artistic and convenient character. The Surrey-street block is very nearly ready for occupation. The city surveyor and his staff will take possession of their portion of it at the end of the present month. Work in the interior is being pushed forward as rapidly as possible. The ornamental ceiling of the council chamber is now exposed, the carving of the tracery windows completed, and the oak dado lining to the walls is being put into position. The marble staircase is being fixed in the hall, and the frieze to the Pinstone-street front, depicting the trades of Sheffield, will soon be finished.

STAFFORD.—The memorial stones of the new Baptist chapel in Lichfield-road were laid on Wednesday. The new church is being built from designs prepared by Mr. E. Harper, architect, Birmingham, and the work is being carried out by Mr. G. H. Marshall, of Smethwick. The buildings will be in the Tudor Gothic style, with bricks and stone dressings; but the spire will be of stone, with open tracery. The church is to accommodate 310 persons on the ground floor, while in a gallery over the main entrance room will be provided for 115 more. There will be a large church parlour, a deacon's and a minister's vestry. The schoolroom will accommodate 250 scholars on the ground floor. There will be six classrooms, four of which will be divided from the central hall by removable partitions.

COMPETITIONS.

EWELL SEWERAGE COMPETITION. — The engineers, Messrs. Taylor, Sons, and Santo Crimp, engaged by the district council to adjudicate upon the schemes sent in, have placed that of Mr. John Anstie first. The scheme recommended is that involving the removal of the suspended matters in the sewage, and the application of the effluent to land for final purification.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

NORTHERN ARCHITECTURAL ASSOCIATION.—The annual excursion takes place to-morrow, July 20. Members will assemble at the Central Station, Newcastle, at 11 a.m., and travel by the 11.10 a.m. train to Chollerford. On the arrival of the train, at 12.18, luncheon at the George Inn will follow, after which members will visit the new buildings at Chesters, carried out for Mr. Clayton. The remains of the Roman Station of Cilurnum in the Park, at Chesters, will also be visited, and will be explained by Mr. Robert Blair, F.S.A., who has very kindly consented to be present. The party will dine together at the George Inn, Chollerford, at 6.30 p.m.

CHIPS.

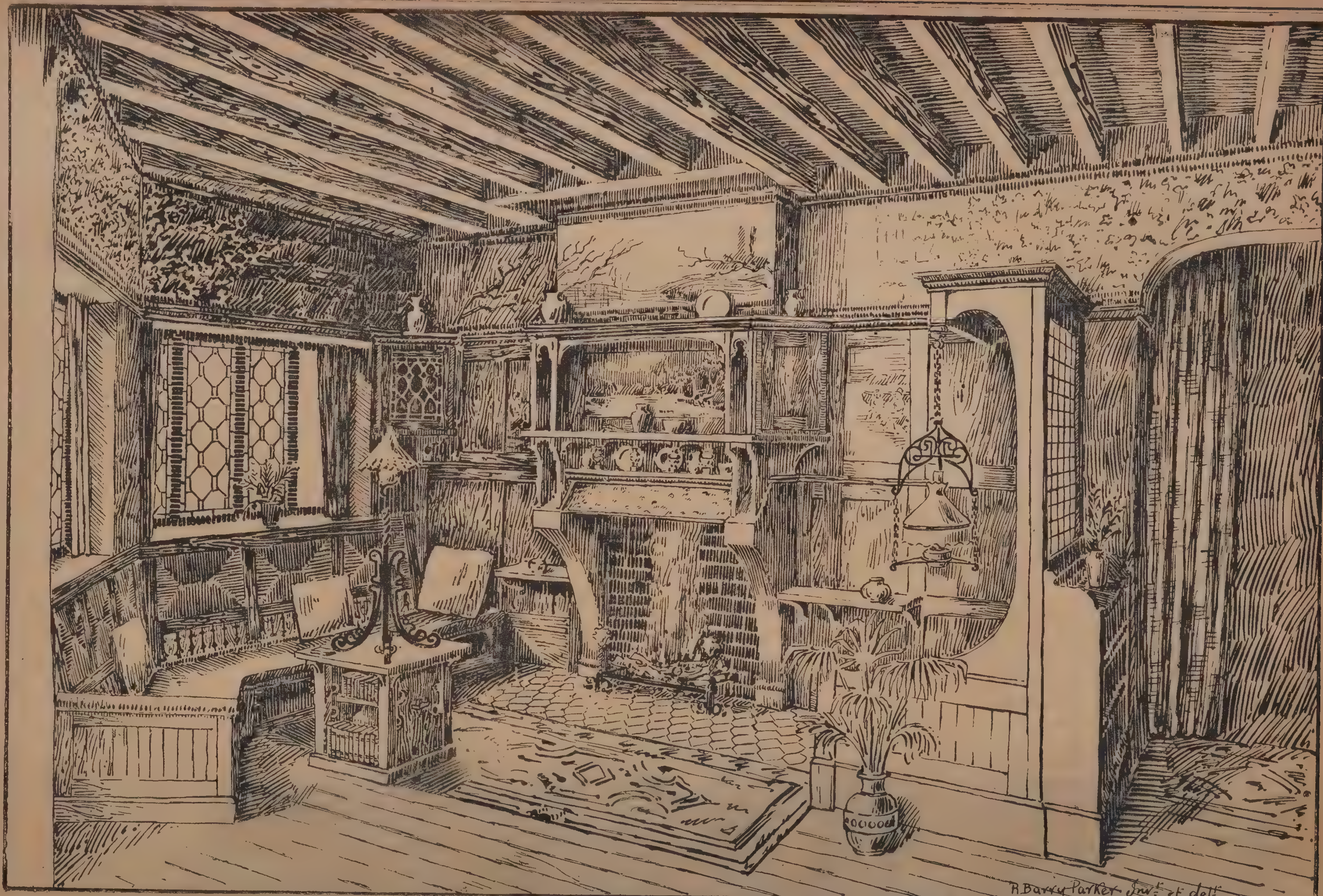
The Presbytery of Perth have agreed to restore the Middle Parish Church, Perth, to the state it was in before the recent fire.

A celebrated Russian art critic and senator, Dimitri Rovinski, died at Wildungen on the 23rd ult. He was well known by his publications relating to art history in Russia, but especially by his monumental work on the etchings of Rembrandt and his school. He was preparing a similar work on Ostade's etchings, and possessed one of the finest collections of engravings in Russia.

The rector and churchwardens of Market Harborough have received a report from Mr. W. Mitchell, stating that the upper portion of the fine spire should be taken down and rebuilt at once, as it has a considerable inclination towards the Market place, and the masonry is cracked.

At the last meeting of the Bangor city council, Mr. Webster, the engineer of the pier, reported that satisfactory progress was being made with its erection, and that the length of the portion erected, including the second embayment, was 635ft. A large portion of the timber joists, &c., had been laid to receive the deck sheathing, about 500ft. of the gunwale and fascia, and about 80 yards of the handrailing were fixed in position.

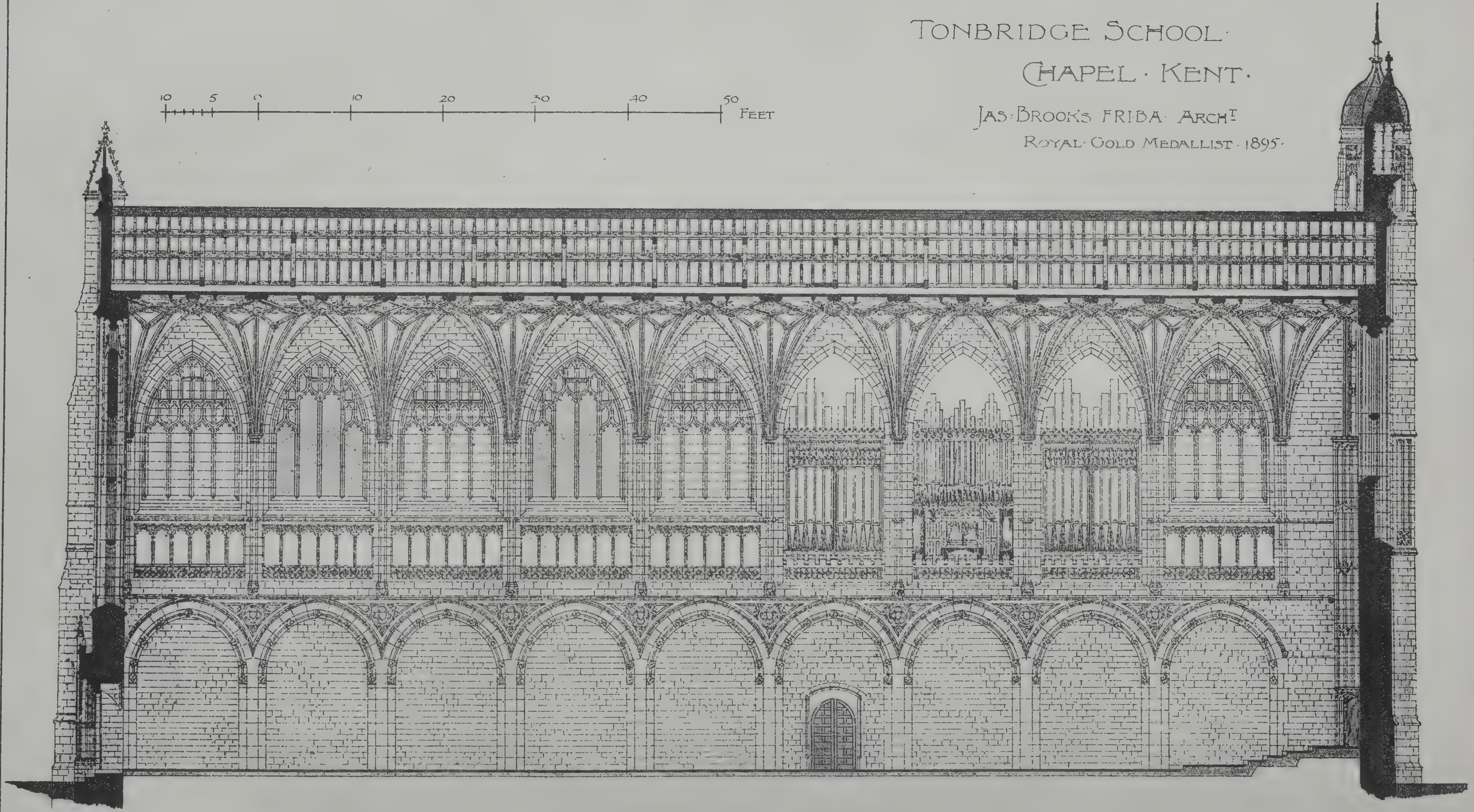
New board schools are in course of erection at Millbrook, Hants, at a cost of £10,000. Mr. A. F. Gutteridge, of Southampton, is the architect, Mr. A. F. Cawte, of the same town, the contractor, and the fittings are being supplied by Messrs. Illingworth, Ingham, and Co.


R.Barry Parker Invt. et delt.

"OUR HOMES," BY R. BARRY PARKER.—VIEW No. 1 OF HALL SHOWN ON GROUND PLAN.

TONBRIDGE SCHOOL·
CHAPEL · KENT·

JAS·BROOKS FRIBA· ARCH^T
ROYAL·GOLD MEDALLIST·1895·

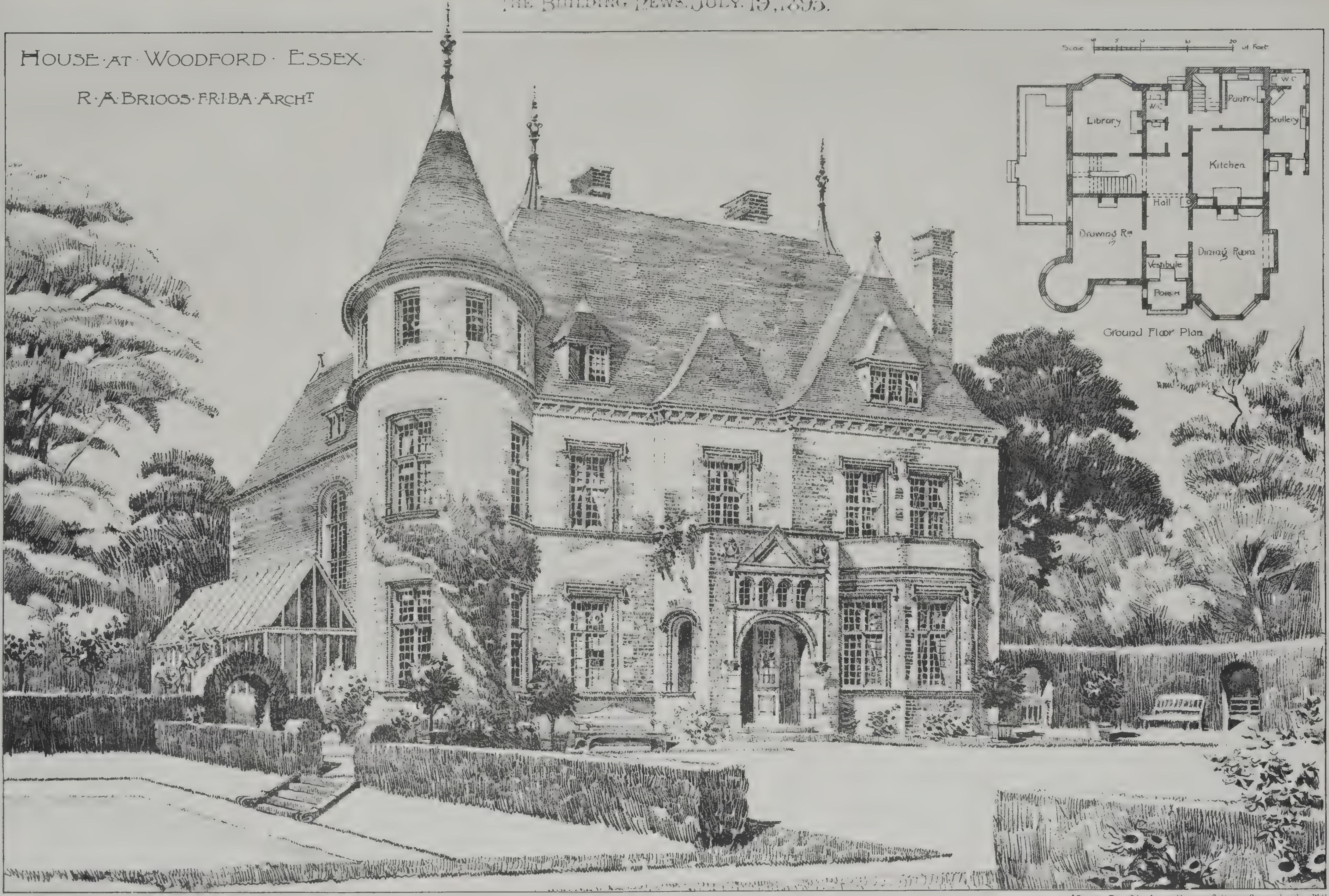


LONGITUDINAL· SECTION·

"PHOTO-TINT," by James Akerman, 6, Queen Square, London, W.C.

HOUSE·AT·WOODFORD·ESSEX·

R·A·BRIGGS·F.R.I.B.A·ARCHT.



Ground Floor Plan

"PHOTO-TINT" by James Akerman 6 Queen Square London W.C.

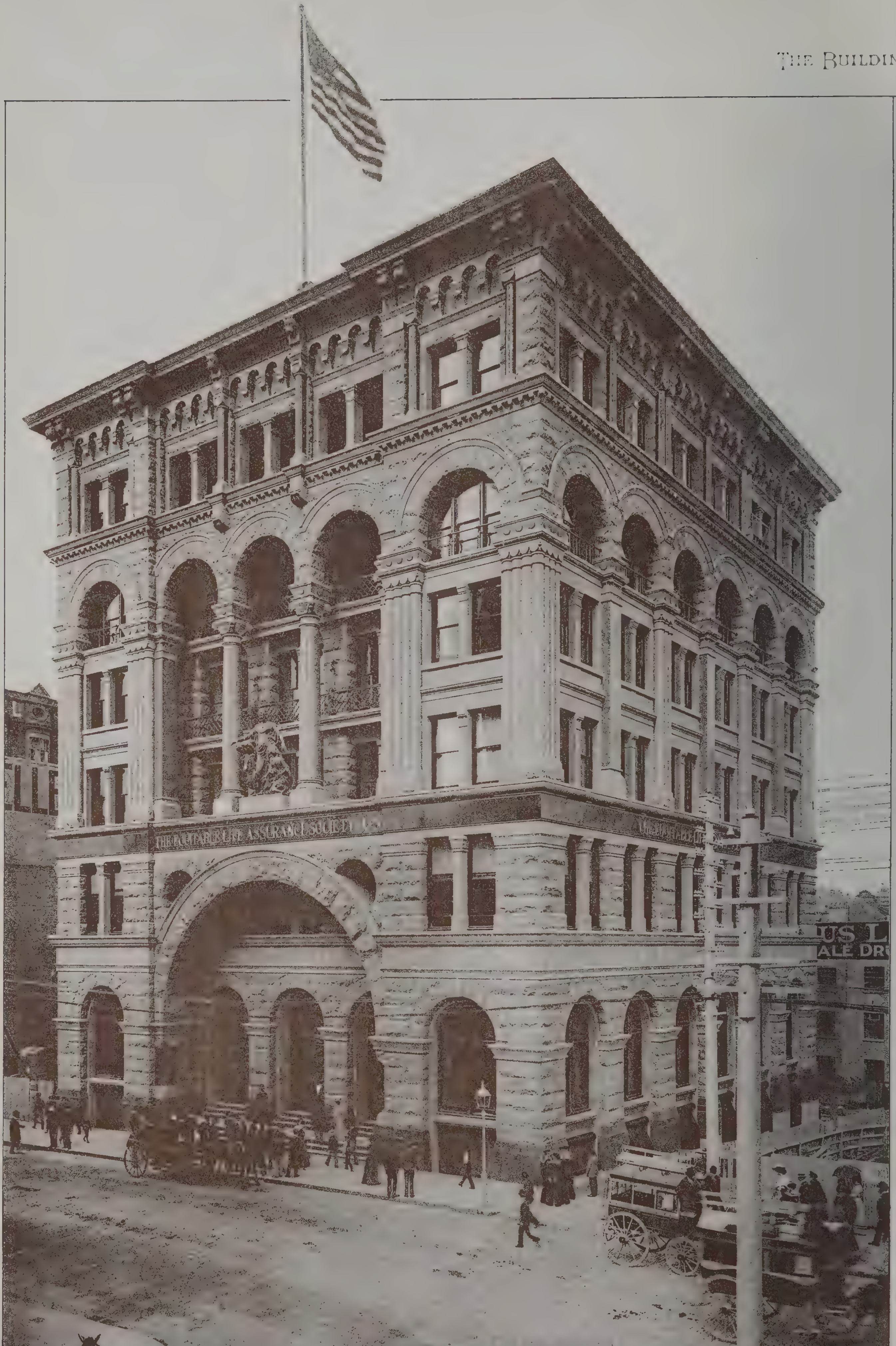
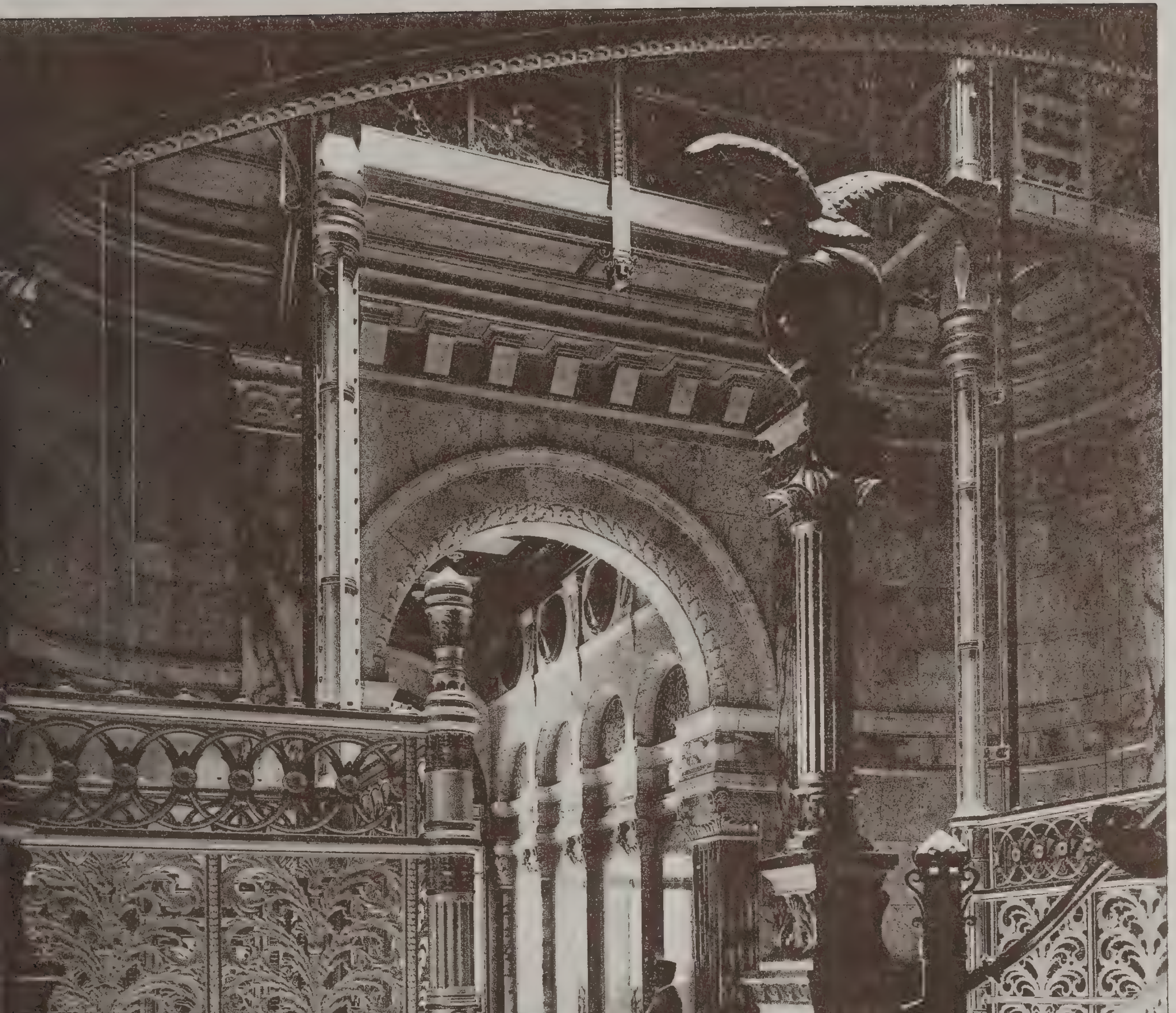


PHOTO · BY · C · BAYLISS · SYDNEY

"PHOTO-TINT," by

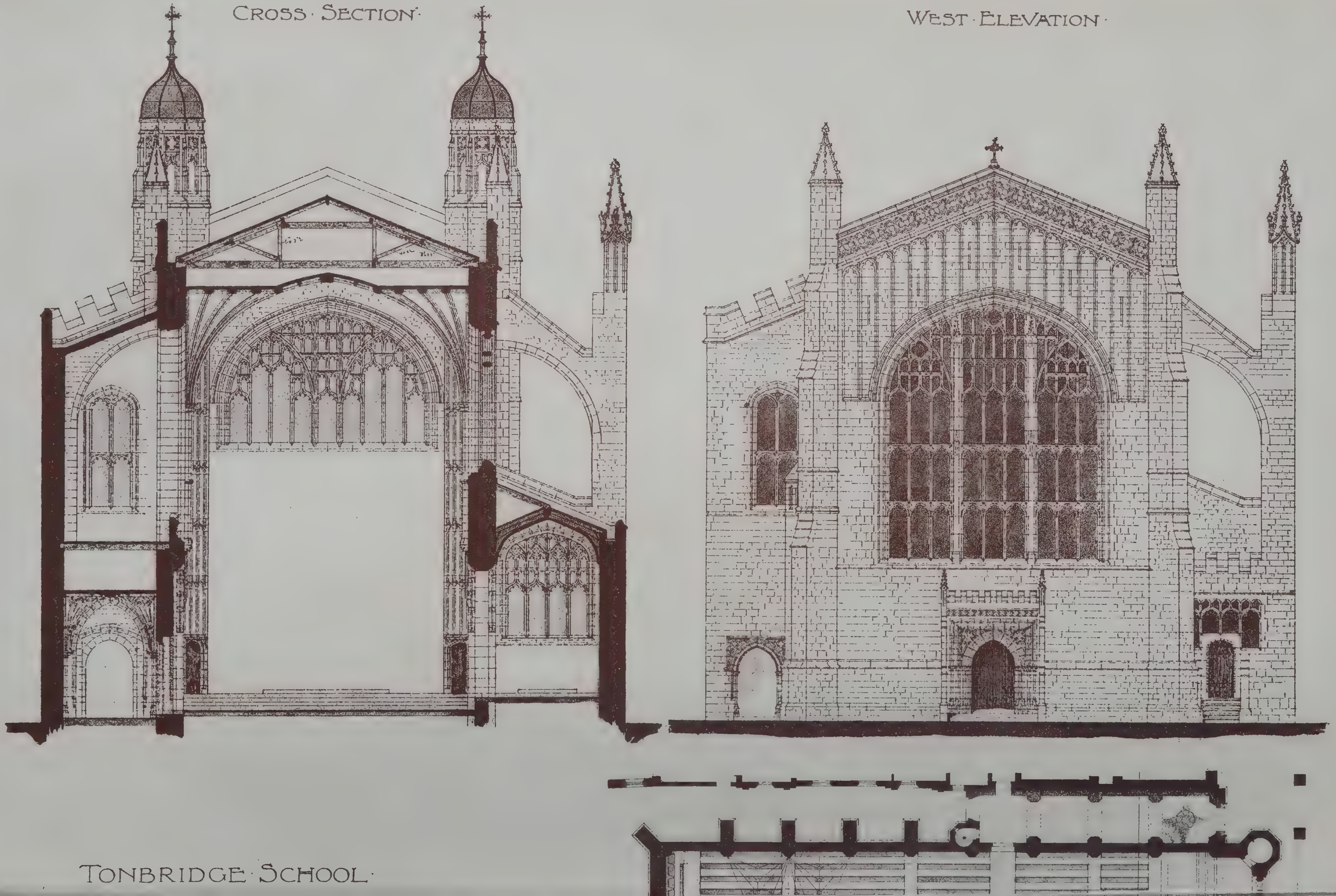
THE · EQUITABLE · LIFE · ASSURANCE · S



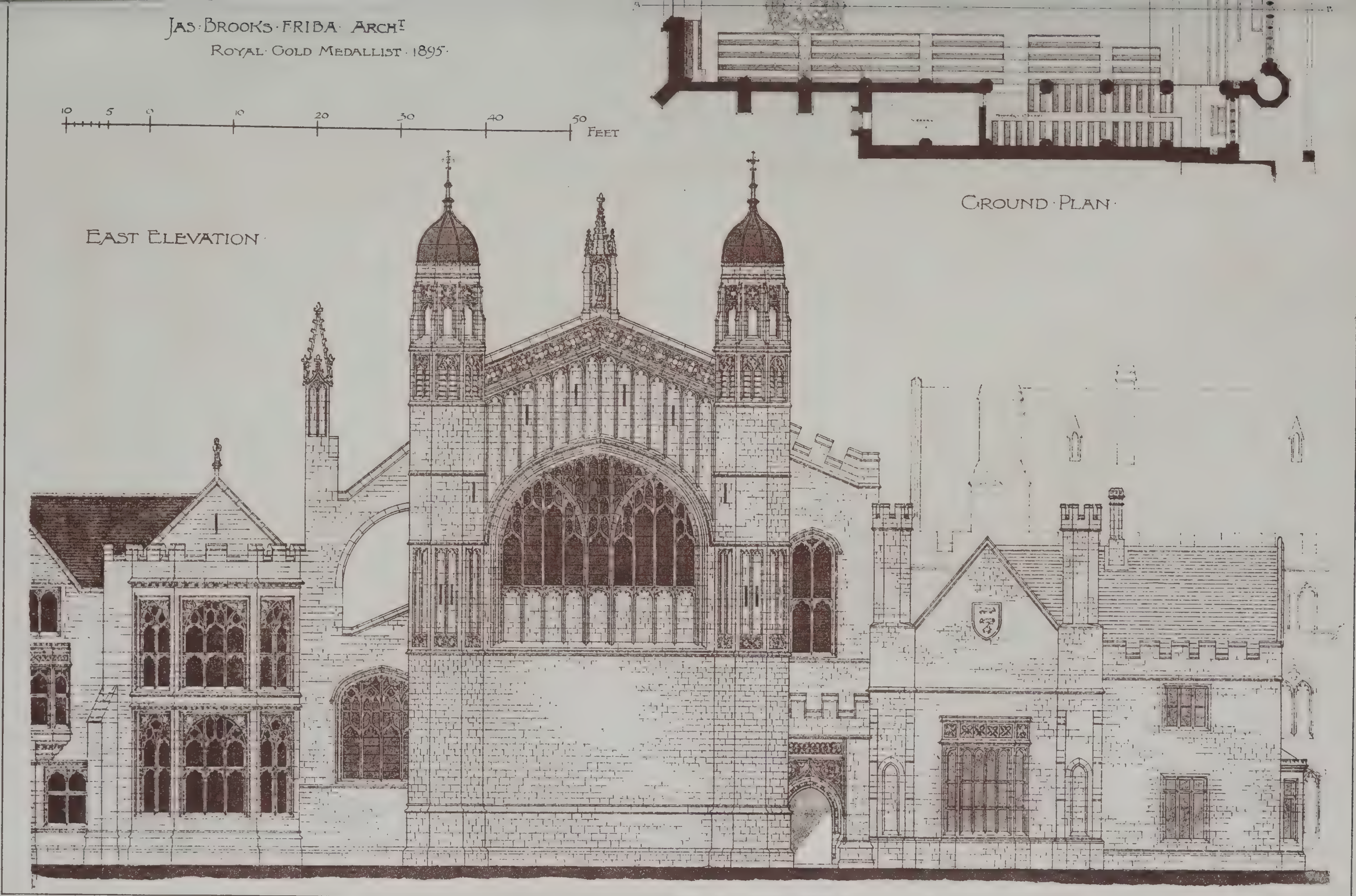
Akerman, London W C

View at Foot of Staircase. Main Hall.

ETY · OF THE U·S· SYDNEY · N·S·WALES·



TONBRIDGE · SCHOOL ·



"PHOTO-TINT", by James Akerman, 6, Queen Square, London, W.C.

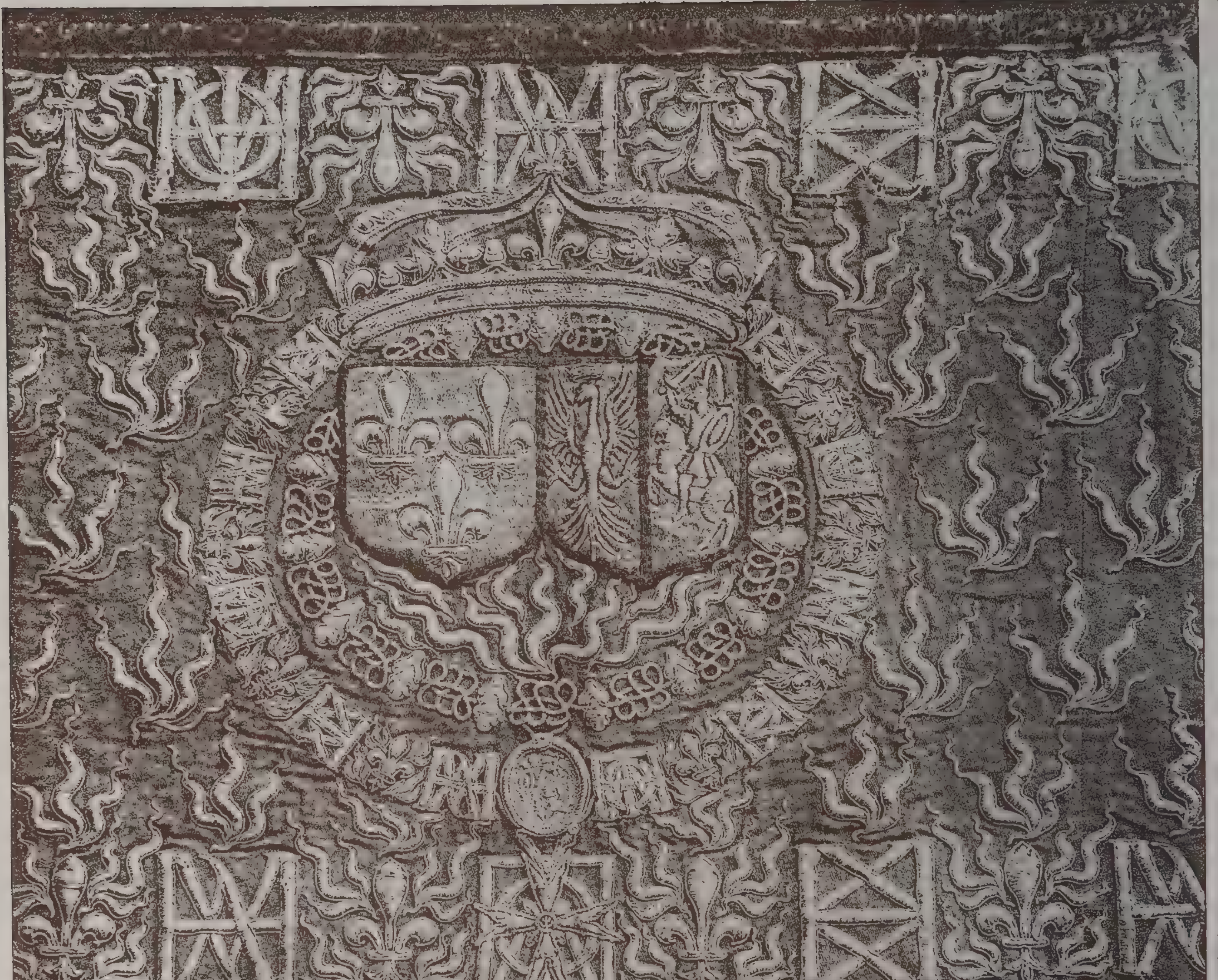
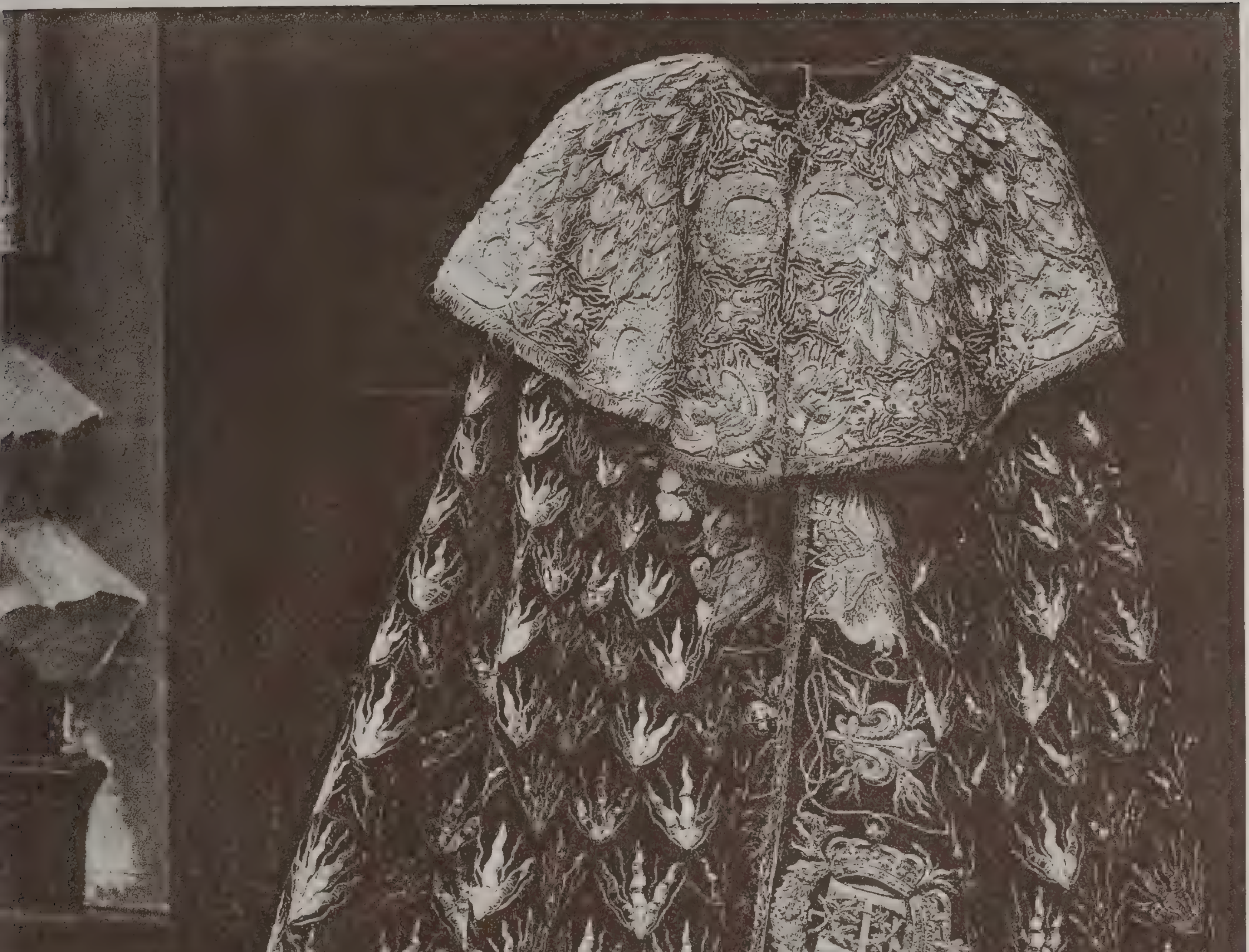


PHOTO · BY · PAUL · ROBERT

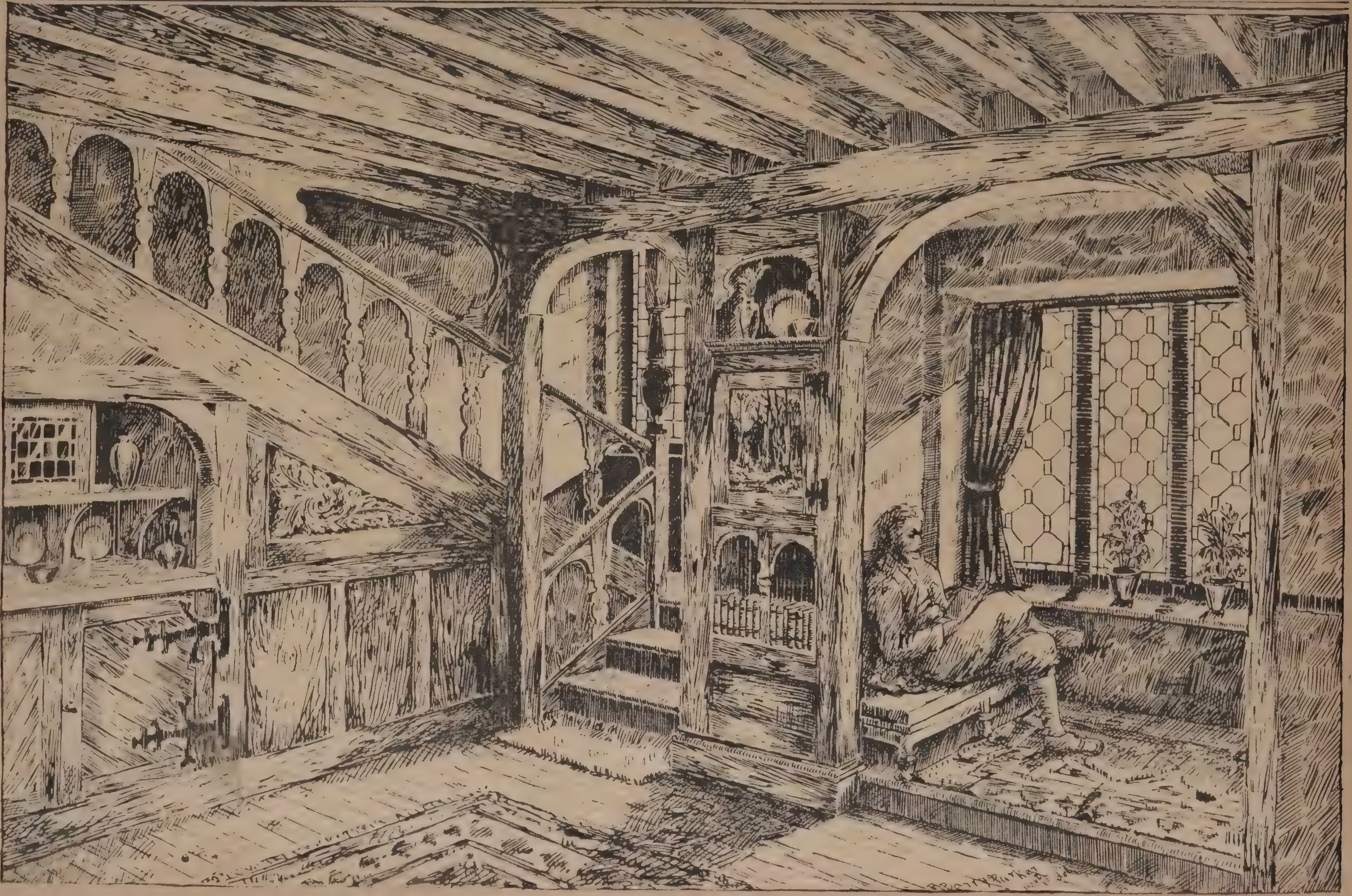
MANTLE · & · BALDAQUIN · OF THE · OR



"PHOTO-TINT," by James Akerman, 6, Queen Square, London, W.C.

R OF ST ESPRIT AT THE CLUNY MUSEUM

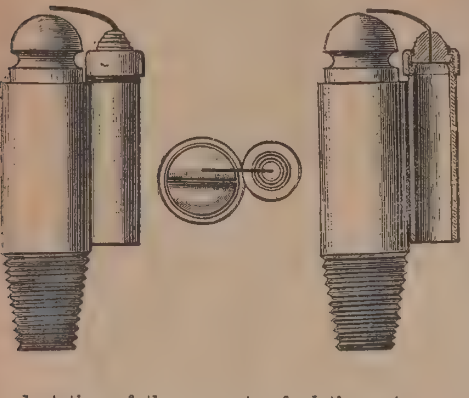
UNIVERSITY



"OUR HOMES," by R. Barry Parker.—VIEW No. 2 OF HALL SHOWN ON GROUND PLAN.

DUKE'S SELF-LIGHTING GAS-BURNER.

WE illustrate below a new invention, which, on account of its practical utility, is bound to be a great success. It is a gas-burner which is absolutely self-lighting, and the advantages of such will be apparent at once when one takes into consideration the time and labour involved in lighting buildings where the gas-burners are out of ordinary reach. The principle is the adaptation of the property of platinum to cause the combination of oxygen and hydrogen, with development of heat, to ignite a stream of gas, and the method of application is explained by the illustration. To the body of a governor burner is attached a small tube, carrying at its top a plug of porous refractory material, in the pores of which platinum black has been deposited. Springing from this plug is a piece of fine platinum wire, which spans the distance to the burner with which it is parallel. All that is needed is to turn on the gas, which causes the porous plug to glow, and the draught of air through the small tube immediately helps to raise the platinum to a white heat, and thus lights the gas. It is claimed that the material used is practically indestructible and permanent.



COUNTY LUNATIC ASYLUMS.—XXII.

By GEORGE H. BIBBY, F.R.I.B.A.

ASYLUM LAUNDRIES.

IN connection with large asylums where an isolated hospital for fever and smallpox patients exists, a special laundry of small extent should be provided in proximity therewith. This may consist of three or four apartments, including a disinfecting-room or closet, a reception-room, washhouse, laundry, and drying-closets, &c. Should the fever hospital be fenced from the asylum grounds with walls or railings, &c., the laundry and drying-ground might also be inclosed, as it is obviously necessary to adopt all reasonable precautions against the intrusion of insane patients, careless attendants and nurses, workpeople and visitors within an infected area.

Unless the medical officers should consider it sufficient that all linen and cotton articles from the fever-wards should be steeped for an hour or so in a mixture of disinfecting emulsion with water, with subsequent boiling, or other similar treatment, it would be necessary that the architect should include in his plan a small disinfecting closet, operated by hot air and steam, the larger goods, bedding, &c., being taken, perhaps, to the disinfector attached to the general laundry, or being burnt in a destructor when advisable.

There should for all laundries always be a sufficient supply of absolutely pure soft water. In some districts the water, though soft, may be strongly impregnated with organic matters, or it may be hard by reason of its having come in contact with or passed through mineral strata. By filtering either of the above described waters these objectionable qualities can be taken from them, leaving the liquid apparently perfectly clear. Should it still remain hard, caustic soda is sometimes added in the proportion of 2oz. to each 100 gallons of water. The cisterns in which these mixtures are made should have an outlet at the bottom for the escape of the mud, &c., when necessary, and the pipe for drawing off the water should be at a height of 3in. or 4in. from the bottom that the opening may not be obstructed by the sediment. The question as to whether or not these cisterns would be required, and their size, is one that may influence the planning of the laundries, and should be considered by the architect at the outset.

In some instances the asylum committees, or county councils, prefer to take the opinion of their architects or engineers (rather than that of their medical officers or other officials) as to suitability of fittings and appliances, for laundry and other purposes; but this knowledge on the architect's part can only be the result of considerable inquiry and consideration. For instance, take the apparently simple question as to the provision of a system of drying-closets and drying-grounds. Upon this subject an American writer says: "Great care should be taken to preserve an even temperature during the whole operation of washing and drying. A draught of cool air from an open window or door will often cause the flannels to shrink. The open air on a summer's day is the best drying-ground, but the articles *should be put in the shade*, as the sun's temperature often exceeds 100°." Again, another writer claims to have "perfected a new steam-heater for laundry drying-rooms, the design being intended to insure rapid evaporation of moisture without the possibility of *discolouring, which so often follows the use of over-heated dry air.*"

In planning asylum laundries it will be observed that the alternatives of hand-washing and machine-washing may influence the architect considerably in deciding upon the lengths, widths, and areas of the laundry apartments; and, further, some machines are much less economical than others as regards the space they would occupy. Machines are made which almost form washhouses in themselves, and there can be no doubt that laundry machinery would be made much more use of in asylums were it not desirable to find employment at the washing-troughs for the female patients.

There is a very compact machine which should reduce the floor-space of a laundry very considerably. It consists of a circular and comparatively shallow metal tank mounted on trunnions; inside the tank there is a perforated metal cage, divided into three compartments for the reception of clothes. The outer casing has one large door, and each compartment of the cage has a separate door. This cage is carried on a spindle running through its centre, fitted with special ball-bearings, cone, and other gearing, for enabling the transformation of one machine into another to be effected with rapidity and ease. Owing to the shape of the machine, comparatively little water is needed, and as the compartments are triangular, the linen in each one is raised and dropped three times in every revolution, and falling into the angles, is squeezed and rubbed against the sides, thus insuring thorough, but not too violent, rubbing. When the washing process is completed, the dirty water is run out; then the operator takes hold of a lever in front of a spur cogwheel, and slips a sliding clutch out of gear. This automatically throws the reversing apparatus out of gear. Taking hold of a hand-wheel, he gives a turn or two, and the whole washer (outer casing and inner cage) swings round horizontally. A friction cone, fixed to the end of the central spindle at the bottom of the outer casing, comes into contact with a vertical cone fixed to the under shafting. The apparatus is locked in that position, and the cage inside the outer casing whirls round at a high speed, being converted into a hydro-extractor or a centrifugal wringer. At once the dirty water is forced out of the linen by the rapid motion, and escapes through a waste-pipe. When all the dirty water is extracted, the machine is reconverted into a washer; hot water is run in, steam is admitted, and the water raised to the boiling point while the machine revolves—first from left to right, then from right to left. Once more the machine is converted into a hydro-extractor, and the fluid removed; back again it is converted into a washer, for rinsing purposes and bluing. Then there is the final "hydroing," and the linen is removed, white and dry, to the ironing room. It will be seen that there are many excellent points in this system, apart from its economic value. To begin with, there is the minimum handling of linen (apart from the frequent necessity for providing labour for female patients before referred to), there is disinfection by boiling and the admission of steam under pressure, and, above all, the dirty washing water is thoroughly removed before boiling commences, and the boiling fluid is extracted to the last drop before the linen is rinsed." We have here all the absolute requirements far a very thorough cleansing and disinfection, and upon a moderate amount of floor space, and for those asylums where laundry machinery may be advisable rather than hand-labour, the desirability of making use of such appliances as the above may well be considered by the asylum architect, and with the view of limiting the cost of the laundries by reducing the areas and cubical contents of the building as far as possible. These are frequently of great extent, and form one of the most costly departments of an asylum, the machinery and appliances being items that should always be of high-class manufacture, and supplied by firms who have had special experience in asylum requirements.

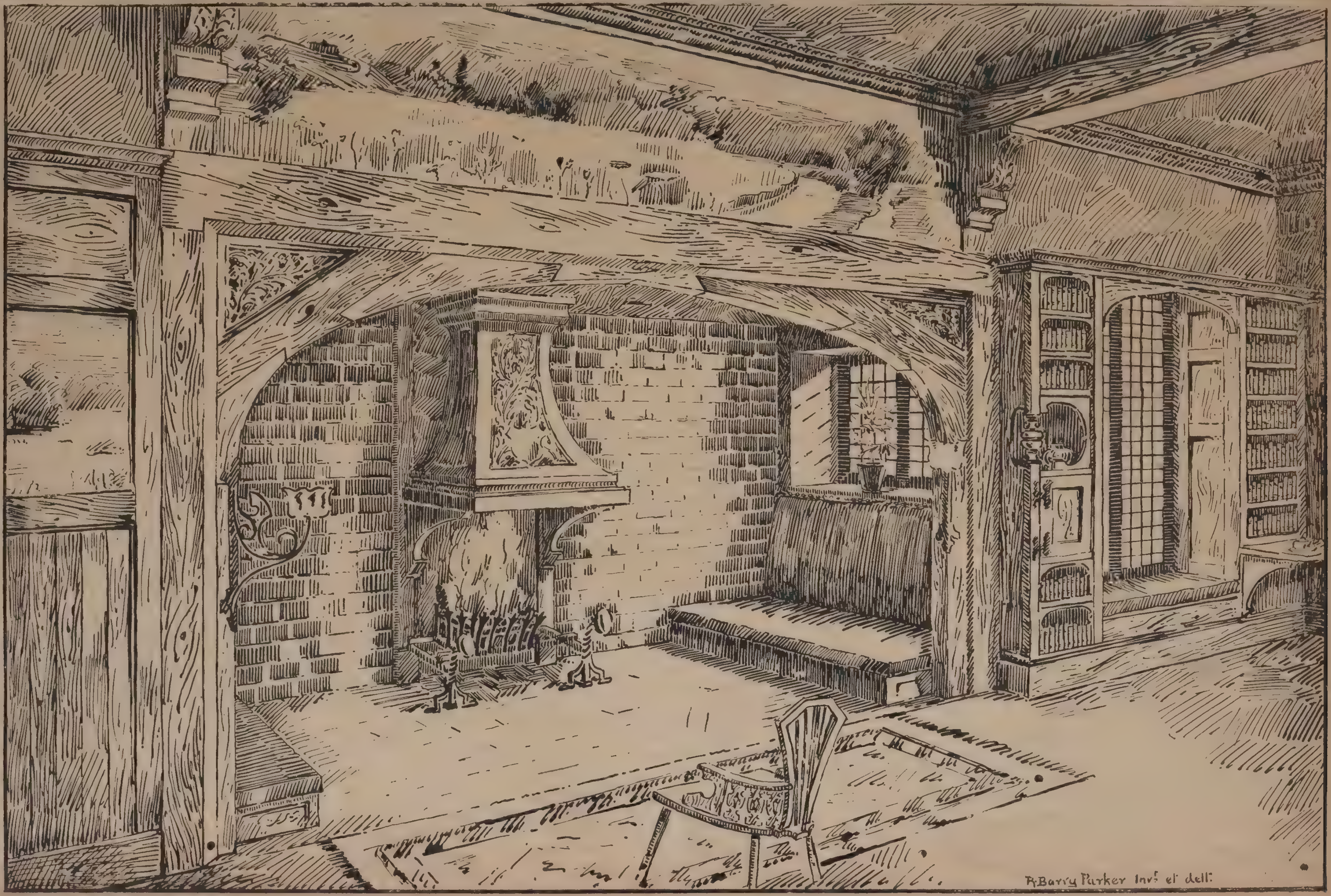
In connection with a laundry, and as a means of occasional or even permanent employment of both male and female patients, a small dye-house might be arranged for. I believe that such accommodation has been provided in American and other foreign asylums, and it is not improbable that some asylum committees may be advised by their medical superintendent that such work as dyeing may be added with advantage to the institution, and possibly with some profit. In some districts there is a difficulty in finding suitable employment for the insance patients, and suggestions upon the subject would be of utility.

In a former paper I directed the attention of the readers of the BUILDING NEWS to the asylum at Gheel, in Belgium, where the patients, instead of being confined in one building, are lodged with the population, each inhabitant taking one or two inmates. These live with, and are employed by, the residents, working with them in the fields, domestic duties, or trades, &c., and it would appear that many skilled occupations may be adopted for the utilisation of the labour of the insane. Since the publication of the above in the BUILDING NEWS there has been published in the *Cornhill Magazine*, for June of this year, a very interesting account of the asylum arrangements at Gheel under the title "A Colony of Lunatics." The institution appears to be very ancient, and the insane have a greater freedom there than would appear to be at all practicable elsewhere. Should, however, a patient present himself at the railway station, he would find a difficulty in obtaining a ticket or seat in the train, the whole population being on the watch at every point. The patients obtain pay for their work, and go to and fro amongst the population without restraint (except when necessary for their protection); for instance, a patient may enter an inn and would be served with one glass of drink, but should he ask for a second would be politely refused. The ininhabitants—men, women, and children—are more or less engaged upon the care of the insane, who appear to be treated with kindness, courtesy, and the utmost care.

The asylums of the world are peopled (in the minds of the inmates) with creatnres of the imagination and of all descriptions, pleasant, ridiculous, and disagreeable, yet such hallucinations have attacked many celebrated men, who though subject to them could not properly be classed as insane, and the causes for certain persons fancying that they can hear, see, and perceive where others cannot, are subjects for scientific examination teeming with interest. A recent article in an American journal suggested that there are yet well-educated people who believe in the supernatural, and that this belief does not proportionately decrease with the growth of logic, science, and enlightenment. The pleasures of the imagination are as enchanting as its terrors are distressing; aud when people plunge into an unreal world of their own creation, the forms of hallucination upon the minds of the sane, as well as of the insane, are infinite, wherever and however these take their birth. Solitude is often the great foster-mother of these troubles. To combat such unsound impressions, to console, amuse, and interest the patients are duties which every official in an asylum should perform. In many cases these duties must necessarily be painful; but from the example given at Gheel it would appear that large numbers of patients can be sufficiently attended to even by the youngest members of the families intrusted with their care; and as regards the cost of maintenance and lodging, the materials for a comparison might be found of considerable utility.

(*To be continued.*)

A new mission church, to be called St. Peter's, intended to be a chapel-of-ease in connection with St. Anne's, Southowram, was opened at Brookfoot, near Brighouse, on Saturday afternoon.


R.Barry Parker Invt et delt.

"OUR HOMES," BY R. BARRY PARKER.—A LIVING ROOM.

OUR HOMES.

By R. Barry Parker, Architect.

"IF a man can cut such a head on his stone gate-post as shall draw and keep a crowd about it all day, by its grace, good nature, and inscrutable meaning; if a man can build a plain cottage with such symmetry as to make all the fine palaces look cheap and vulgar; can take such advantage of nature that all her powers serve him, causing the sun and moon to seem only the decorations of his estate, this is still the legitimate dominion of beauty."—Emerson.

Build a plain cottage that such make all the fine palaces look cheap and vulgar! Generally the cottage such as Emerson is imagining is unnecessary to this end; our fine palaces look cheap and vulgar enough, though we have no such cottages with which to contrast them.

But setting aside the palaces for the moment, could we not build cottages that would make the home of the average Briton look cheap and vulgar? The cottages are less necessary in this case than they are in the other; dozens of country cottages do it now, and the average farmhouse kitchen does it most effectually.

That the farmhouse kitchen has an artistic value far beyond that of the average drawing-room, any one of real artistic feeling will at once admit; and why? In the first place, there is an element of truth and honesty about it, very different from the artificiality, falsity, pretension, and sham of the modern drawing-room. But, apart from this, there are many faults which the drawing-rooms have in common with most other rooms in the house of the average Briton.

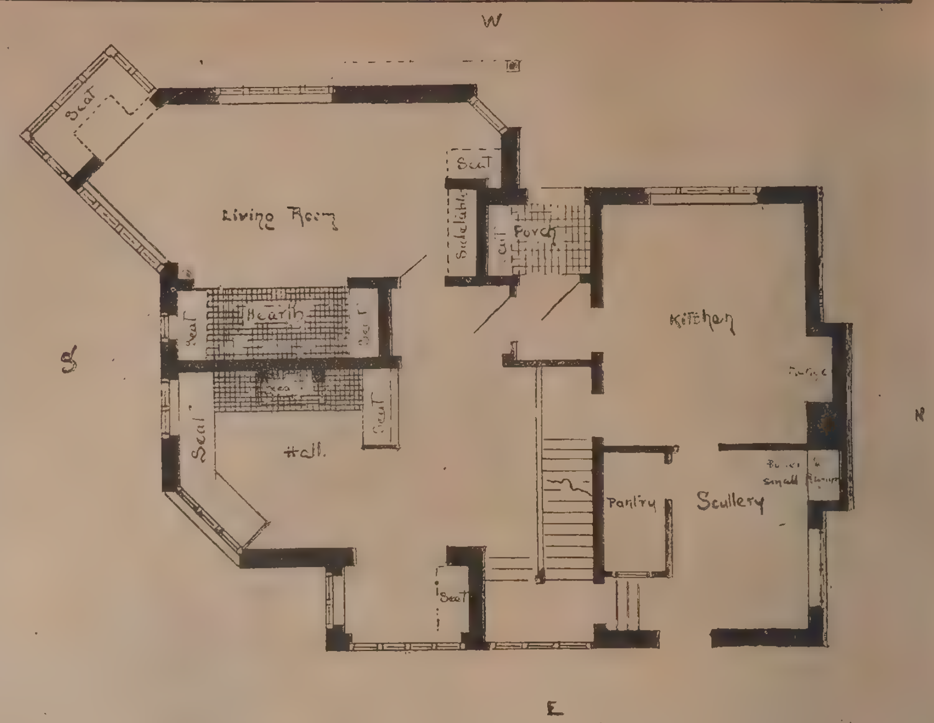
One of these faults (which might also be said to be universal) is over-decoration. Everything has a pattern in it; almost every pattern is mechanically produced, run out by the yard and cut off just where it happens to be when the time comes for it to stop; no pattern bears any relation to any other pattern in the room, and the whole effect is painful to a degree. Nothing is let alone, but every surface must needs be worried and tortured into some unwholesome form of mechanically-produced, and altogether soulless, ornament. Tortuous intricacies of design meet our eyes wherever they turn. Ceiling, walls, floor, curtains, cushions, fireplace, everywhere and everything is one mass of ornament (so-called), and yet often there is not a square inch of *real* ornament in the whole room.

How much of this ornament was done because it gave any pleasure *in the doing?* It is manufactured ornament. What a contradiction in terms! It is one of the *processes* each thing in the room has gone through in its maufacture, so it has been done as cheaply, and therefore as mechanically, as possible. Often it is done because it is cheaper than workmanship in making a thing look a lot for the money, and often because it helps to disguise bad workmanship. At any rate, it is not done in that true spirit of ornament, the desire of the workman to make his work beautiful for the love of it.

How much of this ornament is there because it gives any pleasure to those who use the room? It is there (like so many other things in the room) not because they get any pleasure from it, but because they think it is what is required of them by the class of society to which they belong, or, more often, to which they would wish to be thought to belong; it is the fashion—custom, other people have it. And observe, all this ornament is made to shout: everything is clamouring for notice, trying to assert itself, to attract attention.

Now the first essential in the form and design of any decorative object (and everything in a room should be a decorative object) is reposefulness. This everyone knows, and it sounds somewhat like a platitude; but this first principle is almost universally violated, and in every possible way, one way being this assertiveness. Any ornament you notice when you do not look for it—or perhaps it would be better to say when you do not wish to think of it—is necessarily in bad taste.

A room is so seldom designed *as a whole;* never enough thought of as a whole. The designer of each individual thing, knowing nothing of the form and character anything else in the room was going to take, thought only of his own design, and worked enough interest and incident into it to make it all-sufficient in itself, and the result is (when it gets put into a room in conjunction with a lot of other things designed in just the same spirit), it adds to that restlessness, fussiness, and fretfulness.



"OUR HOMES," by R. Barry Parker.—GROUND PLAN OF HOUSE.
(Designed for Alfred Buckle, Esq., of Derby.)

But so long as the present method of preparing a house for habitation holds its own, no really satisfactory result can be arrived at. So long as one man designs the house, another arranges the decorations, and a third picks up the furniture of twenty designers, and all the hundred and one other things which go to make up the complete room, here, there, and everywhere, our homes will be the painful places they now are. It is essential to any good result that one man should design the house as a whole, not necessarily that he should design everything in it, or draw with his own hand every detail; but he must exercise a controlling power, selecting where he does not design, and insuring that the work of all may be done in a spirit of co-operation towards a complete whole which he planned. Until houses are planned in this way, such rooms will continue to result as those to which we have, unfortunately, most of us, become too much accustomed, and are, some of us, quite content with.

Say a man is asked to design, for a firm of furnishers, an overmantel to cost 30s. It has to be one that will go anywhere. Now this designer may feel that in many of the rooms into which his overmantel will be introduced, nothing nicer could be got for the money than a simple frame with three panels in it; but he cannot send this in as his design, so he has to set to work and design an overmantel with the aid of vulgar stock machine-struck mouldings, run out by the thousand yards, spindly, shapeless, and senseless little balustrades and turnings, also so designed that they can be turned off by the thousand, and it must be run together with the jerriest joints and smeared over with stain and French polish to hide the machine finish and bad workmanship, or it will not come out at the price. If he were designing the room as a whole, and were looking upon the overmantel, as he should, as only a part of the whole, he could put up his frame and three panels if he liked.

Our larger houses have generally, on the ground floor, drawing-room, dining-room, library, kitchen, and offices, and perhaps music or billiard-room; all tolerably good rooms. Now, when a smaller house is wanted what is done is to take a plan suitable for this larger house, and reduce it in every way, instead of designing a house suited to the new requirements. We put exactly the same number of rooms as we had in the larger house, only reducing all in size, until the house comes to be divided up into places so small we can only call third-class compartments, all far too small to give room for the comfortable pursuance of any of the ordinary natural occupations of life, and too small to be healthy.

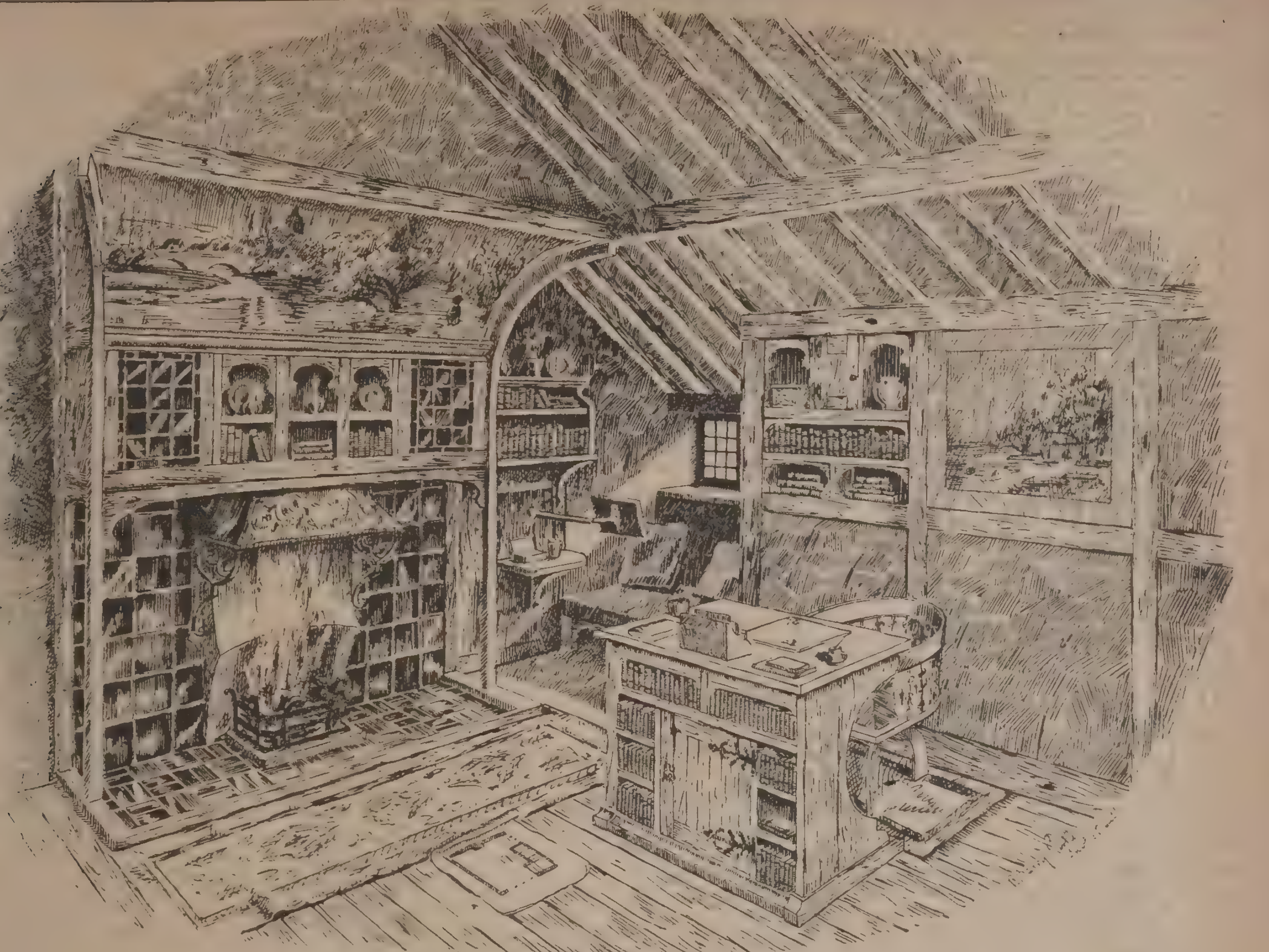
And this system is what is adopted in all classes of houses, from the suburban villa down to the smallest cottage. We never do away with a room until we are *driven* to it; we build four ground-floor rooms until we reach the point at which they would all be *absolutely* useless; then we build three until the same point is reached; then two, and so on. In the smallest cottage it is just the same—a little back kitchen where the family lives, and a little front room no one ever goes into, except to clean; until we get to a dwelling so small that the one little back kitchen is the only room.

Where do we ever find a cottage with one big living-room? Or a dwelling such as would suit the real requirements of many, belonging to almost all classes of society—a dwelling containing one good living-room, a sanctum, and a scullery? Or even a house with two good rooms, kitchens, and offices? And for what do we all cramp ourselves in this way? Generally, only that we may have one or more of these compartments, which are practically no good to anyone. There are very few houses, from the cottage upwards, in which there is not a room which is virtually never used, or only used for the sake of it.

The same idea is religiously carried out in the decorations and furniture. Instead of these being designed to suit the conditions and circumstances in which they are to be placed, each designed for its position and purpose, and good and honest as far as it goes, though perfectly simple, if necessary, we find cheapened imitations of the sort of thing found in larger houses, cheapened by being badly made, by cast or otherwise mechanically produced ornament instead of wrought; by veneer on pine instead of solid wood, by cast metals made to look like wrought, by machine-carved wood, by marbled slate, &c., &c. And they are as unsuited to their new conditions in design as they are lifeless in conception, and bad in workmanship. For one thing, the things in the larger house of which they are imitations, were often designed under the mistaken idea of filling up a room as much as possible—making it look furnished, we call it. Whether this was wanted in the larger house or not, it is certainly not wanted here.

The hall in the house of the average Briton should be made a great deal more of than it ever is. It might be the most comfortable room in the house, and the centre of the common life of the household; but it is generally one of two things—it is either a passsge with a kind of step-ladder for a staircase, and a hat-stand in it, and not room enough for you to hold the door to let a friend out; or it is a great, cold, bare, comfortless waste space in the centre of the house.

Of course, a house with a hall of this kind needs some care in planning. In the first place, the staircase must occupy exactly that position in which it can be made an ornament and a pleasing feature in the room (all of which it is quite capable of being), and a position in which



"OUR HOMES," by R. Barry Parker.—A STUDY IN THE ROOF.

it does not detract from the cosiness, or give any unpleasant feeling of draughtiness or too great openness.

In the second place, the doors necessarily opening into a hall must be carefully so grouped that the parts of the room in which anyone would sit should be out of the draught of them.

By converting the hall into such a room we utilise to the full the air space in the house, and the hall fire, for in most houses it is found necessary to keep a fire of some kind burning in the hall through the winter, or the whole house is cold, and most people find it necessary to keep two other fires burning, one reason being that there may be somewhere to show visitors. Now, when the hall is a sitting-room, we get for the trouble and expense of two fires all the advantages ordinarily attaching to three.

(*To be continued.*)

NOTES FROM PARIS.

ALTHOUGH the complete scheme for the Exposition of 1900 has been prepared since some little time, nothing has as yet been decided upon regarding the commencement of the work, for certain difficulties have arisen between the Exposition Committee, the Paris Town Council, and the State, regarding the share which each should take in providing the necessary funds for the work. Several members of the Chambre have desired that the question be left open until the next Parliamentary session. It is, therefore, probable that nothing, or very little, will be done before the beginning of next year. The estimated cost of the exposition is four millions sterling, of which sum it is proposed that the town of Paris should provide £800,000, the State a like sum, the remaining two and a half millions to be provided by a financial syndicate who would guarantee the finding of that sum. It is proposed that the town of Paris should pay its share by means of five annuities from 1896 to 1900; but before voting this credit, the members of the council desire to assure themselves of the bona fides of the financial syndicate, its formation, and of whom it will be composed. Two important questions are also brought up—that concerning the octroi or entry duties on all materials employed in the construction of the exposition, and that concerning the compensation allowed by the State to the town of Paris for the buildings now existing on the Champ de Mars, the Trocadero Gardens, and the Champs Elysees. As regards the octroi duties on the materials of construction entering Paris, it was proposed that all moneys received from the tax should help to make up the share of funds to be provided by Paris; but after a lengthy discussion it was agreed that this tax could not be allowed, the palaces and buildings of such an exposition being classed as exhibits. The entry of all goods destined as exhibits is free from duty under the condition that as soon as the exhibition is over such goods and materials be at once taken out of Paris. In the case, however, that any of the buildings remained or were bought by the town after the Exposition, the tax which should have been paid on the materials on their entry into Paris would then become recoverable. As regards the second question of compensation for the existing buildings to be demolished, and now owned by the Town of Paris, it has been agreed that after the exposition is over, new buildings covering the same surface of ground as at present on the Champ de Mars, Trocadero, and Champs Elysées should be handed over to the town; again, Paris will have the right to take over all materials coming from temporary building which the State is obliged to pull down at the end of the Exposition. It is also agreed that the promenades, avenue, and gardens shall be restored to the town in the same state as now existing, and during the whole course of the work the State will provide free traffic circulation in the Cours la Reine and the Champs Elysées. All the above questions have been satisfactorily decided between the Town of Paris and the State, the all-important matter, which will require some little time to arrange, concerns the share of expenses to be borne by each party.

The question of the metropolitan and the passenger railway traffic for the coming Exposition is indeed most unfortunate. The committee of railways at the chamber has just thrown out the two schemes submitted for the junction of the Champ de Mars and the Esplanade des Invalides with the Cluny-square and the Orleans station by way of the Boulevard St. Germain, and again the Champs de Mars with the Gare St. Lazare by way of Passy. The first scheme, however, receives approbation, the second scheme being considered as offering a too-circuitous route and being too complicated, necessitating a series of tunnels and a viaduct across the Seine. The whole matter will be again studied and brought up in another form.

It is seriously questioned to utilise the force of the River Seine for lighting the Exposition by electricity, and distributing motive power for various uses in the grounds. One of the twenty-two dams of the river. That nearest the Champ de Mars at Suresnes is considered the most suitable for the purpose, where the power of a little over 2,000c.ft. per second falling 10ft. is available at low water. It is estimated that the power thus obtainable at the Exposition itself would be about 1,300H.P. (French = $1\frac{1}{2}$cwt., 39in. high in one second). In order to make the undertaking profitable, the installation would remain after the Exposition, and the motive power be distributed for various uses in the neighbourhood.

It is proposed to pull down the fine observatory at Montrouge, Paris, and reconstruct a similar building outside the fortifications at Meudon, the large space of ground occupied by the existing building being wanted for the prolongation of the Boulevard St. Michel.

The inauguration of the aqueduct of Acheres, the first important step towards the sanitary drainage of Paris and the system of the Tout-à-l'Egout, took place last week. The system will be one of complete centralisation. Up to the present the two important collectors or main drains, one on each side of the Seine, collecting the drainage from the two portions of Paris, had their outlet into the Seine at Asnieres. By the new arrangement these main drains are now led as far as the converting works at Herblay, where all drainage is made to pass through reservoirs containing a system of gratings holding back all solid matter, which is finely triturated by means of powerful toothed wheels worked by steam power, and carried off at intervals by means of a strong head of water to the fields, where the matter is employed for fertilising purposes. The liquid portion, after a preliminary purification at the Clichy works, and a further similar operation at the Herblay converting works, will be run off over 2,000 acres of land extending to the north of the Forest of St. Germain. The important portion of the work of construction of the aqueduct carrying the drainage across the Seine from Clichy to Acheres is now completed, at a cost of about £400,000, including the preparation of the land for spreading purposes. In order to insure a complete security, and diminish the expenses of maintenance, the use of closed culverts has been restricted as much as possible, and limited to the near neighbourhood of villages and other places where such work was a necessity. It is considered also that the carrying of drainage by means of open aqueducts is very advantageous. The matter, owing to its constant contact with the open air, is prevented from developing microbes and fermentation, arriving thus at the converting works in its almost primitive state. Comparison is made between this system and that of the forced aqueducts of Berlin, where the decomposition of drainage matter is most obnoxious.

Much controversy has been occasioned over the question of the obnoxious smells which each evening during the summer-time spread over large portions of Paris, making the evening stroll or idle hour at a *café terrasse* quite an unpleasant occupation. It is not yet decided whether these bad odours are due to the drains or to the numerous alcohol works lately started to the east of the city, or from other sources; but in order that the cause should be determined as soon as possible, a committee nominated by the police and the town council has been appointed, with mission to discover the causes, the means of remedy for the unpleasantness, and the reorganisation of the service of authorised manufactories at Paris.

The important question of the prolongation of the fine Boulevard Haussmann is again coming up, but rather too late, for an immense "immeuble" or flat dwelling of seven stories has now been constructed across the line of prolongation, and is fast nearing completion. The expropriation of the old buildings which occupied the place of the present new construction, together with the surrounding valuable ground, was estimated a year ago to cost about two million sterling; at the present time must be added the purchase of the fine new building and compensation to the tenants.

The Society of Architects of Seine Inferieure is busying itself on the question of the restoration of the very interesting Chapelle du Lycée Corneille at Rouen. This is one of the largest of the parishes churches in France, measuring 165ft. by 145ft. The first stone was laid in 1614 by Marie de Medicis. The architecture of the building is very remarkable, forming the very rare example of the Transition from that of the Middle Ages to the Later style. As it is proposed to demolish this church, and erect a smaller one in its place, the Society of Architects is taking the matter in hand, and urgently asks for the funds necessary for a proper restoration of the building and consolidation of the portions which may need strengthening.

The *Bâtiment*, a Paris building publication, opens a competition amongst architects for designs of a "bicycle stable" in a flat dwelling-house. The bicycle is now so much *à la mode* at Paris that architects find the necessity of including in the plans of a number of new buildings proper and well-studied arrangements for putting-up and "stabling" bicycles; a certain number are making quite a speciality of this planning.

The drawings, restorations, and studies sent in by the Prix de Rome students at Rome are now being exhibited at the Ecole des Beaux-Arts. M. Sortais sends drawing of the actual state, and a study for the restoration of the Canope of the Villa Adriana. M. Tournaire sends measured work, the ensemble and the details of the Temple of Apollo and its treasures at Delphes, with indications of the state of the excavations at recent dates. M. Eustache presents a well-executed drawing of the ceiling of the Senate Hall at Venice, a half-dozen water colours of interesting portions of Pompeii, several views of the interior of St. Mark of Venice, and measured details of the ancient columns of the Temple of Castor and Pollux at Rome. M. Bertone sends a very brilliant series of sketches at Rome, and measured details of portions of the Forum at Pompeii, the Temple of Mars at Rome, and fragments from Pompeii. M. Chaussemiche sends, as his studies of the first year, several very cleverly-rendered details of temples at Rome.

A congress of economical dwellings will be held at Bordeaux from the 20th October next, before the closing of the exhibition now being held in that town. The programme promises to be very interesting, and papers will be read on the latest improvements which have been made in respect of such dwellings in all countries.

The Parisian public, and even the architects, do not at all seem to be convinced of the success of the new scheme of drainage for Paris. The professional and public papers are constantly publishing articles condemning the system of entire flushing drainage, a number preferring the existing system, and others proposing a compromise between that and the proposed system, several architects and engineers bringing forward various more or less ingenious and practical apparatus guaranteed to obviate all the inconveniences of flushing tanks, down-pipes, and siphons. An article by a well-known and experienced English architect or sanitary engineer would certainly be found very interesting, as coming from a country where every practical experience has been made of the proposed system.

The inauguration of the monument at Courbevoie, near Paris, erected to the "Victims of Duty" has taken place. The work is from the designs of M. Leroux, architect, and M. Segoffin. sculptor. The monument consists of a quadrangular pyramid of pink Scotch granite, about 10ft. high, mounted on a massive granite base, with sculptured flowers and bronze wreaths and palms. The magnificent funeral monument from the chisel of the celebrated sculptor, Bartholomé, and much admired at the Salon of the Champ de Mars this year, will be erected in the Pere Lachaise cemetery, at the end of the principal avenue. This monument will be placed over the burial vaults to be constructed by the town of Paris, and destined for the funerals of celebrated persons. The purchase and installation of the monument will cost £6,000, of which sum £4,000 will be paid by the State, and the remainder by the Paris Town Council.

The public exhibition of the work of the competitors for the Grand Prix de Rome for painting will be held at the Ecole des Beaux Arts next week. The subject of the competition is the body of the dead Christ bewailed over by the Holy women at the foot of the Cross.

The new hall of African antiquities at the Louvre Museum was inaugurated by the President of the Republic this week. It contains several interesting examples of mosaic work, including the celebrated Constantine mosaic, also several statues, or fragments of statues, showing strong evidence of the influence of the Ancient Greek and Latin schools; only a small portion of the interesting antiquities found in the North of Africa have been installed up to the present, the remainder, which it appears is still more interesting, will be brought to the Louvre as soon as possible.

The Senate is at present discussing the new law concerning "professional risk and responsibility for accident." The first few articles which have been voted may not be uninteresting for comparison with the similar law existing in England, and applicable to architects, engineers, and builders. The following indemnities are now due by law to workmen or others injured or killed during work; for partial incapacity from work, the compensation to be allowed is equal to half of the wages which the workman would have earned during the time the injuries prevent working. For an absolute temporary incapacity through injuring, the compensation due is equal to half of the daily wages during the time of incapacity, the indemnity not exceeding, however, 3s. per day. For an absolute and permanent incapacity through injury, the compensation is a yearly allowance equal to two-thirds of the annual wages of the injured person, who has also the right to claim as an immediate payment a quarter of the sum necessary to form the capital which would produce the yearly indemnity, the capital being calculated according to the mortality tables; he can also exact that this yearly indemnity due to him become payable at his death to his wife, in the proportion of the half of the indemnity. When death is occasioned through accident, the widow of the victim can claim an annual indemnity equal to 20 per cent. of the annual wages of her husband, on condition that the marriage was made before the date of the accident. If the widow re-marries, the indemnity ceases at the end of three years after the date of the new marriage. An annual indemnity equal to 15 per cent., 25 per cent., 35 per cent., and 40 per cent. of the average annual wages of the victim is due to his orphans if these are one, two, three or four respectively, up to the age of 16 years. Natural children of the victim, recognised before the accident, have equal rights with the legitimate heirs. If the victim had neither wife nor children, the father or mother of the same, or other ascendants having rights, can claim an indemnity equal to 20 per cent. of the average annual wages. The burial fees of the victim are payable by the person responsible for the accident, up to the sum of £4. The indemnities are payable in advance, and quarterly or fortnightly, in the case of partial or temporary incapacity.

The International Health Exhibition, opened in Paris on the 27th last, at the Palais des Arts Liberaux, has up to the present enjoyed a decided success. The exhibits are divided into ten subdivisions—sanitation of private and public buildings, town sanitation, hospital sanitation, health statistics, sanitary science, school sanitation (children's schools, hospitals, crèches, &c.); industrial and professional sanitation, food, clothing, and physical exercises. There are a large number of very interesting exhibits, both as regards the practical portion of sanitary work and as regards the adjuncts of all kinds necessary to clothe this work, and to afford every kind of convenience in public and private buildings. There are a large number of more or less ingenious apparatus supposed to do away with the inconveniences of the flushing system of drainage, also a quantity of various systems of flushing tanks and siphon reservoirs. Decorated ware of all kinds and styles is the rage. Ceramic and other tiles for the lining of the walls of w.c.'s, lavatories, and bath-rooms give the exhibition a very bright appearance, and some of the model installations of such rooms are exceedingly tasty, but probably rather expensive if executed. A new material for the lining of walls of w.c.'s, bath-rooms, &c., employed also for lavatory table tops, urinals, and other sanitary work, manufactured by the Glass Co., of St. Gobain, and entitled "Opaline," probably owing to its opal colour and surface, attracts much attention, especially from architects who profess to follow after the principles of their master, M. de Baudot, originator of the now fast-growing rational method of design and construction.

The town of Paris has arranged a most interesting and complete exhibition of drawings and working models of the appliances employed at Paris for town cleaning and sanitation, a set of models of the various systems of drains constructed at Paris, with working models of the most important drain-flushing reservoirs, the various systems of street-paving, and the materials employed. One of the "clous" of the Exposition is a monumental fountain placed in the centre of the grounds, and connected with the four water services by which Paris is supplied. The sample of Seine water is decidedly unpleasant-looking, and the unfortunate Parisians will turn with even greater disgust from the slimy-looking beverage which, even now in summer-time, they are occasionally asked to drink. But on the other hand, the numerous systems of filters, which profess to make the water perfectly pure and healthy, may be seen at the exhibition, and the sale is considerable.

We will give an article on the principal and most interesting exhibits and improvements in sanitary appliances, and a *résumé* of the Congress of Sanitary Architects and Engineers, with the interesting reports read by the chief members.

ARTHUR VYE PARMINTER.

At a meeting of the Exminster restoration committee, it was unanimously decided to remove the west gallery and to open the lower, in addition to the scheme already decided upon. Messrs. Andrews, of Teignmouth, having withdrawn their tender, the work has been intrusted to Mr. Herbert Read, of St. Sidwell's Art Works, Exeter.

The Bournemouth town council adopted, at their last meeting, plans prepared by the borough surveyor, Mr. F. W. Lacey, M.S.A., for a fire-brigade station at the East-yard, and also instructed Mr. Lacey to prepare the plans for the chapels and other buildings at the cemetery. For the latter work the surveyor will be paid an honorarium of 120 guineas, out of which he is to pay for any outside assistance required in the preparation of the designs.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to THE STRAND NEWSPAPER COMPANY, LIMITED.

TERMS OF SUBSCRIPTION.

One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India, £1 6s. 0d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front-page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No Front-page or Paragraph Advertisement inserted for less than 5s.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page Advertisements and alterations in serial advertisements must reach the office by Tuesday morning to secure insertion.

SITUATIONS.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is ONE SHILLING FOR TWENTY-FOUR WORDS, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., LI., LIII., LIV., LVIII., LIX., LX., LXI., LXII., LXIII., LXIV., and LXV. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

RECEIVED.—E. S. Fraser.—W. M. and Co.—Civ. Eng.—B. J. E. (Carlisle).—F. J. S and Co.—W. O.

Correspondence.

THE ARCHITECTURAL PROFESSION IN THE NORTH OF ENGLAND.

To the Editor of the BUILDING NEWS.

SIR,—A peep behind the scenes is sometimes interesting, especially where professional life is concerned. I came across a man a few days ago who is, it appears, to have a lot of work, and as I knew him intimately I could elicit a few facts.

Said I: "Why, your father was only a pitman, and you had no proper professional training."

"I'll let you into a secret," says he. "Treat architecture as a business, and get your material on appro."

I did not quite follow him, so he explained.

"For instance, a large competition comes out, and plenty of time for preparing the drawings. I guarantee that by advertising in the BUILDING NEWS, without giving a name, I can get assistants from some of the best offices in the kingdom. Well, when they come I make a great fuss of them; they let me have notes and copies of drawings they have taken from their employers' offices. When I have got all I want out of them, I pretend to have decided to throw up the competition, and ask them to take less than I agreed to give."

"And do they take it?"

"Well, the real gentleman who has money does, when I plead poverty; but the cad doesn't, I have to square him to keep him quiet. In one competition I have had suggestions that have emanated from our leading men by simply changing my assistants as often as possible."

"Do you ever win a competition that way?"

"I have won several by this means; but I get rid of *the* assistant before the award is made. Anybody does to fill the office up afterwards. Now, for instance, I have a boy who knows nothing, so I pay him nothing. I have an old foreman out of a furniture shop, who doesn't know whether a relieving arch is something in iron or wood; he has money, so I pay him what I like. The other fellow was a chemist, whom I told that if he worked for me for a trifle he could get into a good office afterwards, and ask for a good salary."

It certainly seemed a profitable and businesslike way of using a profession. In another instance, upon inquiring who prepared the drawings for a certain building, I was told a lad 16 years of age, who was in —— office.

"I only paid him 10s., and if his employer had been engaged he would have wanted about £20," said the man.

I see by a North-country paper of last week that a young man, calling himself an architect, was sentenced to three months' imprisonment for obtaining 2s. 6d. under false pretences.

I was almost moved to tears when I heard the story of one old man, an architect who at one time had fine offices and a large staff, and a man, they say, who was ever ready to put his hand in his pocket to help a starving professional or an assistant, and during the pitmen's strike many a family knew where a meal could be obtained. His wife, much younger than himself, but a lady in every respect, was keeping herself, young children, and invalid husband by teaching languages and music. It appears the old man, broken down in health and spirits, had not in one year made £5, and even that money he had made principally by teaching French and deportment, &c.

I was shown a set of architect's quantities: a contractor was wondering how he should price them out. Nearly every other item had but a vague description, and no dimensions against it, with the word "say" at the end; but the architect had in each case forgotten to say what the guess amount was to be. In one town I know of about 20 men who practise the *profession* of architect, auctioneer, builder, and undertaker.

I cannot help feeling for the genuine, honourable, professional gentleman who has to fight against such a crowd. AN OLD SUBSCRIBER.

Intercommunication.

QUESTIONS.

[11380.]—**East Anglian Sketching Tour.**—I want to spend a holiday on East Coast within easy range of some buildings worth sketching, and yet of a type of which every detail has been drawn and redrawn and utilised in a thousand modern buildings. Can any reader suggest a comparatively untrodden field within practicable distance from London, and accessible by rail?—SKETCHER.

CHIPS.

The New York city authorities will expend this year £156,000 in new asphalte pavement. The new pavement is to be laid down principally in the poorer quarters of the city.

M. Adrian Diaconu, an Hungarian architect and antiquarian, claims to have found in the ruins of the ancient Roman camp of Bersovia, at Bogsan, near Temesvar, unmistakable evidence that the Romans, and, in particular, the officers of the Fourth Legion (Flavia Felix), understood, as early as the second century, the art of printing, and made use of movable types while encamped at Bersovia. The reported discovery is said to be confirmed by two Bucharest savants and members of the Academy, after a careful examination of the proofs collected by M. Diaconu.

A sub-committee of the Lord Provost's Committee of the Edinburgh Town Council considered, last week, the additions and alterations necessary to be made on the Observatory on the Calton Hill, which is being taken over by the city from the Government. It was resolved to recommend the erection of a new dome for the large telescope at present accommodated in the temporary station at Murrayfield.

The Restoration Committee of St. Saviour's Church, Southwark, are making an appeal for a further sum of £8,000 to complete the restoration and rebuilding now in progress under the direction of Sir Arthur W. Blomfield. Of this sum, £3,000 is required for the works in hand at the nave and north transept, and £5,000 for the restoration of the choir and tower, while another £6,000 will be required at a future time for external repairs.

The new railway-station at Southampton West is making rapid progress towards completion. It is faced with red bricks, Portland stone being used for dressings. A feature of the frontage on the side next the town will be a clock-tower, carried to a height of 80ft. The contract for the building is being carried out for the London and South-Western Railway Company by Mr. H Lovatt, of Wolverhampton.

Legal.

NEW SEWERS.

THE London County Council, in its most progressive ardour, have sometimes found the vestries too slow in carrying out its requirements. The Council has not been backward in issuing orders to these ancient local authorities; but it has experienced difficulties in getting them obeyed. At last the question came before the law courts, as all these matters ultimately must do, and the London County Council failed in its endeavour. It is not possible here to go into the controversy as to whether a new sewer was or was not needed in this instance; but the decision of the Divisional Court of Queen's Bench in the case of St. George's, Hanover-square, is of much importance as a precedent for future use (*Times*, July 5). The point arose upon the argument on the application of the London County Council for a *mandamus* directing the vestry to comply with an order made by the Council in December, 1894, requiring them to construct a sewer as therein stated, and to execute certain works to join it to the main sewer as therein described. The vestry had refused to obey the council's order, and now the question was whether the Court would compel them.

The Court stated that the only point at issue was whether the Council, as representing the old Metropolitan Board of Works, have the power of directing vestries to construct such new sewers as to the council may seem needed. But it appears that although under the Metropolis Management Act, 1855, the old board was intrusted with various powers over sewers, but not with any absolute duty in this respect, upon the construction of the existing Act the judge laid it down that the County Council was not empowered to take the initiative by ordering specific new works of sewerage. They held that if new sewers are made, they must be made in such a way as the County Council approves. But they saw nothing in the statute to take away from the vestry its discretion as to making such sewers, and to leave it to the discretion of the Council. So the rule was discharged, and the London vestries still retain the right to decide when a new sewer is needed, and are not bound to comply with the discretion of the County Council in this respect, though if the work is to be done, it must be in such a way as the Council approve.

FRED. WETHERFIELD, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

NOTE.—All questions for reply in this column must be headed "BUILDING NEWS," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

K. J. S.—BUILDING.—DESIGN.—COPYRIGHT.—As this design has not been published, there seems no way of protecting it by registration as copyright. I do not know of any method by which a builder can be prevented from erecting a house, or doorway, or the like in exact imitation of one that has been already built, nor sued for damages.

S. S.—BUILDER.—QUANTITIES.—LIABILITY.—I don't see how you can be liable upon the clause quoted from your quantities. There is no gross negligence even alleged. The builder should have got an order for this work as an extra, and he does not appear to me to have any claim against you at all events.

LEGAL INTELLIGENCE.

DISCONNECTING GAS-METERS.—Thomas Dudley, architect and surveyor, Lancaster-place, appeared last week at Bow-street to a summons charging him with an offence against the by-laws of the Gas Light and Coke Company. Mr. Avory explained that the offence complained of was in contravention of Section 64 of the Company's Act, which provided that before any person connected or disconnected any gas-meter with the company's mains, he should give twenty-four hours' notice of his intention, or forfeit a sum not exceeding £5. The defendant had had his gas cut off no fewer than eight times in default of payment, and on one previous occasion he reconnected it without giving notice. The company, however, overlooked that offence. On May 6 the defendant's gas was again cut off, but on June 22 it was discovered that the meter had been reconnected. This was a serious offence, and people had been convicted of stealing the company's gas in similar cases. Evidence was called to show that when the gas at defendant's place was cut off, on May 6, the meter showed a consumption of 11,100ft. When a meter inspector visited the premises on June 22, he found that a cap placed over the cut end of the service pipe had been removed, and the pipe reconnected with the meter, which now registered 13,600ft. Mr. Johnson, on behalf of the defendant, said that the sheriff's officers were in possession of the premises. Everyone knew, he said, what sheriff's officers were like, and he suggested that they had connected the gas-pipes to enable them to smoke and keep warm. Defendant was well known, and utterly incapable of committing the offence attributed to him. Sir John Bridge said it was evident the defendant must have known that the gas-pipes had been reconnected, no matter by whom the work had been done. It was a serious offence, and he should fine the defendant £5; in default fourteen days.

London Building Act, 1894, Sec. 145. — At Southwark Police-court, on the 11th inst., Mr. H. A. Hardy, of 6, Nebraska-street, Great Dover-street, S.E., and Mr. J. Malham, of 140, Rockingham-street, S.E., were summoned by Mr. Bernard Dicksee, district surveyor for East Newington, for erecting a w.c. in the rear of 56, Great Dover-street without giving notice as required by Sec. 145. Mr. Dicksee, in his evidence, stated that on June 24 he discovered the building in question had been erected, no notice having been given to him. He made inquiries, and ascertained that Mr. Hardy had executed the work for Mr. Malham, who found his own materials. He (Mr. Dicksee) therefore contended that Mr. Hardy was "the builder," and Mr. Malham the "other person causing or directing the work to be executed," and that they were both liable to the penalty. Both defendants pleaded ignorance of the fact that notice was required. The work had been ordered by the sanitary inspector, and they had merely carried out his order. Mr. Dicksee said that was his reason for taking out the summonses. There appeared to be misconception among builders on this point. He had great difficulty in getting notice from the builders when work had been ordered by the sanitary inspectors. He had, therefore, taken these proceedings to warn builders that notice must be given in these cases. He did not, however, wish to press for a large penalty, but thought a nominal one would be all that was necessary. Mr. Kennedy said that it was a matter of very great importance that notice should be given to the district surveyor in all cases. He adopted the district surveyor's view, and imposed a nominal fine of 5s. and 5s. costs on each defendant.—Mr. W. H. Cable, of 176, Malden-road, N.W., was also summoned for doing work to 170, Great Dover-street without having given notice. Mr. Dicksee explained that this was a similar case, but that the work ordered by the sanitary inspector was contrary to the Building Acts, and the irregularities were now being amended. The defendant's solicitor thought that, as only two wooden walls of a w.c. had been removed and replaced with brick, the work was only a necessary repair, and exempt under Sec. 209. Mr. Dicksee pointed out that, even if the work were a necessary repair, it was not exempt, as only those necessary repairs that do not affect an external or party-wall were exempt, and these walls were external. Mr. Kennedy ruled that the work was not exempt, and that notice was necessary, and he fined the defendant 5s. and 5s. costs, as in the previous case. Messrs. Hart Bros., of 16, Great Dover-street, was also summoned for doing work to 17, Great Dover-street without having given notice. Mr. Dicksee stated that the work consisted of taking down and rebuilding the parapet of back wall. Defendants pleaded ignorance of the necessity of giving notice. Mr. Dicksee explained that a misconception might have arisen in consequence of the decision of "Briant v. Fletcher," under the Metropolitan Building Act, 1855, but that this decision had been wiped out by the London Building Act, 1894. Mr. Kennedy held that notice should have been given; but as there might have been some misconception, he would only impose the same fine as in the other cases, 5s. and 5s. costs.

Lavy and Upjohn v. the London County Council.—This was an appeal on Tuesday before Lords Justices Lindley, Lopes, and Rigby, from a decision of Mr. Justice Day and Mr. Justice Wright, sitting as a Divisional Court. The decision of the Divisional Court was given on a case stated by a Metropolitan police magistrate. Upon July 24, 1894, the appellants were charged with having, at 391, City-road, in the parish of Islington, in the county of London, unlawfully erected a certain structure beyond the general line of buildings in City-road without the consent in writing of the London County Council, contrary to section 75 of 25 and 26 Vict. cap. 102; 45 Vict. cap. 14, section 10; and 51 and 52 Vict., cap. 41. By the Metropolis Management Amendment Act, 1862 (25 and 26 Vict., cap. 102), section 75, it is enacted that "no building, structure, or erection shall, without the consent in writing of the Metropolitan Board of Works, be erected beyond the general line of buildings in any street, place, or row of houses in which the same is situate, . . . such general line of buildings to be decided by the superintending architect." By section 28 of the London County Council (General Powers) Act, 1890 (53 and 54 Vict. cap. CCXLIII.), "any person deeming himself aggrieved by the certificate of the superintending architect may, within 14 days after notice of such certificate has been given or served, appeal to a tribunal to be constituted as in the section mentioned." The facts were as follows:—The appellants were the owners of the house 391, City-road, which was 38ft. from the footway. It had a forecourt which for many years was bounded by a brick wall, 2ft. or 3ft. high, 9in. thick, with an iron railing 5ft. 6in. in height. That being the state of things, the appellants from time to time made applications for leave to build upon the forecourt. The applications were refused. Prior to 1894 the appellants erected on the dwarf wall a hoarding for advertising purposes. It was placed against the railings so as to get their support, and it had struts for additional support. The County Council gave notice to remove it, and on May 5, 1894, the hoarding was removed and replaced by what was now complained of—viz., a wall 11ft. high, 14in. thick, with its face put back 4½in. from the line of the old dwarf wall, so that there might be a ledge to support it. The summons was taken out on July 11, and on July 13 the architect gave his decision, under section 75 of 25 and 26 Vict., cap. 102, as to what the building line was. That decision was appealed from. On July 24 the appellants appeared to the summons, and the respondents asked for an adjournment. The adjournment was granted upon the terms that the rights of all parties as they were on July 24 should be preserved—*i.e.*, that the matter was to be in the same position as if the magistrate had begun to hear the appeal on July 24. Adjournments took place from time to time, and on October 19 the architect's decision was confirmed by the appellate tribunal. By that confirmation the building line was finally decided to be the line of the house 391, City-road. The magistrate found that the wall was erected as an advertising station, but that it was intended to serve also as a boundary wall for the forecourt, and on December 7 made an order upon the appellants to demolish the erection, and found, so far as it was a question of fact, that it was a structure in front of the general line of buildings. No consent to the erection being made was ever given by the respondents, the London County Council. The learned justices of the Common Law Division overruled a technical objection on the part of Messrs. Lavy and Upjohn that the architect's decision had not been given at the date of the issue of the summons. They also held that the wall in question was a structure or erection within the meaning of the prohibition, and gave judgment in favour of the County Council. The owners appealed. The Lords Justices agreed with the learned Judges in the Court below, and dismissed the appeal.

Timber in Party-Walls.—At the Uxbridge Petty Sessions on Monday, Messrs. Wilkinson and Son, builders, &c., of Notting-hill, who did not appear, were summoned by the Uxbridge Rural District Council for unlawfully placing timber in party-walls in two buildings erected by them at Northwood, thereby infringing by-laws Nos. 31 and 32 of the said Council. Mr. B. Freeman, surveyor to the Council, gave evidence to the effect that plans were submitted in the early part of the year by Messrs. Pinchbeck, architects, for several pairs of houses in Hallowell-road, Northwood, and were duly approved by the Council. There was no timber in the party-walls marked on the plan. According to No. 31 of the by-laws, it was stated that no bond timber or plates were to be placed in the party-wall. By-law 32 stated that there should be 4½in. from the centre of the wall to the joists. The party-wall between these two houses in question is only 14in. up to the top story. On the first and second floors the joists were put into both walls. That was an infringement of the by-laws. Witness had interviewed Mr. Wilkinson since the proceedings had been instituted, and the defendants were cutting out the joists. He was instructed to press the charge against the builders, as it was a very bad case. The Bench also took this view, and fined the defendants the full penalty of 40s.

Re George Beszant, the younger, Melksham, Builder. — The liabilities in this case were £698 1s. 5d., and there was a deficiency of £628 6s. 2d. The debtor has been adjudged a bankrupt, and the Official Receiver is trustee. He reported as follows: The debtor has, since 1888, carried on business as a builder, commencing with no capital. He alleges the cause of his failure to be simply "bad speculation in building at Melksham." He admits that he first became aware of his position two or three years ago, and has since contracted debts to the extent of £150 or £200. According to the statement of affairs, however, this amount is nearer £400 or £500. He appears to have executed a deed of assignment on the 2nd of March last, and this was the act of bankruptcy upon which the receiving order was made. The trustee under such deed has accounted to the Official Receiver for the stock, furniture, and book-debts realised by him. The sum entered in the statement of affairs should be less by about £11, certain of the costs incurred by the trustee in realising, which were deducted. It is expected that the liabilities will be increased, as the securities held by a partly-secured creditor do not belong to the debtor but to his wife, and she may probably have a right to prove against the estate.

Our Office Table.

The Turners' Company announce that their twenty-sixth annual prize competition in turnery will be held at the Mansion House, London, by permission of the Lord Mayor, on the 23rd, 24th, and 25th of October next. Prizes in money, medals, certificates, and, in the highest classes, the freedom of the Company will be presented to the successful candidates according to merit. The competition will be in turning in hard and soft wood, xylonite, celluloid, vulcanite, and other materials, and there will be special classes for apprentices, amateurs, and schoolboys. The qualities considered in awarding the prizes will be beauty of design, symmetry of shape and utility, and general excellence of workmanship, fitness of the work for its intended purpose, good copying, novelty, and polishing, carving, and inlaying. The exhibits must be delivered at the Mansion House in the week ending October 18th, and the judges will be Mr. J. J. Holtzapffel, Mr. Alfred Bevan, Mr. W. Brindley, and Mr. A. Murray, City Surveyor.

At a meeting of the Liverpool branch of the Sanitary Inspectors' Association, held on Saturday last, Mr. Henry H. Spears (inspector of nuisances for Waterloo-with-Seaforth) read a paper entitled "A Layman's Notes on Sanitary Law," in the course of which he argued that the existing nuisances clauses in the Public Health Act were inadequate to deal with nuisances where structural alterations were necessary. He, therefore, advocated a reform of the Sanitary Law to something like that of the Isle of Man Local Government Act, 1886, which empowered local authorities, without the intercession of magistrates, to carry out or cause to be carried out any structural alterations which, in the opinion of such local authority, were necessary to insure the health of the inhabitants.

In a report on the hygienic virtues and shortcomings of wood pavement, Dr. Blyth, the Health Officer for Marylebone, refers also to asphalte, which he is inclined to prefer, on the ground of its being less capable of absorbing the impurities of a busy thoroughfare. Its chief drawback, however, as he observes, is its noisiness. The sharp pit-pat of the horses' hoofs is almost as annoying as the rattle and roar of the traffic over granite cubes. "In the near future, however, when that unfortunate Locomotive Act, 1865, is repealed, and the great industry in self-propelling carriages by compressed air, by petroleum and electricity, is in full swing, the hansom cab, the omnibus, and all light carts will disappear from the streets, motors in the long run being much cheaper and more convenient; in that happy time this objection against asphalte will not hold good."

"The Year-Book of Australia" points out that Australian hard woods are now in much request in Europe for wood-paving purposes, and large orders have been received in Tasmania and elsewhere for cargoes for the United Kingdom. Any introduction of inferior timbers into the home market would doubtless retard, or, perhaps, altogether stop, the business, and, according to the *Year-Book*, much of the Tasmanian wood is greatly inferior to the best classes of New South Wales timber. Messrs. Burns, Philp, and Co. have had samples of the best timbers in London for some years; but prices quoted by them were hardly as low as the quotations of other colonies for inferior woods. Some weeks ago, however, orders were cabled out to load three vessels, equal to 600,000ft. each vessel, to be despatched monthly from Sydney. Unfortunately, these orders could not be executed, as the milling plant on the New South Wales coast was not adequate to turn out such a quantity, and very great extension will be necessary before quantities like this can be dealt with. A shipload is, however, on its way to London, and the firm named are seeking to gradually build up a large trade by sending only the timber best adapted for wood-block pavements.

Messrs. T. Crapper and Co., of Marlbro' Works, Chelsea, have issued a new catalogue of the sanitary appliances made and supplied by them. It comprises their well-known air-tight manhole covers, air inlet valves, cast-iron and porcelain baths, cast-iron pipes and junctions, elastic valve closets, enamelled fireclay sinks, grease traps, &c. The improved Kenon disconnecting trap suggested by Dr. Corfield is also shown. The catalogue is very well got up, copiously illustrated, and the prices are in all cases moderate.

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXIX.—No. 2116.
◆
FRIDAY, JULY 26, 1895.

THE STYLE FOR A NEW CATHEDRAL.

IF the Liverpool Cathedral is in abeyance for the present, and the Birmingham one postponed, perhaps, to better times, there are two of which something is now being heard. The first is the Catholic one at Westminster, the other is presumably Anglican, and is in contemplation at Washington. What seems to interest the public, in each of them, is its style—style is about as far as the public usually get, in their attempts to judge of a new building. Few people, indeed, can be brought to see that there is anything beyond it. Plan, proportion, composition, detail, do not force themselves on the notice of the uninstructed; but even the man who reads nothing but newspapers and novels can see a difference, say, between St. Paul's and Westminster Abbey. It is like the difference between a Greek book and an English one, which would have been plain even to the little boy who, as he said, knew his letters very well, but had not learned the names of them yet. Such a little boy, as to architectural matters, it usually is who employs and directs and criticises the architects of the day. Possibly it is a set of such little boys—of all ages—who are the trustees of the proposed Washington Cathedral, and who have asked an architect, Mr. Flagg, to report to them on the subject of style. His statement in reply contains, as is natural under the circumstances, some rather elementary teaching, and in addition to this some very questionable assertions.

That Gothic architecture began to be copied in the United States about fifty years ago, and that it never has been copied there with any great success, are the undoubted facts which Mr. Flagg sets out. And when he goes on to trace the original development of Pointed art, he only says what has been said a great many times before. It amounts to this. "The olden builders wanted to make their churches fireproof. To do so, they vaulted them in brick or stone. They could not vault them unless the spans were narrow and the supporting columns numerous, and out of their structural incompetence in these respects arose all the peculiarities of Mediæval churches. We can now do our fireproofing in easier and cheaper ways; therefore let us give up Gothic, and"—here comes an extraordinary *non sequitur*—"let us build in Renaissance."

Now, first of all, we question the assertion that it was simply, or even chiefly, to make their churches fireproof that the ancient masons vaulted them. Vaulted and domed buildings had been in use a thousand years earlier than the Gothic period. Without going back to the corbelled stone coverings of early Greek treasuries, vast Roman works had been executed—not in Italy alone—without any structural timberwork in them. Every pilgrim to Rome saw the Pantheon and the remains of even mightier things; every Crusader who passed by Constantinople gazed on St. Sophia. Before Gothic arose, the Saracens were building their domed and vaulted mosques; the Greek Christians their domed and vaulted churches. Men had for ages felt it to be a condition of the highest type of architecture that it should be roofed in the same materials with which it was walled. Nothing else is so masterly; nothing else is so permanent; nothing else is so monumental. Any tiro can cover his spans with wooden trusses, or with iron ribs, now they are in the market. That shows no skill, no power, no art. But it takes more than a tiro to build the smallest bit of vaulting; and the production of a vaulted building was the criterion of an architect.

This had never been quite forgotten. But constructional science had more and more died out from the eighth to the tenth century. There was a general belief that the world would end in the year 1000, and people felt, therefore, that it did not matter how badly all secular work was done. Probably they got into the state of mind which was attributed to a certain D.D. who flourished some 30 years ago, and who predicted that the earth would be swept away by a comet at a date now long since past. A fortnight before the time named, it was announced that the reverend gentleman was having his coals in by the scuttle, which was probably an exaggeration, though he belonged to a race noted for prudence and economy. The tenth century people, however, did build, even if they did not live, in this hand-to-mouth fashion. They began the century with the conviction that the universe itself had only a 99 years' lease, and they did not attempt to make their churches more durable than the globe on which they stood. Craftsmanship was almost forgotten, and had to be revived out of barbarous ignorance when the scare was over. But one thing lasted through it—the habit of building on the basilican plan. When men took heart again, found that life had still to be lived, and learned once more, by slow degrees, how to live it, it was to the old long-aisled type of plan that their efforts at improvement were directed. It did not get its narrow avenues and its multitude of columns from the necessities of groined vaulting: they existed twenty generations before groined vaulting arose. They belonged to the type on which the churches of Western Europe were mainly based from the beginning—that is, to the Roman basilica.

What happened in the 12th century was not chiefly a fright about fires, and a wild desire for fire-proofing. Perhaps, indeed, the architects of those days, like those of our own, finding that their clients had more respect for "practical" than for artistic considerations, used the practical ones to influence them, when all the while it was the artistic ones that influenced themselves. Perhaps they said, and said truly, if your church is vaulted everywhere, it cannot be burnt down like that in such and such a city, or at such and such an abbey. But what they were themselves thinking of was apparently more like this: "Christianity has become the greatest power in Europe; its buildings should be the most imposing, permanent, and striking. We are outmatching the secular castles with our church-towers; we will surpass the old temples with our church interiors. The best that man can do in building is what we will do; and this best, as all nations know, is to span them, as well as to wall them, with stone." Does anybody to this day, know a better "best"? How long will the "fireproof" buildings last, which, Mr. Flagg says, can be erected "for a tithe of the time, labour, and trouble" of the old Gothic ones? Their permanence, happily, is not likely to be much in excess of their beauty. If they do not burn down, as so-called "fireproof" buildings are notoriously apt to do, they will perish through rust, or crack themselves to pieces by the unequal expansion and contraction of their materials. There will be "many dry eyes" when they finally crumble away.

But how does all this praise of modern fireproofing show the superiority of the Renaissance style? The Great Renaissance churches, which succeeded the Gothic ones, were, like them, spanned with stone, and not covered in on Puff's Patent Fire-Defying System. If the Gothic naves were spanned by cross-vaults, the Renaissance ones also were spanned by cross-vaults, barrel-vaults, and domes. In construction, they were vastly heavier than their predecessors. If, as Mr. Flagg supposes, Gothic churches were obliged to have so many columns because they were vaulted—Renaissance ones would have had a great many more, for their columns had a far heavier load to carry. But the fact is, that Gothic churches could easily have been built with much wider naves, and much fewer columns than we generally find in them. More than this—a great many of them were so built. St. Bertrand de Comminges was nearly 50ft. across the nave, and had no aisles. The cathedral of Alby is 63ft. across, from centre to centre of the piers. Tarragona Cathedral nave is 52ft. across from centre to centre, the Collegiata at Manresa is nearly 60ft., and Palma Cathedral more than 60ft., and the width of the bays, or, in other words, the fewness of the columns, in some Gothic churches is equally remarkable. At the Jacobins, Toulouse, the nave piers longitudinally are 30ft. from centre to centre. At St. Antholin, Medina, they are at the same distance. At the "New" cathedral of Salamanca they are 33ft., at Avila Cathedral 34ft., at the Collegiata of Manresa 32ft., and at Siguenza Cathedral 39ft. What has been done so often could be done again, so that Mr. Flagg's "practical" reasons against Gothic clearly will not bear looking into.

He has a real reason, however, in the fact that Gothic has not been taken up with much success in America. But has Renaissance been followed there any more successfully? It hardly seems so, from the plans and views which find their way to Europe. The most interesting things in them are the American ones: the ideas, sometimes barbarous, sometimes incongruous, but sometimes fresh and suggestive, which our fellow workers on the other side of the Atlantic have infused into that collection of odds and ends, which, under the name of Renaissance, is just now in fashion. Yet somehow the style does not seem so pliable in their hands as the Romanesque which they previously began to develop. In that they often took a line of their own, and did something at once natural and artistic. In Renaissance, their power to do that seems enfeebled. Most of it, apparently, is the same sort of thing of which we are getting sick in London: a mere product of caprice, without reason, without aim, without soul. We shall be rid of it soon, as probably they will, likewise: it would be a pity to begin a cathedral in a style which everybody will have seen through and despised before the walls are up to the level of the roof.

In Mr. W. Flagg's remarks on types of planning we observe with more pleasure an echo of much that has appeared in the BUILDING NEWS during the last quarter of a century. But plan and style are quite independent things. Unobstructed areas may be found in ancient Byzantine, Romanesque, and Gothic buildings, as well as in Renaissance ones. The dome itself was incorporated into one variety of the Pointed style which flourished late in the 12th century in Central and Southern France. It was adopted with equal success in the refined Romanesque of Spain; for instance, at Salamanca, at Zamora, and probably at Toro. We have precedents for all we can want, if anybody is still foolish enough to look on precedents as something sacred. To the wise architect they are far enough from sacred, though they are in the highest degree valuable. They are, in fact, somebody else's experiments, tested by time and change, so that we can now see easily where they were weak and where they were strong, where they succeeded and where they failed. The Renaissance style, like others, has precedents for us of this sort—works to study, to criticise, to improve on. We hope it is frankly in this spirit that the Renaissance which seems to have been decided on for the Washington Cathedral will be treated.

Unless it is so, it would have been far better to leave the question of style an open one.

ARCHITECTURAL LANDSCAPE.

LIKE other allies of architecture, gardening was once closely associated with all the greater achievements of the constructive art. Italian, French, and Dutch gardeners tried to surpass one another in adding to or accentuating the charms of their great buildings, or in furnishing an appropriate setting to them. A true *esprit de corps* animated both architects and gardeners, and their joint productions even inspired the great school of Classical landscape painters of whom the names of Claude of Loraine, R. Wilson, and Turner are most prominent. Grandeur, breadth, and stateliness are characteristic qualities of the works of these masters, and we have a few painters amongst us now, chief among them being Mr. John Fulleylove, who are devoted exponents of the artistic alliance between architecture and scenery. The architectural "landscapist" has not, however, a numerous following; even those who make our architectural perspectives are strangely ignorant of the first principle of the art of uniting buildings with their surroundings, for do we not see every day of our lives small villa residences surrounded by long, winding carriage-drives amidst park-like scenery; or a building set down upon a plain, dotted over by a few straggling trees, reminding us of a house-agents' litho', or a cemetery mason's landscape? The architectural perspective is, in fact, a sorry witness to the want of sympathy between the architectural and the landscape elements of design. Each ought to contribute to the other, as it is their joint effect which makes for the result. The architect will never properly appreciate this alliance till he begins to design *in situ*, instead of confining his attention to the drawing-board, or of studying a building on paper only. The practical, specialising spirit of the day has something also to answer for in restricting the architect's attention to the building, and regarding the site and environments as accidental. The divorcement of gardening from architecture has been rendered more complete by this limitation of the architect's studies. Nor do we find any programme or syllabus of the young architect's studies in which landscape in relation to the building has found a place. The "landscape gardener" is a profession followed only by a very few—in fact, the art has of late years passed out of general recognition, or is assumed by every head-gardener, land steward, or nurseryman. We have not now men like Repton, Brown, Loudan, or Paxton, who devoted their whole time to the design and laying-out of parks and noblemen's estates, and who at the same time often became accomplished as architects, or who were jointly and simultaneously engaged with them in the carrying-out of great works. In those days mansions were not built anywhere on vacant sites, and then allowed to be spoilt by the taste of the estate gardener or nurseryman; but the site was selected and its surroundings artistically arranged by a landscape gardener of eminence. The approaches and carriage-drives were planned in relation to the aspect of main front and entrance, and also to the "lay" or levels of the ground, and the position of the main clumps of trees. The greatest skill and tact, though not always in good taste, were displayed to avoid the visible direction or course of the approach by judicious bends and the planting of clumps, in addition to which, the style of the building was ordered to some extent by the character of the scenery and the prevailing forms of the foliage. Near the main front of the building the art of the gardener was directed to lead the eye by gradations from the rougher and more natural outskirts to the smooth lawn and artificial platform and terraces, and here the geometrical style of gardening and the ornamental taste of the florist came into play. The trim lawns and flower-beds naturally brought the art of the gardener down to the very windows, or into touch with the building, and was a fitting climax. Beyond the flower-garden, smaller shrubs and trees of an ornamental kind formed a transition to the park. The accessories of balustraded terraces, flights of steps, pedestals, and vases would bring down the more solid masses of the building, and connect them with the grounds. No sudden transition marked the one from the other, such as we see in many modern villas which rise abruptly from the midst of smooth lawns or small forests of trees, as if they fell from the clouds on the most uncongenial of surroundings. What can be more grotesque than to see a house designed like a miniature Italian palace built on a wild or rugged hillside, or a picturesque group of buildings planted in a flat and tame landscape? The one is as incongruous a misappropriation of style as the other. We do not mean to say we want tame buildings on tame sites, or picturesque ones on rugged sites; but we expect to see a little affinity between the building and its surroundings, some art bestowed on the platform, so that the contrast may not be so abrupt as to cause one to exclaim, "What a caricature! How strangely out of place!" And it is just this endeavour of harmonising the building to its environments, of making the gradation easy and natural, which can be found in all our great historic buildings. We find nothing jarring or discordant between the buildings and surroundings of our great ancestral houses and palaces. The Palladian severity of Wollaton, and the broken and picturesque Italian of Blenheim, appear to be in entire harmony with their natural setting. The noble house of Hatfield, with its projecting wings and corner turrets, and its terraced sides, seems as if it had grown up amidst its beautiful surroundings naturally. Again, the picturesque and turreted skyline of Burghley is in perfect harmony with the landscape around it, the multiplicity of its vertical features, and the light and shadows of its broken plan being in keeping with this class of scenery. Let us take Longleat as another type of English house of Elizabethan character, surrounded by a natural style of planting. Few who have seen it will deny a charming appropriateness of this style to the round-headed foliage of the trees. Besides our Domestic buildings, we have the examples of our great churches. How majestically does the great cathedral of Peterborough stand out from the dead level of the locality; or Ely on the flat ground of Cambridgeshire; and then let us contrast with these the western front of Durham, rising on its wooded heights above the Wear—all three admirable examples of the relation of structure to landscape. What would be appropriate to the Fens would scarcely be suitable to Wales or the Lake District. The majestic towers of Ely break the flatness of the surrounding landscape; but it has sufficient length of nave and repose of horizontal lines to unite with the scenery. A fitful, spasmodic, broken skyline would be wanting in harmony in such a situation.

The value of material in this connection must not be forgotten. There is a natural affinity between building materials and the locality. In a stone district, like Northamptonshire, brick or timber-framed buildings would be out of place. The old stone-built mansion in the style of the Renaissance, like Kirby Hall, is thoroughly in keeping with its situation. So, too, we can appreciate the brickwork of the Eastern counties, and the half timber-framed work of Shropshire, Surrey, or Kent. The timber-framed houses which abound in the towns and villages on the Moselle are picturesque examples of the relation of material to locality. Everywhere, from the feudal castle which crowns the rocky crag, above vine-clad slopes, like the Castle of Elz, near Moselkern, with its medley of gables, turrets, and dormers, to the reposeful châlet on the banks of a Swiss lake, we find the natural adaptation of material and feature. It is needless to give further instances. The chief lessons we learn are of value to the architect. One is appropriateness (*a*) of building to contour or configuration of ground, and (*b*) of style of building to the character of scenery or of foliage, and in attaining this attribute the principles of contrast and gradation come into play, just as we wish either to accentuate or smooth down the differences. With respect to the first condition—contour of ground or of level—one writer (Mr. W. Robinson, the author of "Garden Design") says the natural form or lines of the ground are the best to follow, and he says: "The lawn is the heart of the true English garden, and is as essential as the terrace to the gardens on the steep hills," and he illustrates this by the fine Elizabethan house of Wakehurst, where the grounds are not terraced, but the lawn goes right up to the base of the house. At Arundel Castle, terracing is introduced, which is rendered necessary by the fall of the ground. The objection raised to terrace walls is that they cut off the view of the landscape from the house, or the house from the landscape in some cases—but if properly planned this need not be. What we have said just now on this point is worth repeating—viz., the terraces and other outworks of the building are valuable, as at Haddon, in gradually leading the eye from the more natural scenery or park to the garden. The late Sir C. Barry's idea, quoted in "The Formal Garden," is that the "garden was gradually to become less and less formal till it melted away into the park." This is the right idea. We cannot agree with the adherents of the formal style of gardening, as expressed by the author of the book we have mentioned, when he tells us that the garden should be separated from the adjacent country "by a clean boundary line, a good high wall for choice." No doubt there may be circumstances which warrant such a distinct separation of the garden from the country, but it does not apply in all cases. As to the character of foliage and scenery, it ought to control to some degree the style and features of the building; a hilly or precipitous locality suggests a style a little in harmony with it, as a flat, tame landscape would dictate a few bold features.

Upon the Dutch or formal style of gardening, as distinguished from the natural style of landscape gardening, we do not propose to say much. The beauty of old gardens like those of Compton-Wynyates, Levens Hall, Montacute, Haddon, Brympton, and others speak for themselves. We think that in every true design the formal and the natural should find a place; the one may merge into the other, or be distinct parts of the whole. Reproducing uncultivated nature is by no means the aim of the true landscape artist—far from it; it is rather the idealisation of Nature that he seeks—not Claude-like landscapes, but English pastoral scenery idealised Even lines of "tortured" limes such as we see in French towns are in harmony with stately architecture. We can admire such things as clipped yews at places like Versailles or Hampton Court, though some of the grotesque forms are ridiculous abortions. There will always be two sides to every question. We have naturalists and formalists not only in gardening, but in painting, ornamentation in architecture, and in almost every other thing, and it is equally certain there is truth to be found in each view. It is as great a mistake to imitate uncultivated nature near our buildings as it is to affect an admiration for curved, crooked, or serpentine paths because they are supposed to be natural, or to ignore a straight line because Nature never shows one. Studied picturesqueness is quite as absurd as the attempt to turn our gardens into geometrical puzzles.

DEFECTS OF MODERN HOUSE ARRANGEMENTS.

DURING a season which until the last few days has been exceptionally dry, the sanitary condition of houses and dwellings in every great town must create some concern. An abnormally dry season is one looked upon with some suspicion by hygienists and medical authorities. It means, of course, a sparse and impure water supply and a sluggish discharge through the sewers. Under these conditions of dryness and temperature all kinds of apprehensions are entertained. The machinery of the Local Government Board is set in motion, a fussy local board or vestry busies itself, and the least hint or suspicion of something wrong arouses the meddlesome action of the sanitary inspector. The power given under the new law is to make him more arbitrary than discreet. Then every medical practitioner is under a penalty to make notification of any case of a questionable character among his patients, and something like this is what happens:—A person is taken ill, and sends for his doctor; is found to be suffering from some febrile disorder, or slight gastric derangement, and forthwith his name and address are notified to the sanitary authorities. The drains are at once suspected, especially if they are arranged on the old system. A sanitary inspector makes his appearance on the scene; he examines the drains, and their house connections, the water supply, &c. He applies the "smoke" test to the drains, and discovers a leakage that has been going on, perhaps, for years, and forthwith condemns the whole system. Both landlord and tenant are pounced down upon with merciless severity, as if other houses were not in an infinitely worse condition, and had been allowed to remain so for years without any serious consequence. All the time a street-grating near the house may have been giving out sewer-gases enough to poison the whole street, yet it is passed by uninspected, or the ventilating-pipe of an adjoining house may have been discharging the same deadly gas. In a desperate attempt to put the law into operation trivial faults are discovered; all the while the real evil may go undetected. That this is often the result of the existing regulations may be well imagined. Again, there is a prejudice against all those houses which have not been drained on the regulation model. The inspector at once comes to the conclusion that there is a faulty connection between the sewer and the house; that the traps are defective; or that there is no ventilation—in some instances all hasty conclusions. The modern house-owner is often victimised: he is called upon to reconstruct the whole drainage system, to remove the old fittings and substitute ones of improved make and in accord with the regulations of the sanitary authority, but without any absolute proof that there is any leakage, or that his drains and fittings are more defective than hundreds of others in the neighbourhood. And why? Because his tenant is suspected of having an infectious illness. Such is by no means an exaggerated picture of hundreds of cases where the unsuspecting house-owner is made the victim of vexatious sanitary regulations. Of course, there is the other side of the picture, where the law steps in to compel indifferent and negligent house-owners to put their property in a sanitary condition, and it is because this class is more numerous that we have the hardships inflicted by a non-discriminating department of sanitary officials. The Public Health Act, 1875, was enacted to compel property-owners and others to provide sanitary dwellings amongst other things; it was to make people sanitary who otherwise would not be. Further instalments of the law like the Public Health (London) Act, 1891, have made it still more arbitrary and indiscriminating in its operation, so that those who have good fittings, though out of date, are treated similarly to those whose sanitary arrangements are of the worst order.

But the health of our houses depends on other things quite as much as on the number of patented fittings of a certain approved pattern, disconnecting traps, manholes, and the regulation plan of connecting house with sewer. These are useful and necessary in some cases; but they do not supersede the value of periodical flushing of house-drains, which in this dry weather is absolutely necessary for health. A bad case of the want of flushing and inadequate water supply is now being investigated. Several admirable flush tanks are made—such as Crapper and Co.'s automatic. Where the falls of the drains are small, the daily flush is the best safeguard that can be provided. The very dry season calls urgent attention to the question of the level of the ground water under dwellings—a point often lost sight of in estimating infected areas. During excessively dry weather like the present, the ground-water level will be low, and the interstices of the soil above be filled with air and gases of very questionable character. Old refuse heaps and ashbin contents are the kind of soil which whole suburbs of London are built on, and it is therefore not surprising if such a substratum of soil should give off gases of a dangerous kind. One provision has been made by building by-laws which, if properly carried out, effectually cuts off the ground air and moisture from the building—namely, the laying of a bed of concrete over the whole area; but as to the manner this is done, or the nature of the concrete, we have little positive proof in thousands of cases of small dwellings erected by jerry builders. What is equally important as an additional safeguard is a free space of air at least 18in. in depth, open to the external air by perforations or air bricks, below the ground-floor joists of rooms above the ground level or concreted surface, not a mere subterfuge of a few inches deep filled up with sleeper walls, and having only a few air-bricks in front. If there are cellars with properly made windows, well and good. When the level of ground floor is too low to allow of a good air-space, we should insist on continous dry areas being formed in front and back of all street houses, these being properly concreted and asphalted. In addition to these sanitary provisions the hygienic house of the future demands that it should possess a general system of ventilation. Such a system should be self-acting, simple, and natural, and be easily applied without much expense, which essentials appear to be most nearly fulfilled in Messrs. Boyle and Son's method. A sanitary house should be so planned and constructed that not only should it have the means of quickly and innocuously getting rid of all its waste products, but of also being able to change its air continuously summer and winter during every atmospheric condition. The healthful state of our town dwellings will not be materially improved until, firstly, the drainage and ground air and moisture are cut off from the house; secondly, till efficient flushing arrangements are provided during dry weather; and, thirdly, till an automatic system of ventilation be made compulsory.

OUR HOMES.

By R. BARRY PARKER, Architect.

(*Continued from p.* 99.)

A MOST delightful house can be designed with a hall, one other good large room, kitchen, and offices. But many of the most thoughtful of our times have come to feel that even a house of this size, though possessing advantages, is not really worth what it costs them to maintain, costs them in worry, anxiety, loss of liberty, incessant bother with servants, and in time spent in work entirely without interest, dignity, or real advantage to themselves or their fellow men, or power of giving any vestige of pleasure. These have come to see how much of what we have grown to regard as necessary is really only waste; and when we think of the number of unused and useless rooms there are in every town, village, and hamlet in the country, of the number of unused and useless things in those rooms, and the amount of unproductive labour expended daily in their creation and maintenance, we can only wish that more and more may come to realise this.

But perhaps there is nothing which contributes more to the artistic failure of our rooms than the look everything has of being ready to move at any moment. Most things, to look right and happy in their places, must be designed for their places.

In the little illustration of an overmantel, used a while back, the frame with three panels in it would have had to be made the width of the chimney-breast against which it was to be fixed; if it had been wider or narrower it would not have looked nice—that is, it must have been designed for its place. This is one of the secrets of its superiority over the overmantel substituted for it. That overmantel could not, of course, look nice anywhere or anyhow; but this is one reason why it could not.

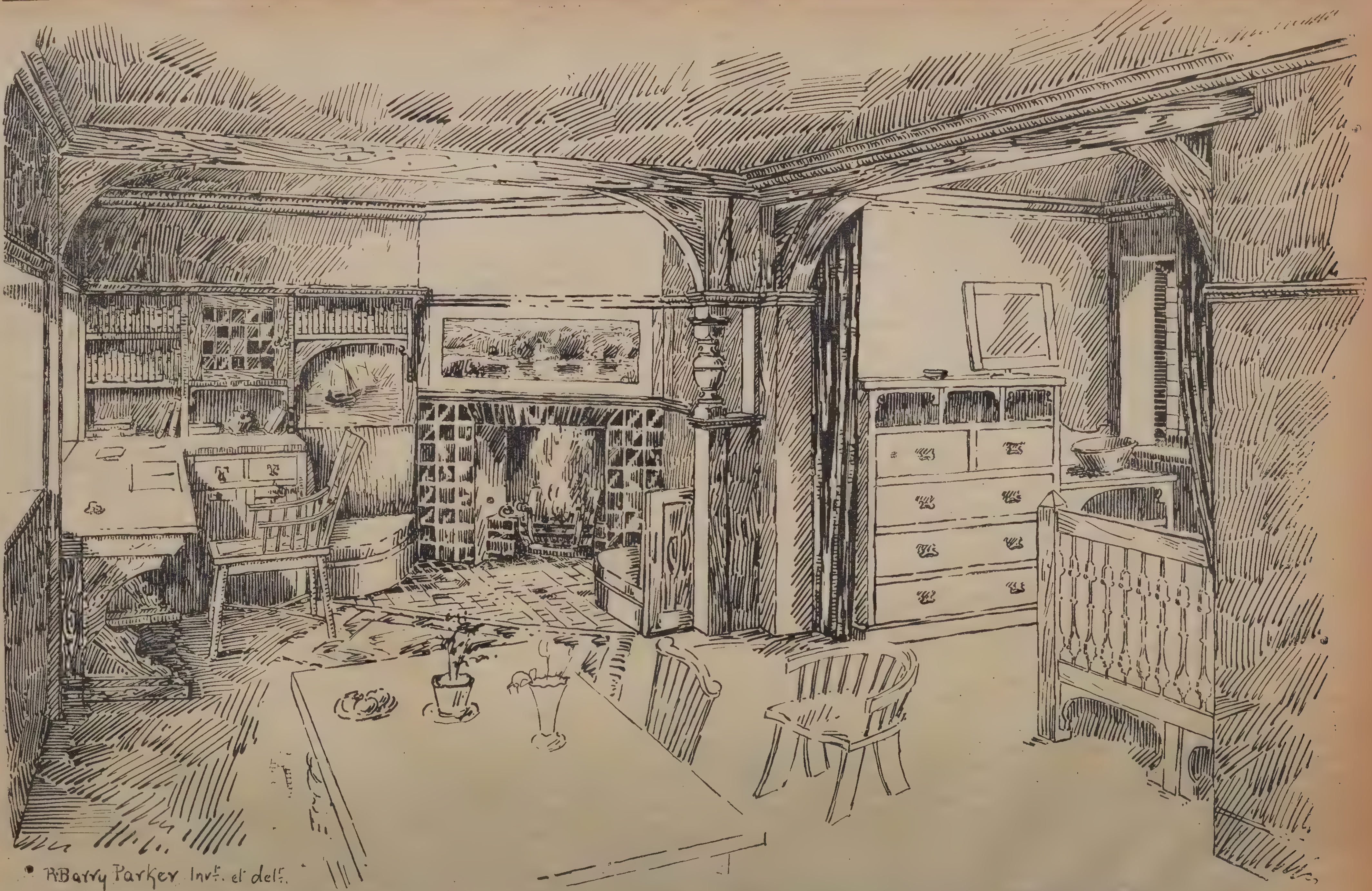
The advantages attaching to rooms furnished in this way, largely by means of fixtures, the accompanying sketches would do something to show. There is a unity, completeness, comfort, and repose about such which can never be got in rooms in which the furniture is not designed for its position and looking at home, but is just temporarily stuck where it happens to stand, with a look of being on the alert and ready to move at a moment's notice. The attempt to reduce everything to a form which can be produced by the thousand, and which will do to go anywhere, has knocked all the life and spirit out of design and handicraft. A thing which is right anywhere is right nowhere.

The influence of our present system of reducing everything to a level which may be produced by machinery—creating as it is doing, in place of the old craftsman, a class of men who are themselves only machines—strikes us afresh and with renewed regret every day; but the effect of this system upon ourselves, in the absence of that influence which the old artist-craftsman had upon us, through his work largely, passes unnoted by us.

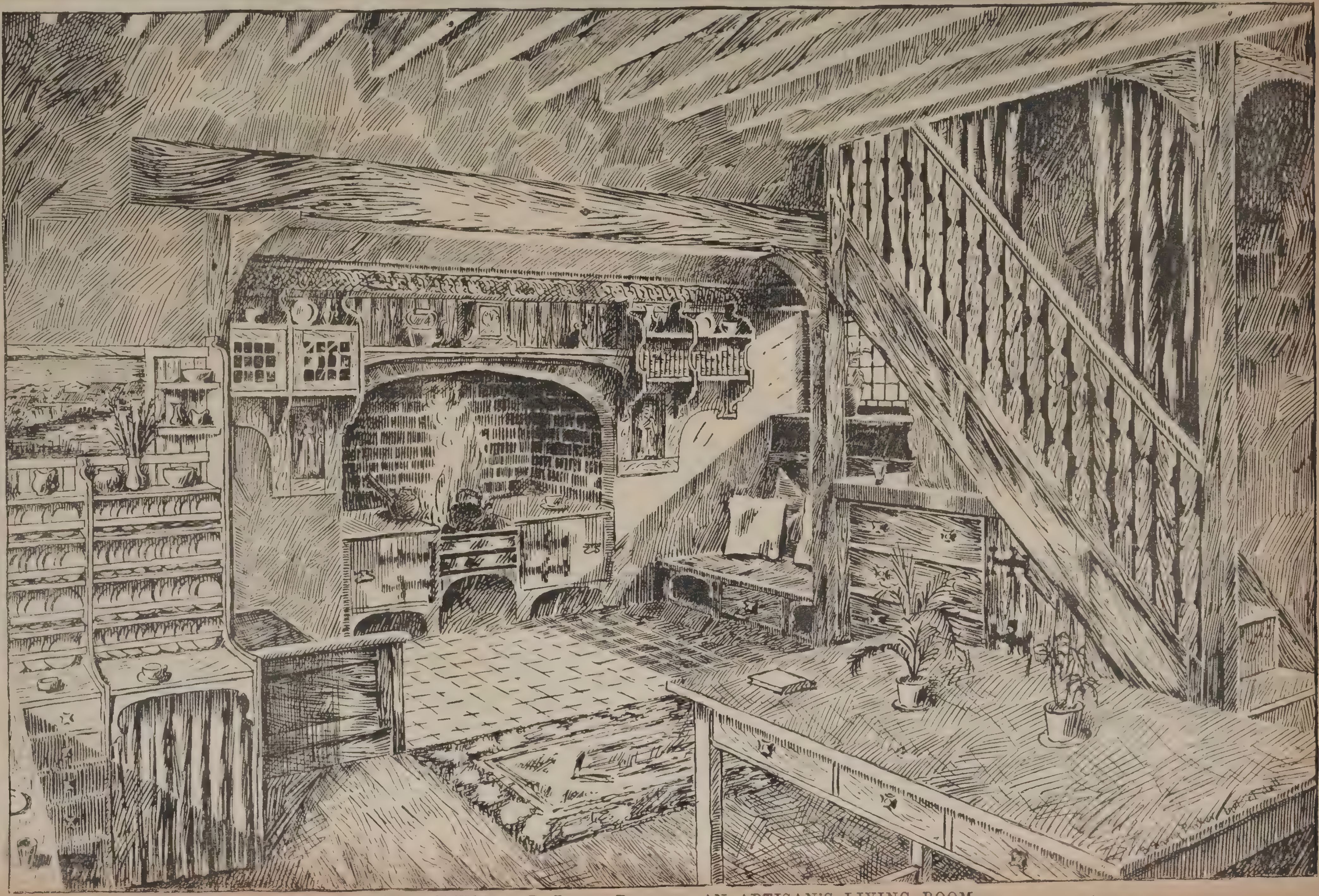
Ready-made clothes fit better than ready-made furniture. The very essence and life of design is the finding the form in which the special aim, uses, and requirements of the thing to be designed can, with the maximum of beauty and convenience, adapt themselves to the special conditions and circumstances under which they are to exist; and perhaps the most fruitful source of charm in the design and form of anything is in the grace with which it adapts itself to its conditions, uses, position, and purposes.

How many of the beautiful features of the work of past ages, which we now arbitrarily reproduce and copy, arose out of the skilful and graceful way in which some old artist-craftsman, or chief mason got over a difficulty; if, instead of copying these features when and where the cause for them does not exist, we would rather emulate the spirit in which they were produced, there would be more hope of seeing life and vigour in our architecture and design again.

It is well known that the creations, not only of nature but of man, in assuming the form best adapted to the discharge of their uses and functions under the conditions peculiar to them, also assume the most graceful form possible to them; and in the main, in the degree in which a thing adapts itself to its uses and environments, the more graceful will it be in shape. The best illustration of this is, of course, to be found in the forms of men and animals: but in the works of man the same thing holds good. The form of a boat was not determined by any abstract idea of beauty, but was chosen because it was best adapted to the functions of a boat—offered the least resistance to water in passing through it, and so on. And I observe the more fully it recognises and acknowledges in its form the nature and limitations of the conditions under which it is to exist, the more beautiful it becomes.


R. Barry Parker Invt. et delt.

"OUR HOMES," by R. Barry Parker.—A BED-SITTING ROOM.



"OUR HOMES," by R. Barry Parker.—AN ARTISAN'S LIVING ROOM.

"Beauty must come back to the useful arts." The only true method of making a room beautiful is to make all the necessary things in it also beautiful. So much is this true, that it becomes almost impossible to design a really beautiful room that is to have no useful work done in it, and natural life lived in it, and therefore has no useful and necessary things in it. This is one great advantage the farmhouse kitchen has (in common with all other workrooms) over the drawing-room. An architect called in to design a room in which nothing more earnest is to be done than to gossip over afternoon tea, has a hopeless task, and can never achieve a satisfactory result; for a room must always derive its dignity or meanness from, and reflect somewhat, the character and kind of occupation carried on in it. For instance, the studio, the smithy, the study of the man of letters, the workshop of a carpenter, the farmhouse kitchen, each in its position and degree, derives a dignity, interest, and individual and characteristic beauty from the work done in it. And the things in the room will bear some relation to that work, and will be the furniture and surroundings natural to it—as the easels and canvases in the studio, and the bright pans and pots in the kitchen.

But what useful occupation could be carried on in most drawing-rooms and in many of the other rooms spoken of here? About the only occupation of any kind which could be carried on in them is dusting, and this is attended with danger, for in most of these rooms one cannot move without fear of damaging something. And even this dusting cannot be regarded as a useful occupation, for how useless are the things on which it is expended, and how very few things of which the room is so full can make any claim to be allowed to exist from real intrinsic beauty! Do they really add anything to the lives of anybody?

But in a workroom all things have a place by reason of their usefulness, which gives a sense of repose and fitness entirely wanting in a room in which a place *had* to be *found* for everything.

The number of those who are tired of sacrificing themselves to their surroundings is daily increasing. These are tired of the life spent in anxiety, incessant toil and worry, that they may have one or more rooms they never go into, and may be surrounded by all these unnecessary and valueless things incapable of giving them any vestige of real pleasure. These are anxious to find houses suited to their genuine wants; houses in which they can live a truer, healthier, more natural life than is possible to them now; houses in which the work will be reduced to a minimum, and the beauty increased to a maximum, by the only true method of making all the useful and necessary things beautiful; not by the false method of keeping all useful and necessary things out of sight, trying to conceal their purpose, or to appear unconscious of their existence.

We want rooms where we have space to carry on the business of life freely and with pleasure, with furniture made for use, not for sale only, as most is now; rooms where a drop of water spilled is not fatal; where the life of a child is not made a burden to it by unnecessary restraint, and those who are there with it have not to give up all their time to anxiously watching that it "does no harm" and "touches nothing." Plain, simple, and ungarnished, if necessary, but honest.

Let us, wherever possible, have such ornament as we do have really beautiful and wrought by hand — carving, wrought metal, embroidery, painting—something which it has given pleasure to the producer to create, and which gives evidence of this in every line; which is, and always will be, the only possible work of art.

Let us call in one of the numberless artists who are almost starving throughout the land. Let him leave his easel-pictures, and paint on our walls, panels, and over the chimney-corner landscapes and scenes which shall bring light and life into the room; which shall speak of nature, purity, and truth, and shall become part of the room, of the walls on which they are painted, and of the lives of us who live beside them; paintings which our children shall grow up to love, and always connect with scenes of home with that vividness of a memory from childhood which no time can efface.

Then, if necessary, let the rest of the walls go untouched in all the rich variety of colour and tone, of light and shade of the naked brickwork. Let the floor go uncarpeted, and the wood unpainted, that we may have time to think, and money with which to educate our children to think also.

Let us have rooms which, once decorated, are always decorated; rooms fit to be homes in all the fullest poetry of the name; in which no artificiality need momentarily force us to feel shame for things of which we know we need feel no shame; rooms which can form backgrounds, fitting and dignified, at the time and in our memories, for all those little scenes, those acts of kindness and small duties, as well as the scenes of deep emotion and trial, which make up the drama of our lives at home.

EXHIBITION OF NATIONAL COMPETITION DRAWINGS, KENSINGTON.

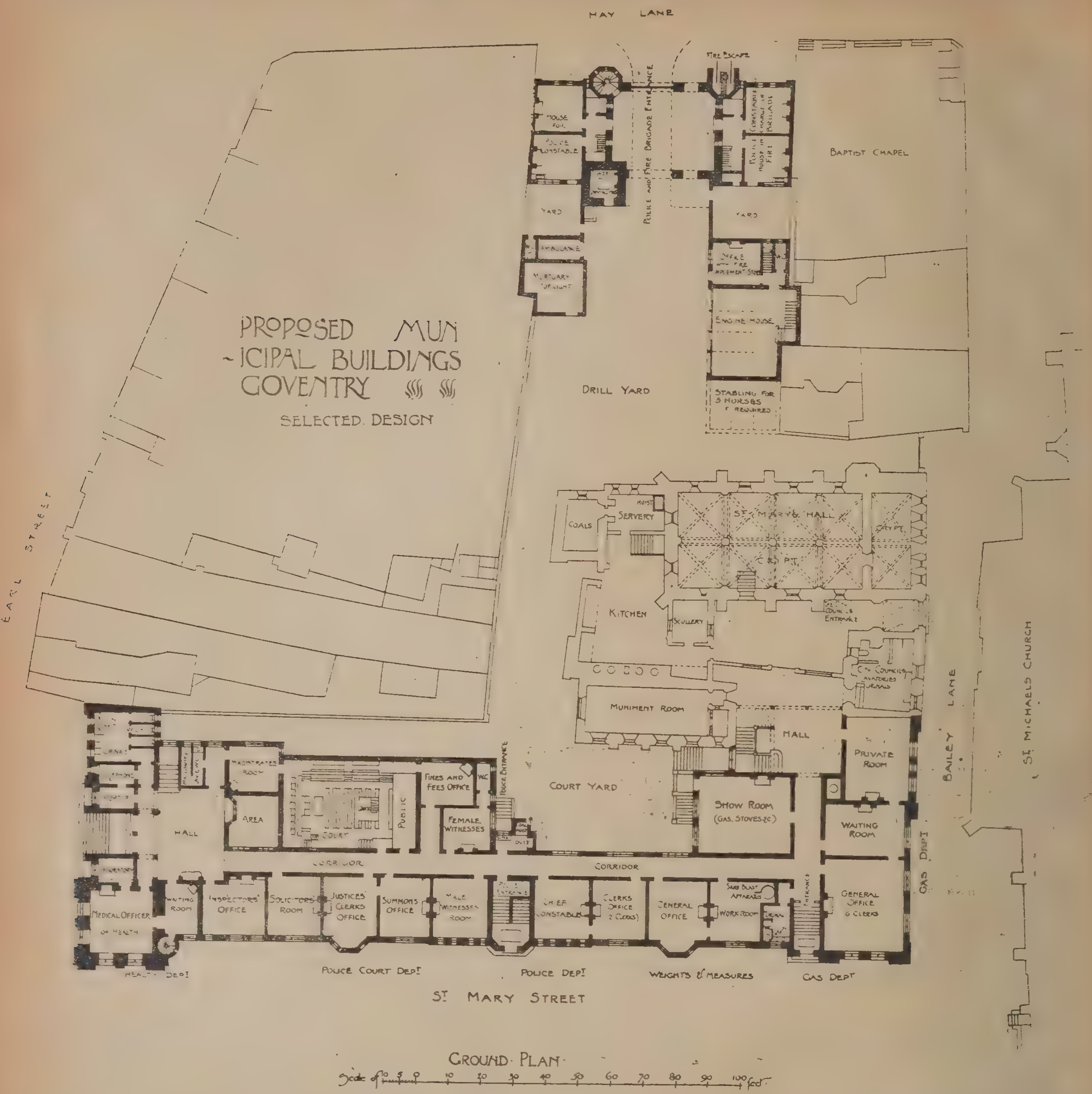
YESTERDAY the annual exhibition of students' works was opened in the newly-built galleries in Exhibition-road, near the Machinery Section buildings, and the collection, numbering some 874 models and drawings, as a whole, seems equal to the average standard, though the drawings in the Architectural section and in the Applied Arts department, more particularly those associated with building work, scarcely present any one example of more than ordinary merit. The examiners of Architectural Design, Messrs. Geo. Aitchison, A.R.A., T. G. Jackson, A.R.A., and J. J. Stevenson, have, we suppose, made the best choice in their power. We may at any rate presume that in some cases the prizes they award would not have been given had better work been presented for competition. Their report repeats the ever-timely warning to students, "that deceptive construction, such as imitation of half-timber work by veneers of thin boards and plaster, is inartistic and inexcusable, and has in cases prevented awards being made. Another instance of bad design is the dividing of the upper half of a window by sash-bars into small panes, while there are none in the lower." How far this latter point may reasonably be insisted on is, however, a matter of opinion, and when we notice in some of the designs chosen for prizes, certain discrepancies of a far more serious character, it becomes difficult to understand how the experts who adjudicated in this instance permitted so unimportant a consideration to weigh sufficiently with them to exclude other designs from the contest entirely. Mr. Jackson wishes to add, with good reason, that, in his opinion, to "trick up geometrical elevations into pictures is not only useless, but mischievous, encouraging students to think in elevation rather than in perspective, and the public to believe that an elevation gives a true idea of a design. The art of elaborately shading geometrical drawings has no practical value. No architect ever makes such drawings in his practice, and there is no demand for assistants who can do them." This edict, so tersely expressed, scarcely accords with the teachings so long the leading characteristic of the Royal Academy Schools, and while, no doubt, Mr. Jackson correctly describes the practice of the profession in England, his remark is certainly at variance with the custom of French and Continental architects, whose speciality in this respect has always found a warm advocate in the architectural master at Burlington House, Mr. Phené Spiers.

The leading architectural prize work at South Kensington is to some extent second-hand, seeing that Mr. Charles Quennell, of Lambeth, obtains a Gold Medal for a design that was submitted under the motto "Lion's Head" in competition for the Soane Medallion at the R.I.B.A. last year. The subject is an art gallery, and its chief feature is a dome, which, in reality, would look very depressed in outline. The design is marked by flaming ornament, which is over-large in scale, but at least is not finnicking, in its proportions, like some big modern buildings' enrichments unquestionably are. Another Gold Medal is awarded to Mr. A. H. Hodge, of Glasgow, for his design for a similar art gallery, which he has conceived, with no small degree of imagination, in a Northern Italian style, florid in colour decoration and mosaic work, but impossible for practical utility, and very indifferent in plan. The elaboration of the pavements and other ornamental work has occasioned vast labour to be expended upon a design which fails in the elements of appropriate character. Mr. Geo. A. Paterson obtains a Silver Medal for a public school chapel, which he has designed in a very thin kind of Gothic, and drawn in perspective in exceptionally coarse ink lines, with wild clouds sweeping like conventional ribbons from one side of the sky to the other, robbing the building of all repose and scale. The pulpit is placed in front of the altar, and the seating is too crowded to make a good plan, though the building is drawn after the manner of the fashionable cult in architectural matters. Mr. T. A. Williams takes a silver medal for a memorial church design which recalls something we have seen in Wales by a Chester architect, possibly at Barmouth. The tower over the choir is sturdy and good, with details generally of Late 14th-century work. One of the best things in the gallery is a Silver Medal design for a Riverside Warehouse, by Mr. E. F. Reynolds, of Birmingham, treated with reserve, and handled with suitable simplicity in brick and stone; but the relieving arches over the stone lintels are omitted. The perspective sketch is not very well managed. One of the Tite Prize competition designs from Conduit-street, for an Exchange, has secured a Bronze Medal. Mr. J. G. Gillespie, of Glasgow, is the author, and Mr. H. P. Sharpe, from the same city, has taken another National Medal for an ungainly Village Church with two towers, and badly-proportioned side windows, of the same width as the recess for the organ. Surely Mr. Jackson cannot admire such a design as this? It is described in the report as a College Chapel, and the design is spoken of as "unequal in parts." It looks really all of a piece. Mr. G. H. Lenfestey obtains a Gold Medal for some pencil sketches of French staircases which do not seem quite so charmingly drawn as the report indicates, and Mr. R. I. Beale, of Maidstone, is awarded a Bronze Medal for some careful, and in a way spirited, sketches, of the pulpit at Cliffe, with its hour-glass stand and other Jacobean details. Mr. Chas. B. Howdill, of Leeds, taking a less familiar subject for measurement, sends a detail of the retro-choir screen from St. Bavon's Church, Ghent, a work in masonry, with brass balusters of admirable proportion. The screen is in marbles, and Renaissance in style. The statue at the top has not been properly delineated. A Bronze Medal is given for this, and others are dispensed to Messrs. Gladwell, Vinall, and Thorogood for unsympathetic outlines of the cast in the Museum, taken from the stalls of St. Denis, Paris. There is no "tricking" up in these elevations, to use the examiner's phrase, and one can but wish that some little spirit of "go" had been infused into their delineations. Mr. Mavart sends some poor drawings from Glasgow Cathedral which take a Medal, and Mr. P. W. Meredith's studies from Wells Cathedral Chapter House hardly merit the honour. The exterior sketch is a libel on the building. Another poor set from Bolton Abbey, by Mr. Whipp, of Rochdale, receives also a Medal unaccountably, thereby making the prize somewhat too cheap. Broughton Church, Oxon, supplies Mr. Harry Rogers, of Banbury, with a subject for his geometrical diagrams, obtaining a Book Prize, and Mr. J. F. Walker takes a Silver Medal deservedly for a set of drawings from the queer, but clever, Classic church of St. Mary, Banbury, which of late years has been skilfully decorated. The General News Rooms, Leicester, is another Classic building, but much more severe in style, with the Ionic order to the portico. Mr. J. Clarke sends some big details of it, and is given a Medal. The figures are very badly shown, and reflect upon the justice of the award. The organ in St. Michael's Chapel, Brownsover, formerly belonged to St. John's College, Cambridge, and is a handsome instrument, with bold and picturesque exterior. Mr. A. E. Martin, of Rugby, has but indifferently drawn it in outline, and his sketch is unfinished. We note more care expended on the detail sheets, and so he wins a Bronze Medal. A like prize is given to Mr. Ch. F. Dawson, of Shipley, for a firm and crisp drawing of an inlaid oak chimneypiece, dated 1610, from Riddlesden Hall. The darker parts of the pattern are tinted neatly in grey. The drawings of the George Inn at Glastonbury, by Mr. A. E. McKewan, seem painstaking enough; but, having ourselves carefully sketched the same building, we doubt the correct proportions of the façade, as shown on this sheet in perspective. It obtains a Book Prize, which the author well deserves for his industry. One of the most refined pieces of work shown in this connection is a statuary marble chimneypiece from Leinster House, Dublin, with figures by Nollekens, and here drawn full size, with grace and feeling, by Mr. W. L. Whelan, who is given a Silver Medal for his work. The outline is spiritless, but the figure in monochrome is very capital. Temple Bar, Theobalds, Essex, and the Marino Casino, by Sir Wm. Chambers, Dublin, are other subjects in the same style. Gothic work is not strong in the exhibition; but we notice some drawings of the Countess of Salisbury's chapel at Christchurch, Hants, by Mr. H. C. Wallis, of Ryde, whose pretty sketch of the exterior is attractive, and we note his plan of the Priory Church complete, and think he merits the Medal awarded, though we cannot admire the cold-grey interior of the chantry. The Fox Chantry at Winchester, by Mr. F. C. Nash, is fully delineated, and takes a Silver Medal; but we scarcely think the original obtains justice, for the drawings are not first rate. The N.W. chapel at St. Michael's, Coventry, is shown by a pencil drawing by Mr. F. H. Brown, not badly executed, and a Bronze Medal is taken by Mr. A. McKewan for a village school design. The Silver Medal design for a sideboard in oak, by Mr. H. Davis Richter, of Bath, is one of the most elegant and original proposals in the furniture way which we have seen lately. The curved top is finished with a chastely proportioned cornice, and the Late Renaissance has clearly been carefully observed. Full-size cartoons display the exact contours. Mr. F. W. C. Gregory, of Nottingham, takes a Bronze Medal for a good cabinet, which recalls the Vicarage Gothic a trifle too much, and the design is wanting rather in repose, but deserves recognition certainly. We much admire the cast bronze lock by Mr. Leon V. Solon, with its two gladiators holding shields, modelled in low relief, well adapted to the metal and its position. Mr. G. A. Paterson, already named, sends a good design for a drawing-room chimneypiece in stone, broadly treated, but the elevation fails rather for lack of concentration, being so "all over" in effect. A Silver Medal is well given to Miss Mary I. Newill, of Birmingham, for her reredos cartoons (and central figure worked in wools) of three angels. The face in the finished work is dirty in tint, but the reds and greens are harmonious and subdued. The wings in red seem hardly a success in drawing. St. Christopher is the subject of another Silver Medal Cartoon, by Miss Agnes Manly. The figure drawing is capital, and the drapery is artistically shown; but the general result of the cartoon has an over-wrought effect.

A YEAR'S WORK OF THE LONDON COUNTY COUNCIL.

IN his first annual address on the work of the London County Council, Sir Arthur Arnold expressed surprise that the control of the water supply, of artificial lighting, and of public markets were thought by some people to involve too great a strain on the energies of the Council. He professed full confidence that they could undertake and digest whatever work might be found proper for the central authority of London. He then proceeded to remark in detail on the work of the principal committees. With regard to the Asylums Committee, Sir Arthur mentioned that the existing asylums provide for 10,400 patients, and that the Council had approved the erection of a new asylum at Bexley for 2,000 patients, the cost of which, exclusive of site and equipment, will be £375,000. He congratulated the Bridges Committee on having surmounted the main difficulties in the construction of the Blackwall Tunnel, the cast-iron-lined portions of the tunnel being already far past the centre of the river bed. The number of men working in compressed air is about 120, and there have been only five cases of serious suffering from the peculiar nature of the work. The opening of the tunnel will probably take place in 1897. The next great work of this committee, which has been sanctioned by Parliament and has received the Royal assent, will be the new Vauxhall Bridge, 80ft. wide, with gradients of 1 in 40, to be constructed at a cost of £380,000, including £30,000 for a temporary bridge. The building Act Committee had, he thought, done wisely to retain as their chairman that member of the Council who, more than any other, laboured for the passing of the Building Act of 1894. Their thanks were due to Dr. Longstaff for the assiduity and ability he displayed in the promotion of that statute by which the Council have secured consolidation of the law regulating streets and buildings in London. Among other valuable functions, the Corporate Property Committee have entered upon the preparation of a ground-plan of London, and 206 estates, representing about 30 square miles, have been delineated. He hoped, however, that the Council would not proceed in minutest detail to examine the tenure of all land in London, because the difficuty and cost of that operation would, in his judgment, very far outweigh its value, which, with constant changes of ownership, would not be permanent. The Fire Brigade Committee are proceeding with the provision for additional protection from fire. The staff already numbers 920. The annual cost of this department, which is now £210,315, must increase. By the substitution of "H." for "F.P." in all parts of the county, the public can judge how largely the Council have caused fire-hydrants to be substituted for the obsolete fire-plugs. In the report of the Highways Committee will be found statements of the policy and proceedings of the Council with regard to electric lighting, tramways, and the telephone service. In two places where gates have been removed under the Acts of 1890-93 it has been found that an average of 2,200 and 1,131 vehicles now pass daily. The committee find that out of more than 200 railway stations in London not fewer than 177 need improved accommodation, and have made suggestions, which they are at present powerless to enforce upon the respective railway companies. The Improvements Committee are controlled in their larger schemes by the financial policy of the Council. But the committee were, he thought, entitled to congratulation upon the position of the Wellington-street improvements in connection with the Duchy of Lancaster, of the Tower-bridge approach on the south side, and upon the instruction they have received from the Council to prepare a scheme for the formation of a new street from Holborn to the Strand, subject to the conditions as to betterment imposed in the case of the Tower-bridge approach.

The Chairman dwelt at considerable length on the work of the Main Drainage Committee. When the Council came into existence the river was more foul than at any time since the construction of the main drainage system nearly forty years ago. The pumping machinery at Abbey Mills and elsewhere was obsolete and dilapidated, and the low-level sewer was overcharged as far eastward as Somerset House. By compounding the engines at Abbey Mills and by repair of the pumps they have accelerated the self-cleansing flow of the main drains, the low-level sewer is not over-full, and has now always a steady flow in dry weather. The committee have cleansed the river by carrying away to sea 2,000,000 tons of sludge per annum, in six vessels which have cost about £147,000, and the effluent passing into the river after the removal of the sludge is clearer that the river water, and can be made innocuous by passing it through filters of coke breeze. The sludge vessels made over 2,000 passages last year at a total cost of about £40,000, or of £19 3s. 2d. per trip. There is no deposit on the sand in the Barrow Deep where the sludge is emptied. £150,000 a year is spent in connection with Barking and Crossness in thus dealing with the sewage. The most interesting experiments been in the filtration of sewage and in examining the atmosphere of sewers. A filter of one acre has been constructed, the material consisting of 3ft. of coke breeze covered for retaining purposes with 3in. of gravel. The quantity of effluent running through this filter is about 1,000,000 gallons daily, and the clarified result passing into the river has so improved that fish live for many weeks in it. If it were desired, the whole Metropolitan sewage could be treated in this way upon about 180 acres of land, with perfect freedom from noxious smells in the operation, and then the effluent would be much less foul than the ordinary waters of the river. The cost of making this filter, exclusive of land, has been about £2,000 for the acre. The Council lately engaged Mr. Parry Laws to make experiments in sewer air, and his investigations show most clearly that there is no resemblance whatever between micro-organisms of sewage and those of sewer air. He found that not any of the organisms which predominate in sewage existed in sewer air, and the experiments demonstrate very strongly that the possibility of the existence of the typhoid fever bacillus in the air of sewers is indefinitely remote. The chairman next dealt with the probable limit to the purity of the river. The drainage system is, he explained, so constructed that $\frac{1}{4}$in. of rain per day may possibly pass away by the sewers into the precipitation tanks at Barking and Crossness; but if $\frac{1}{8}$in. falls in a single hour upon ground already saturated, then all the main sewers begin to pour their overflow directly into the river. This overflow occurs perhaps 20 times in a year, and is not to a certain extent preventable. It is evident, therefore, that a perfect cleansing of the river is impracticable; but the question will soon arise whether the main sewers have reasonably adequate capacity for the increasing area and population. In order to make the main drainage system capable of discharging, without overflow into the river, $\frac{1}{3}$in. of rainfall in 24 hours, a further expenditure of about $2\frac{1}{4}$ millions will be needed for the construction of new main sewers from Paddington on the north side and from Balham and Streatham on the south side, and, indeed, if the capacity of the main sewers are to be made proportionate in efficiency to those of other cities, this work must be undertaken forthwith. The acreage, under the control of the Parks and Open Spaces Committee, has risen from 2,656 to 3,684, but the cost of maintenance has grown in much larger proportion from £52,751 to £100,932. The area of Royal parks within the county is 1,438 acres, and the expenditure £56,058, so that if the expenditure of the committee was upon the same proportion, it would amount to £130,000 a year, and it may be added that our open spaces are small and scattered, and therefore more costly than the Royal parks in regard to management. The Public Health and Housing Committee labour under the weight of the vast problem which connects them with the housing of the working classes of the Metropolis. The committee have had to provide housing in some cases upon sites which no private enterprise would look at, and the result has not, Sir Arthur admitted, been wholly satisfactory from the financial point of view. On a total estimated capital cost of £146,785 there is a probability of an annual charge of £669, or say $\frac{1}{2}$ per cent., falling on the rates for the next 54 years. It must not, however, be assumed that the same proportion of loss would result from every scheme. But progress in this work must be cautiously scrutinised. The Council have lately resolved that before deciding to acquire or appropriate lands for the purposes of Part III. of the Act, the Finance Committee shall report on the estimated financial effect of the scheme, including the erection of dwellings on such lands. The Stores Committee have continued the plan of limiting contracts to one year only, and, in order to afford facilities for manufacturers of special goods to submit prices, the tenders for each item in the schedules are considered separately. The Water Committee have done much to prepare the basis for the Bills recently before Parliament, and are now inquiring as to suitable gathering grounds in Wales for the future supply of London, in pursuance of a recent resolution of the Council. The Water Committee have also been much concerned with the results of the severe frost, which demonstrated the insufficient depth of many of the companies' mains and service-pipes. It is noticeable that in capitals where there is much greater severity of frost the freezing of water-mains is uncommon, because of the greater and uniform depth at which they are laid. He congratulated the Works Committee upon having overcome many of the difficulties inseparable from the commencement of an undertaking so novel and in circumstances of great emergency and exigency, and not less upon the fact that the character of the work they have executed has been acceptable and generally excellent. He should be surprised and disappointed if the excess of cost which has occurred in so many cases should be continued. In his opinion the establishment of the Works Committee was a necessity. Trade-union rate of wages, in practice obtained by the co-operation of employers and employed, is the only rate of payment which can meet the just claims of the whole body of electors, and the adoption of this rule undoubtedly led to so much difficulty with the contractors that the institution of the Works Committee was the unavoidable result. It has never been suggested that the Council should cease to deal with contractors, and, as a matter of fact, they have never ceased from such dealings. But he was sure that the existence of a Works Committee exercises a salutary influence, and in giving or withholding work from that committee, the members must not forget that they will soon have a large capital invested in shops and stores, the charge for which must be distributed throughout their operations. In conclusion, Sir Arthur referred with approval to the work thus far accomplished by the Technical Education Board; but suggested that the title ought to be changed from "board" to "committee."



COVENTRY MUNICIPAL BUILDINGS COMPETITION.

THE FIRST PREMIATED DESIGNS.

[WITH PHOTO-LITHOGRAPHIC ILLUSTRATIONS.]

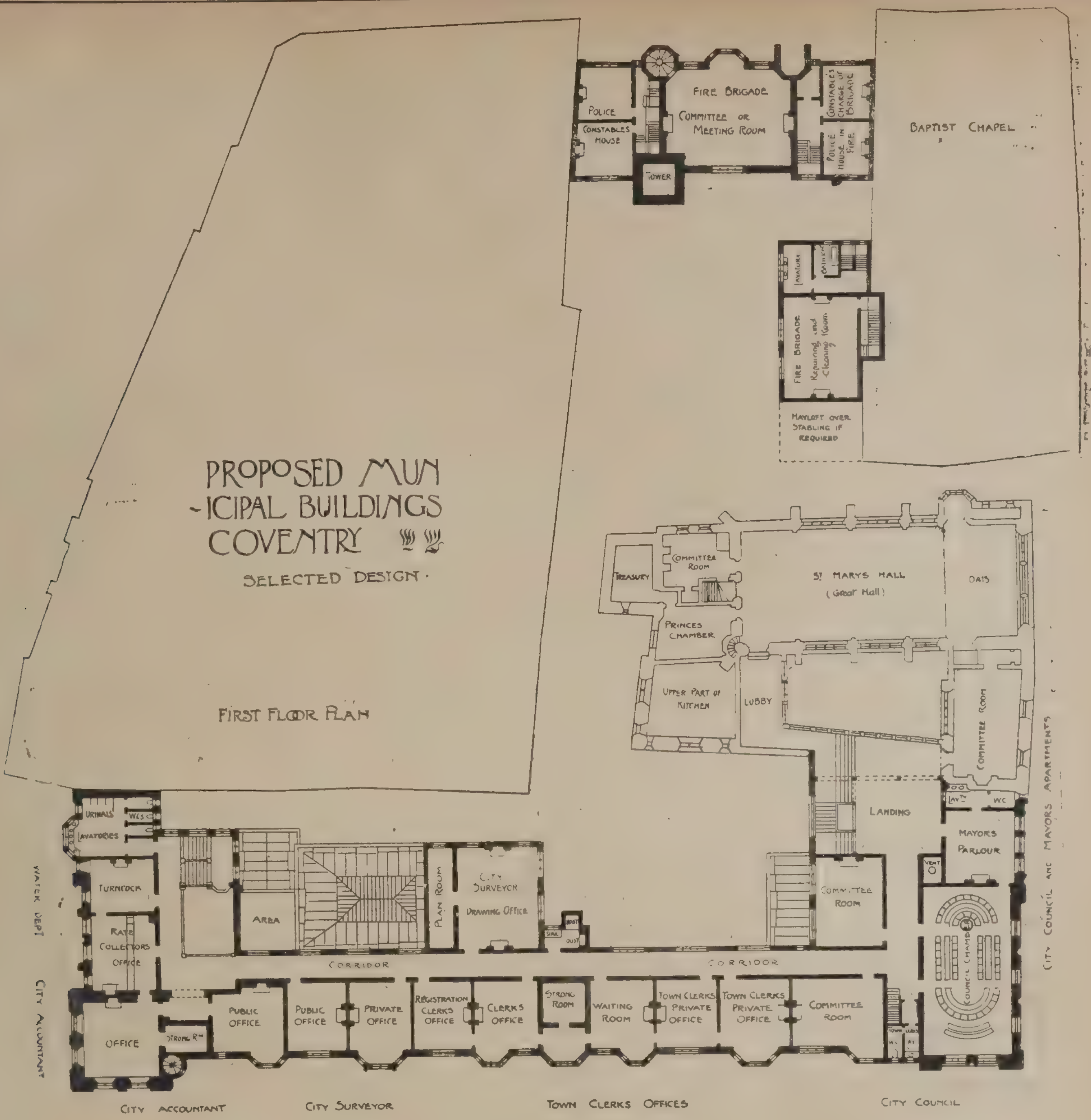
THE competition for these important buildings was recently decided by Mr. C. Barry (the assessor) in favour of the drawings submitted under motto "Leofric the Saxon," the authors being Mr. Harry Quick, of Coventry, in conjunction with Messrs. Brewill, Baily, and C. E. Mallows, of Nottingham and Bedford. The drawings published herewith sufficiently explain themselves; the leading characteristics of the scheme generally are studied simplicity of plan, economy of space on an unusually cramped site (where ancient lights are an important consideration), and adaptability of the new work in plan and elevation to the fine old hall of St. Mary, which has been incorporated with the new buildings so as to be used *en suite* with the council chamber and mayor's parlour, which are placed for that purpose on the Bailey-lane, or northern, front, facing the south side of St. Michael's Church. That this might be made the quietest portion of the site was another excellent reason which determined the position of the council chamber, and also led to the placing of the police-court to the position it occupies, at the back of St. Mary's-street front, and near to the principal entrance on the ground floor. The entrance to the council chamber is through the 15th-century groined gateway in Bailey-lane, which has been used for that purpose for ages, and which it was thought best to retain in order not to disturb old traditions. The continuity of the plan is kept, and suitable provision for the various municipal offices best provided for in the main block by placing the Fire Brigade station and drill-yard, &c., to the Hay-lane frontage, which, owing to that street being rather narrow, has been set back some feet in consequence. Externally, the type of Late Gothic (of which St. Mary's Hall is such a beautiful example) has been adopted, and an earnest attempt has been made on the Bailey-lane front and elsewhere to properly carry out the lines of the old work, so that the new shall be in artistic sympathy, not only with St. Mary's Hall itself, but with the surrounding architecture generally.

* * *

The Duchess of Devonshire laid on Monday the foundation-stone of a new infant-school in connection with St. Mary's, Ulverston.

PROFESSOR BOYD DAWKINS ON THE AGES OF MAN.

PROFESSOR BOYD DAWKINS opened, on the 17th inst., the Antiquarian Section of the Royal Archæological Institute, the members of which have been holding their annual meeting at Scarborough. He said that the study of antiquities, so long a mere *dilettante* study, had now become an exact science, and the question of the antiquity of man, so eagerly discussed in the "sixties," had now passed into the region of well-ascertained fact. The Palæogean implements associated with the remains of the extinct mammalia, such as the mammoth and the woolly rhinoceros in the caves and river deposits, proved that man found his way into Britain when our land formed part of the Continent, and when the winters were sufficiently severe to encourage the migration of reindeer and other Arctic animals, while the summers were sufficiently warm to allow of the hippopotamus wandering as far north as Kirkdale and Leeds. The relation of Palæolithic man to the glacial phase of the Plesiosaurus period was clearly shown by the distribution of his implements in Yorkshire and in the South of England. The Palæolithic implements in the caves in the districts covered more or less



by the glacial drift showed that man was living in Yorkshire in pre-Glacial times. A Palæolithic man was about 5ft. 3in. high. The skulls and bones of Palæolithic man which were beyond dispute were too fragmentary to allow of their being identified with any existing race. They were, however, sufficient to prove that when he first appeared in Northern Europe he was a man, and not a missing link. The Garden of Eden, in which he was evolved from a low ancestry, was to be looked for in some part of the world other than Europe, and up to the present time unknown. The higher antiquity of man had not as yet been established. The relation of the Neolithic to the Palæolithic age, keenly discussed during the last ten years, had not yet passed into the region of undisputed fact. For his part, he was unable to recognise a trace of continuity between them in this country, or in Europe, or in any other part of the world with which he was acquainted. To him, as a geologist, they were separated from each other by a profound change in geography, in climate, and in animal life in Western Europe. If, however, the Palæolithic and Neolithic inhabitants of the British Isles were separated by these great changes, which, from their experience, they might take to have been slowly brought about in untold ages, still more were they separated by their habits, manners, customs, mode of life, and general condition. The Palæolithic men were nomad hunters, ignorant of all arts except sewing, implement-making, and the use of fire. It was strange that, in the midst of this savage life, one section of the cavemen should have left behind figures of the animals on which they lived. The Neolithic men were not only hunters, but farmers and herdsmen. To them they owed the domestic horse, so dear to all true natives of Yorkshire. They were spinners and weavers, and miners of flint for the manufacture of implements, which they turned to use in the clearing away of the forest and the development of carpentry. They lived in fixed habitations; but in spite of this immeasurably higher culture, they were singularly devoid of the art of reproducing natural forms, which their Palæolithic predecessors carried to so high a pitch in England, France, and Switzerland. While there was no proof of the contact between the Palæolithic and Neolithic dwellers in Europe, all who believed in the descent of man from one stock must hold that in some quarter of the world the Palæolithic hunter gradually became educated into the Neolithic farmer. Professor Dawkins referred to the "Bronze Age," and said that the many skeletons which had been met with in almost every part of the British Isles proved that the use of bronze was introduced by the tall, broad-headed ancestors of the Irish Celts and the Gaels of Scotland. Dealing with the prehistoric archæology of the district of Scarborough, the speaker said it had yielded an abundant harvest to many explorers during the last ten years. The physical characters of the district were very remarkable. To the north and west lay the lofty Oolitic heather-covered moors of Cleveland, deeply cut into well-wooded ravines and valleys, leading southwards into the great alluvial plain of the Upper Derwent, which extended eastward almost as far as the line of cliffs between Scarborough and Speeton. To the south of this were the lofty and precipitous range of chalk wolds sweeping from Settrington eastward to Speeton, and gradually descending to the south-east along a line from Bridlington to Driffield and Beverley, and from Hessle to the marshes and ancient moors of Holderness. It was also divided by a central valley into two parts. It was in the higher grounds that they met with traces of man in this district, in the implements and weapons, in the ancient dwelling places and burial mounds, and last, though not least, in the series of earthworks which guarded the uplands from attacks. The axes and some other stone implements found in the surface soil of the district and in burial-mounds proved that it was inhabited in the Neolithic age. They were, however, few in number, and implied a sparse population, who interred their dead in a crouching posture. In the Bronze Age the population was very considerable, as was proved by the large number of tumuli, most of which contained stone implements known to have been used at that time from their association with bronze implements elsewhere. They burned their dead, as a rule, in that age, although the practice of interment was still carried on. Were it not for this they would have had no material for identifying the men of the Bronze Age with a living race. The Neolithic remains belonged to a small, long-head Iberic race of men—the oldest stock in Europe, to whom the living small, dark Yorkshire men and women owed not only their dark hair and eyes and long heads, but the taste for horseflesh which, as everyone knew, was one of the attributes of the dwellers in the county.

THE INTERNATIONAL HEALTH EXHIBITION, PARIS.

THE International Health Exposition, organised by the newly-formed Society of Sanitary Architects and Engineers, was opened on the 27th of last month at the Palais dés Arts Liberaux, in the Champ de Mars, and will remain open until the 15th of September next. This exhibition is enjoying an almost unexpected success; the various sections of exhibits are exceedingly well arranged, and there are a large number of very interesting novelties and apparatus pertaining to the service and practice of sanitation. A list of the sections and subdivisions of the exhibition has already been given in the BUILDING NEWS. The five chief sections consist of—sanitation of private and collective dwellings, town sanitation, sanitary science and health statistics; food, clothing, and physical exercise; industrial and professional sanitation. Before making a summary description of the exhibits, of which sketches of the most novel may be given, or entering into the matter of the congress of sanitary architects and engineers, which was held in the Exhibition buildings from the 7th to the 13th of this month, at which a number of very interesting reports were read and discussions raised, mention might be made to the society which took upon itself the duties of organising the exhibition. The idea pervading the formation of this society, in April last, was to found and to make known the professions of sanitary engineer and sanitary architect—professions up to this time unknown in France. The design of the society is to group together engineers and architects taking a special interest in sanitary matters; to discuss in common questions relative to sanitary science; to facilitate the study of sanitary science, and means of application, to young engineers and architects; to encourage the study of the best means of applying practical sanitation to towns and dwellings; to reach by means of the members workmen and foremen, and induce these latter to interest themselves in practical sanitary work; to facilitate, by means of discussion and practice, the development of inventions relating to sanitation; to provoke a healthy competition amongst manufacturers; to reward the creators of new apparatus, contractors, and skilful workmen; and, lastly, to keep the members of the society constantly informed of the work being done in foreign countries by means of communications and publications. Each member should, during the year following that of his admission, address the society on a question relative to the science or practice of sanitation, or a description of some important sanitary work lately completed. The official publication of the society is the *Genie Sanitaire.* Sir B. W. Richardson, president of the Sanitary Inspectors' Association, is a foundation member of this society, and it is hoped that, by means of constant correspondence between the Sanitary Institute and societies of England and the newly-formed French society, to do much good work in the interest of the two countries. The readers of the BUILDING NEWS will be kept well informed of the doings of their French neighbours, and of the interesting novelties and appliances relative to sanitary matters.

Just making a rapid view of some of the exhibits, before entering more into the details of the most interesting, we find a certain quantity of novelties, some put forward as perfect for doing away with all the inconveniences of the Tout à l'égout, and not a small number adapted from English invention or apparatus which has borne the test of experience in England. It is regrettable that English work is not more fully represented at the exhibition, very few of our well-known manufacturers exhibiting.

A sanitary architect, of Laffcrgue, exhibits an automatical apparatus for the evacuation of drainage and waste water. The inventor claims for his apparatus an economy in the quantity of water necessary for the proper flushing of w.c.'s. Again, ordinary river or canal water may be employed, economising greatly the expense which would be necessary if spring water was used. The apparatus is placed at the bottom of each down-pipe, the risk of freezing being thus lessened. All matter falls into this cistern, which is fed by a constant supply of water, and fitted with a siphon on the compressed-air system, allowing periodically a powerful flush, carrying away the contents of the cistern, and at the same time cleansing the near portion of the drain.

The Compound Siphon Co., of College-road, exhibits an installation of the compound siphon of Captain Nadieïn, composed of a series of single siphons of different diameters, each one connected with the other, and ultimately joining that of the largest diameter; a slight quantity only of liquid being necessary for starting the smallest siphon, putting the whole battery into immediate action. This apparatus is specially adaptable for urinals, necessitating only a small feed of cleansing water. The Chamberland filter, system Pasteur, has an interesting installation of the various forms of this filter, which appears to have an increasing success in France. This filter, in its simple form, consists of a metallic tube, inclosing a second tube of porcelain, having an outlet at its lower end. The metallic tube is fixed to the water supply cock, the pressure of the supply forces the water contained between the outer tube of metal and the inner tube of porcelain through the pores of the latter, flowing in a perfectly pure state from the lower orifice, all impurities remaining on the outer surface of the porcelain, which may be easily cleaned from time to time. The filter is also arranged in batteries of three, five, and eight tubes, that of three tubes giving an average supply of 15 gallons per 24 hours.

Another filter, system Breyer, exhibited by Blumenfeld and Co., of Vienna, attracts considerable attention, owing to its powers of filtering and sterilising large quantities of water in a very short space of time, the filter No. 1 exhibited at the Champ de Mars furnishing over 100,000 gallons of filtered and sterilised water per 24 hours. The liquid is sterilised by means of steam jets forced through the apparatus in the same direction as the flow of the filtering liquid. The cost of filtering and sterilising large quantities of water comes to about 3s. for the above quantity. Several portable filters for travellers, &c., supplying three gallons of water per minute, and weighing 15lb., are also on view.

The Society "La Force Motrice Gratuite" has an installation of apparatus for filtering and sterilising water by means of boiling at high pressure. The apparatus consists of a tubular boiler, a changing cylinder, and a filtering reservoir. The water is first boiled at a temperature of 135° Centigrade, and under pressure by means of a steam "bain-marie," and is thus sterilised by the time it has passed under this degree of heat through a series of steam bath boilers; the liquid then passes through the changing cylinder when it is cooled, giving a portion of its heat to fresh supplies of water, which pass through this cylinder on the way to the boiler, thus economising to a large extent the fuel for heating the boiler. At its exit from the cylinder the water is nearly cold, and is sterilised, having now only to pass through the series of filters forming the third portion of the apparatus. A smaller apparatus is made for domestic uses, consisting of a boiler containing about nine pints, and heated by gas or spirit, the second portion of the apparatus being a double reservoir for receiving the sterilised water and supplying fresh water to the boiler, to which is joined an apparatus for filtering. This domestic apparatus extinguishes automatically the gas furnace as soon as the water attains the temperature of 135° Centigrade, and an alarm signal gives notice of this fact, and that the boiling water is ready to be let into the changing cylinder. In the case of a second immediate supply the operation of heating is more quickly performed, and an economy of gas obtained, for the fresh supply of water is, from its contact with the outgoing flow, already heated up to 50°.

The well-known Maignen filter is also represented at the exhibition; the filtering matter through which the water passes is composed of a tissue of asbestos and carbo-calcis.

Howatson and Co. put forward their well-known system of filtration of water for drinking and industrial purposes, the filtering matter for the former purpose being silex and polarite—a porous, spongy, and absorbent mineral substance containing a large percentage of iron, its special properties being its powers of clearing water of all traces of iron or lead, at the same time adding a certain amount of oxygen to the purified liquid. The purification of water for industrial purposes is done by means of a filtering base of broken silex.

Flicoteaux and Co. have an important installation of sanitary apparatus and appliances. They are giving much advertisement to a flushing cistern called the "anti-fuites," or safety against leakage. This apparatus consists of the ordinary floater attached to the supply-cock and the siphon providing the flush. The special portion consists of a dry compartment containing a second floater attached to the supply-cock. In the case of leakage the water in the outer cistern rising above the level of the dry compartment fills this latter, and thus the floater closes the supply before the water has time to rise high enough to give flow to the siphon. No further water supply for flushing can now be obtained until the leakage, from whatever cause, has been repaired. They also exhibit a flushing cistern for w.c.'s containing neither valve nor floater. The siphon flush is produced by pressure on a push-tap placed on a level with the seat, and connected with the cistern by means of a ½in. pipe leading from the supply to the cistern. Pressure on the push allows a quantity of water sufficient to start the siphon to pass from the supply to the siphon.

Bogier and Mothes exhibit a large installation of w.c. apparatus and cisterns, the latest models of which will be interesting to deal with in detail later on. The "Compagnie Anglaise" exhibits all the latest improvements in apparatus and appliances.

Emile Merty, of Bale, exhibits an interesting hydraulic ventilator for private and public buildings. Water under pressure is employed for working this ventilator. With a pressure of five atmospheres a supply of 1,800c.ft. of fresh air per minute may be obtained. The revolving ventilating fan is worked somewhat on the principle of the water-wheel. The jet of water necessary to turn the fan-wheel rapidly is of the diameter of a darning-needle; the supply of water needed with a pressure of five atmospheres being about thirty-five gallons per hour, the waste water may also be re-utilised. The ventilator is very light and compact, and may be fixed in the window or door-frame, in the ceiling or wall, and the inventor claiming that there is no danger of leakage of water, the supply tap may be placed anywhere within reach of the hand.

A warmed w.c. seat, exhibited by Barbas and Balas, is a novelty here. A wide groove made in under side of the seat contains metal wires offering a great resistance to an electric current obtained from a lighting supply, giving to the upper surface of the seat a moderate warmth, which in no case can exceed 30° C. This system can be applied to all existing seats of whatever material.

The Syndicate of Plumbers of the Seine department exhibits the plumbing work done by the apprentices and pupils of the Plumbers' School at Paris. This syndicate has organised an interesting course of lectures and practical classes for sanitary plumbing work, and does a quantity of good work by this means. A. C. Walters, R.P.C., has a number of well-executed samples of plumbing work done at the Shoreditch Municipal Schools.

There are a large number of exhibits of work in iron trellis and cement for drain-pipes of large diameter, walls, partitions, vaults, and floors, several of which systems are earnestly advocated and employed by the well-known architect, M. de Baudot, partisan of the rational system of construction with materials produced by the present age, and fit for the wants of the present time.

Coignet and Co., the well-known inventors and manufacturers of concrete work, constructors of the imitation stone base of the Eiffel Tower, and makers of the concrete stonework for the monumental fountain, balustrading, stairways, &c., for the Exposition of 1889, still existing without any appreciable signs of wear or deterioration, have an interesting installation of samples of such work, and a number of panels of their very successful and artistic Venetian mosaic work.

Boulenger and Co., of Choisy-le-Boi, exhibit specimens of their beautiful artistic ceramic ware and faïence for architectural purposes, such as monumental chimneypieces of faïence, wall-linings of ceramic ware, and several wonderfully-executed and deliciously-coloured specimens of relief panels, vases, pilasters, balusters, and consoles, manufactured in one piece, and suitable for all kinds of decoration in architectural work.

The St. Gobain Glass Co., and the contractors for Paris, Piet and Co. and Henri Mcuret, have very important and complete installations of natural and decorated "Opaline," manufactured by the St. Gobain Co. This interesting material, brought out about two years ago in France, and which has been patented in England and is being introduced into that country, is one of the successes of the exhibition, and attracts much attention from architects and sanitary engineers, owing to its adaptability for a very large number of uses, such as wall-linings for w.c.'s and lavatories, laundries, hospitals, and laboratories; also backs and partitions for urinals and w.c.'s, wall-covering for subways, counters and slabs for butchers' and other shops, lavatory table-tops—in fact, for all uses where marble or other slabs are now employed, and where absolute cleanliness is desired. Of white opal tone, with a hard surface, either with a natural grain or polished, in large slabs manufactured up to a hundred super. feet and more, thus avoiding the numerous joints of tile work, it is said to be the coming material for sanitary purposes. Several very artistic panels of decorated and enamelled opaline are also exhibited, as well as samples of bricks and moulded work of the same material.

Henry Mouret has an interesting exhibition of hollow porcelain bricks and moulded work, enamelled on one or more faces. These bricks have been employed for lining the subways of the first portion of the Seaux railway. They present an exceedingly hard polished surface. The price of £40 per thousand for the bricks enamelled on the narrow side, and £48 for those enamelled on the flat side, appears at first sight rather high.

Elastic emailline is a new anti-salpetrous hydrofuge, invented by A. Bayard. This material is employed for coating the damp walls of w.c.'s, lavatories, laboratories, &c., and may be applied against wood, stone, or cement by means of the brush; it should only be employed for interior surfaces.

A very neat installation of the various sample designs of zinco-tectum, a lately-invented wall-lining of enamel on zinc in very thin sheets of large size, enjoys also considerable success. This material, manufactured by Coubé and Co., and now introduced into England, is much employed for covering the walls of w.c.'s, lavatories, toilet rooms, and all places where walls are damp, or where neatness of effect and great cleanliness are desired. The sheets of zinc being extremely thin are very easily applied to the wall or other surfaces, and being of large dimensions, joints, which for wall-coverings should be avoided as much as possible, are few and far between, and are, owing to the slight thickness of the material, scarcely visible.

The Vallieres alabaster quarries make a strong advertisement of an alum albaster plaster, called "alabastrine," concerning which a paper was read at the Congress. This material, invented in England by Keene nearly fifty years ago, was first patented in France by an Englishman shortly after. It is now largely employed in France for a variety of purposes, coating of walls, stucco-work, imitation stone, and such like. Its price at the works ranges from 3s. 6d. to 8s. the cwt., depending upon the colour.

The Congress of Sanitary Engineers and Architects was held from July 7th to 13th last. On the first day a visit was made to the new works for purifying drainage matter, and the lands destined for spreading purposes at Clichy and Acheres. A visit was also made to the aqueduct of Acheres, inaugurated on the same day. The Congress was opened on the following day (Monday) by the Minister of the Interior. In the morning a report was read by M. Petsche, engineer, on the treatment and utilisation of house refuse; a second report being made by M. George, architect, on the employment of siphoid, stop-valves in the interior drainage of dwellings. In the afternoon communications were made concerning the system of pneumatic drainage at Levallois, by M. Chardon, engineer; the rational installation of fitters in private and collective dwellings, by M. Georgeon, engineer; and a respiratory mask against dust, by Dr. Detourbe. A visit was made to the disinfection station of the Rue des Recollets.

On Tuesday, papers were read, first, by M. de Baudot, architect, on the planning of dwellings and their interior arrangements; the second by M. Morin-Goustiaux, architect, on the necessity of an efficient control over the sanitary inspection of dwellings. In the afternoon a visit was made to the works of the Société de Salubrité, at Levallois-Perret. On Wednesday, a report was made by M. Philippe, engineer, on "Public Baths," M. Jourdain, town engineer, reading a paper on the rules and regulations of public roads and streets. In the afternoon, M. de Baudot conducted the members of the Congress to the Sevigné school for girls, a building constructed by this architect after his much-studied ideas of rational design and construction. An interesting visit was afterwards made to the Paris drains and catacombs, the day's work ending up with a banquet on the first platform of the Eiffel Tower. A visit was made on Thursday to the slaughter-houses of the Villette, where an inspection was made of the various modes of killing. In the afternoon, communications were made, by M. d'Anthony, engineer, on the system of heating schools; by M. Pignant, engineer, on the necessity of a sanitation law in France; by M. Bougarel, on the system of purifying drains; house refuse, by M. Bonvellain, engineer; the rearrangement and utilisation of drainage work existing in towns not yet properly drained, by M. Montricher, engineer; and three examples of the utilisation of waste water outside Paris, by M. Lacau, architect. On Friday, M. Cacheux, engineer, read reports on the evacuation of waste water in small towns and villages; M. Ch. Gautier, architect, on the rational system of heating and ventilation of dwellings; also several minor communications in the afternoon. The proceedings terminated on Saturday by papers on the interior and exterior sanitation of cheap dwellings, by M. Charles Lucas, architect; the organisation of a professional teaching in sanitary matters, by M. Benouville, architect; and several minor discussions in the afternoon.

Summaries of the most interesting reports will be given, with the discussions or important communications made by the members of the Congress.

Paris, July 22. ARTHUR VYE PARMINTER.

SALISBURY CATHEDRAL.

SIR ARTHUR BLOMFIELD has reported to the Dean and Chapter that unless repairs of two turrets of the central tower are immediately commenced the tower and spire of Salisbury Cathedral will be most seriously endangered. The work is strictly a work of repair, not of restoration, and no feature of the tower and spire will be injured, under the careful superintendence of Sir Arthur Blomfield, and Mr. Thompson, the contractor, who has so skilfully succeeded in similar works elsewhere.

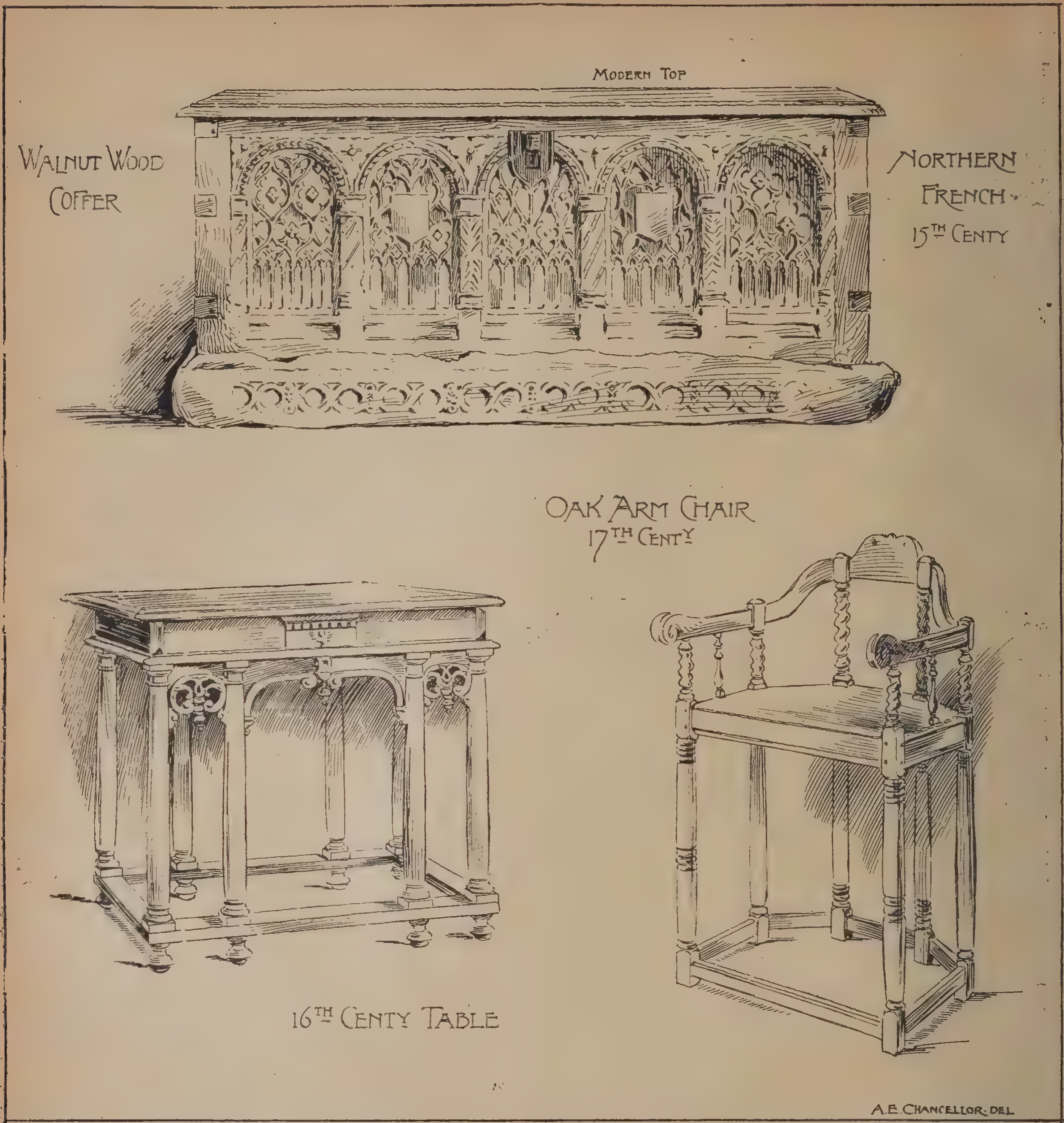
To complete what Sir Arthur Blomfield suggests will involve an expenditure of at least £5,000. From the funds intrusted to their care for the fabric of the cathedral, the Dean and Chapter are only able to promise £500 in two years, and the Bishop, the Dean, and Chapter, and members of the Greater Chapter have already undertaken to give £800 in two years. The Dean therefore hopes that he may be assisted by the contributions of those who are anxious to preserve so noble and interesting a memorial as the tower and spire of Salisbury. The following is Sir Arthur Blomfield's report:—

"During the progress of certain minor repairs in the central tower it became evident that something was seriously amiss with the upper part of the two western stair turrets which required investigation. A scaffold was accordingly erected round the north-west turret, from which a close and careful examination has been made, with the result that its state proves to be even worse than was feared. A good deal of the external stonework is split and fractured and is in so loose and unsafe a condition that no assurance can be given of security from some serious disaster which might at any time occur. Certain cracks which are observable internally, especially one in the base of the spire at this angle, though they are certainly not altogether new, show indications of a slight recent movement which would inevitably become dangerously aggravated by any considerable fall of portions of the external stonework. It is difficult to determine with certainty the precise cause of the present state of things in these turrets, but various adverse agencies have, no doubt, been gradually at work for many years past. Of these the principal are, first, the numerous iron bands, rods, and ties which have been introduced from time to time, many of them in the most injudicious manner. An attempt has been made to protect some of them with lead from wet and consequent corrosion, but this has in many places altogether failed and made matters worse rather than better. The next agents are wet and frost, which have gradually done much damage; and the third is to be found in the great thrust of the spire, which is continually active. Nothing can be done to lessen or modify this last element of danger, but it is imperative to render the angle turrets, which receive so much of it, as sound and strong as they can be made. For this purpose any attempt at small repairs or patching would not only be useless, but positively dangerous. The work that is called for by the necessities of the case is emphatically not one of restoration, but of repair, which is absolutely essential for safety, and which to be effectual must be complete and thorough. The greatest care, caution, and skill will be necessary in dealing with the damaged portions of both these turrets. I should recommend the completion of the north-west turret first, to be followed immediately by the repair of the corresponding one on the south side. It is impossible to give any accurate estimate of the cost of the work necessary to put these turrets in a sound and satisfactory state, but it will probably amount to about £5,000."

THE ENGINEERS' AND ARCHITECTS' SANITARY CONGRESS IN PARIS.

THE newly-constituted Society of Sanitary Engineers and Architects of France have been holding a congress at the International Exhibition of Hygiene in Paris. Though not strictly speaking an international congress, some Dutch, Belgian, and British sanitarians attended. The latter, to the number of 16, included 10 sanitary inspectors from different London districts.

The idea dominating the organisation of the congress seems to have been, says a *Times* correspondent, that hygienists had terminated their mission, had solved the problems affecting public health, and that the time had now come for practical men to apply the theories evolved by the hygienists. The speeches of the congress, nevertheless, showed that various most important sanitary problems were far from settled, and that the practical men were not as yet forthcoming with practical measures. Thus on the disposal of household refuse no emphatic opinion was pronounced, some speakers preferring destruction by fire, others utilisation for agricultural purposes; the only real agreement being that railway companies should reduce their charges for transferring the contents of dustbins to rural districts. In respect to domestic drains, no agreement could be arrived at as to whether there should be an intercepting trap between the house and the sewer, or whether every soil-pipe should be utilised as a sewer ventilator. On the other hand, papers were read before the congress proposing all manner of contrivances to economise the use of water in drains. A good deal was said about the control of the plumbing and sanitary work in dwellings, a duty generally left to the municipalities; but little was said as to the incapacity of the many municipalities who, in France at least, know little or nothing of sanitary matters. It was, however, agreed that the technical schools of sanitary plumbing established in Paris should be encouraged, and a diploma of capacity should be given to the students after examinations following on three years' training. It was also agreed that a chair of hygiene should be established in the schools of architecture. Such teaching is, however, already given in some of the schools of architecture. There was a very lengthy discussion as to the rules that should govern private thoroughfares, and it was finally decided that such thoroughfares, if frequented by the public or inhabited by several individuals, should be subjected to the same regulations as public roads. But the congress could not come to any understanding as to height of houses in proportion to the width of roads. To the proposal that the window of every inhabited room should receive direct rays of sunlight, M. Bechmann, chief engineer of the town of Paris, replied that it was not possible to pull down the whole capital of France so as to conform with the decisions of the congress. There was a very interesting debate on the heating and warming of dwellings, when M. Emile Trélat's well-known theories were very generally approved. Stoves were very energetically condemned and steam-pipes widely commended. The principle of open windows, of cold air but warm walls, was unanimously



EXAMPLES OF EARLY FRENCH · FURNITURE · FROM THE "PAYRE" COLLECTION · AT · S·K·M·

approved, but the difficulty of application equally recognised. M. Emile Trélat thought that even unhealthy portable stoves might be employed to superheat a room, on condition that the stove was removed and the windows thrown wide open before anyone entered the room. Resolutions were also passed in favour of giving douches in all schools, of building cheap working - class dwellings, and other similar measures. The members of the congress visited the pneumatic drainage works of the Société de Salubrité at Levallois-Perret, and discussed at some length the Liernur system of drainage. The congress also visited the model disinfecting station in the Rue de Récollets, the Paris sewers, the slaughter-house and cattle-market at La Villette, and were entertained at a banquet on the Eiffel Tower. Altogether upwards of 300 members joined the congress, for the most part architects and engineers.

* * *

Six memorial-stones have been laid of an enlargement of the Antley Wesleyan chapel and school premises, Accrington, which is to cost about £3,000.

EARLY FRENCH FURNITURE FROM THE PAYRE COLLECTION.

In last week's "B. N." we gave a notice of this remarkable collection now on exhibition at South Kensington. The Coffer, elaborately carved in walnut-wood, is a fine specimen of the 15th century, and though considerably decayed about the plinth, the rich Gothic tracery is in a good state of preservation. It comes from the North of France, is 5ft. 6in. long, and 2ft. 6in. high; the top is the only modern portion. The framework has been bound with iron angle-pieces to keep it together. The small Table, also in walnut, with its eight circular and slightly tapering columns supporting the top, is 16th-century work. It is 3ft. 1½in. long, 1ft. 7½in. wide, and 2ft. 9in. high, and contains one long drawer. The oak arm-chair, of quaint and unusual design, is worthy of a place in any museum. The arms and back are remarkably low, giving the seat an appearance of greater height, although it is only 2ft. from the ground. Two of the small balusters from the raking pieces in the back are broken away. The chair is 2ft. wide, and the depth of seat is 1ft. 2in.

OBITUARY.

The sudden death is announced, at the advanced age of four-score years, of Mr. **Samuel Hemming**, formerly and for many years in practice as an architect—first in Parliament-street, Westminster, and subsequently in Temple-row, Birmingham. Mr. Hemming, who had retired from the profession, died on Thursday, the 18th inst., at 81, Stockwell-road, Brixton.

* * *

At the half-yearly meeting of the Liverpool Tramways Company, on Saturday, it was reported that the directors had just let the contracts, amounting to £7,694, for constructing an extension of the tramways from the Bootle boundary to Litherland bridge, being a length of about 1,303 yards; and from Everton to Walton-road, thus connecting Breck-road, Everton, with the North Docks, a length of 1,236 yards; and also 290 yards length of tramway line in Oakfield-road, connecting the company's Belmont-road lines with those of the city. The total length of these extensions measures about 1 mile 1,609 yards, the contract price being only a little over £4,500 a mile.

CONTENTS.

The Style for a New Cathedral 103
Architectural Landscape 104
Defects of Modern House Arrangements 105
Our Homes 105
Exhibition of National Competition Drawings, Kensington 108
A Year's Work of the London County Council 109
Coventry Municipal Buildings Competition 110
Professor Boyd Dawkins on the Ages of Man... ... 110
The International Health Exhibition, Paris 112
Salisbury Cathedral 113
The Engineers' and Architects' Sanitary Congress in Paris 113
Early French Furniture from the Payre Collection ... 114
Obituary 114
The Building News Directory ... ... IX.
Our Illustrations 115
Architectural and Archæological Societies 115
Building Intelligence 134
Competitions 134
Classic Details and their Application 135
Designing of Steel Bridges, Theoretical and Practical. —XX. 135
Hot-Water Heating in a Chicago Apartment-House 136
Correspondence... 138
Intercommunication 138
Legal 139
Legal Intelligence 139
Our Office Table 140
Meetings for the Ensuing Week 141
Water Supply and Sanitary Matters 141
Trade News 141
Tenders 143

ILLUSTRATIONS.

NEW MUNICIPAL BUILDINGS, COVENTRY.—NEW BANK AT HALIFAX.—R.I.B.A. SILVER MEDAL DRAWINGS OF LLANDAFF CATHEDRAL.—"OUR HOMES," BY R. BARRY PARKER.

Our Illustrations.

COVENTRY MUNICIPAL BUILDINGS COMPETITION.

(For description and sketch plans of first premiated design see pp. 110 and 111.)

NEW BANK, HALIFAX: SELECTED DESIGN.

The new banking premises about to be commenced for the Halifax and Huddersfield Union Banking Company is an outcome of an open competition in which prizes of £100 and £50 respectively were offered. Forty-three sets of designs were sent in, and Messrs. Horsfall and Williams, of Halifax, were awarded the first prize of £100, and have been intrusted with the carrying out of the work; Mr. Mitchell Withers, of Sheffield, winning the second premium of £50. The architects' detailed estimate for the building was £12,000, and the contracts have been let for £20 within this figure. The whole of the three principal elevations will be of cleansed ashlar, from quarries in the neighbourhood; the four circular columns supporting the front entrance pediment being of polished red granite. The entrance vestibules will be finished in Doulton ware, and the pavements of all vestibules, corridors, and public portion of large banking hall will be of mosaic, the remaining being of oak blocking. It is intended that the premises be used solely for a bank, and they will therefore be of two stories only. The ground floor is set apart for the large central banking-hall, which is surrounded by manager's room, having three waiting-rooms adjoining, and sub-manager's room overlooking the administrative, directors' room and offices, accountant's office and book safe, bullion and plate safe, calling-over room, clerks' and keeper's entrance and offices, and an additional lavatory being provided for the public. The first-floor plan, surrounding or flanking the banking-hall on three sides is set apart for book-stores, manager's private rooms, and the bank-keeper's residence. The large hall will be lighted by a large dome-light of coloured glass, and the walls will be pilastered, panelled, and decorated with fibrous plaster, and the fitting will be of wainscot oak. The site of bank is in the most commanding position in the town, the style of architecture adopted being Classic, and the drawing which we reproduce herewith is hung in the present Royal Academy Exhibition.

LLANDAFF CATHEDRAL WEST FRONT: R.I.B.A. MEDAL DRAWINGS.

We have already, in the Building News for the 12th inst., published the plan and several drawings made by Mr. J. H. James of this great Welsh cathedral. We then gave a short account of the history of the building. To-day, from the same series of drawings, for which a Medal of Merit was awarded by the Royal Institute of British Architects, we print a large scale detail of the west front as measured and drawn on the spot. The sections of mouldings freely figured, with full dimensions to every part, will be appreciated by our practical readers, as they must be by everyone who cares for the study of our national architecture of the Middle Ages.

"OUR HOMES."

(For further sketches and descriptive article see pp. 105-8.)

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Northern Architectural Association.—The annual excursion of this association was held on Saturday last at Chesters, the residence of Mr. N. G. Clayton. The following twenty-one gentlemen from Newcastle, Sunderland, South Shields, &c., were present:—Mr. F. W. Rich (vice-president), Messrs. J. H. Morton, J. T. Cackett, A. B. Plummer, E. Shewbrooks, W. Glover, F. Caws, H. Grieves, H. C. Charlewood, G. T. Brown, W. Hope, H. Gibson, C. S. Errington, H. Cayley, H. Oswald, R. Morton, E. J. Watson, M. Martinson, R. Sisson, and R. Rich. Mr. Robert Blair, F.S.A., was also present with the party during the day, and conducted the members over the remains of the Roman station of Cilurnum, and explained the plan to the members of the association. Mr. Rich conducted the party over the new buildings, and explained that Chesters has been in possession of the Clayton family for about 90 years. It was originally built by the Erringtons. Some additions were made to it, chiefly in a portico on the north side in Mr. Dobson's time. The present owner, Mr. N. G. Clayton, has had extensive alterations made. The old mansion house has been gutted and nearly rebuilt, and forms a very small portion of the mansion of to-day. This is built of stone throughout from the neighbouring quarries, is lighted by electric light, generated by Mr. Clayton's own installation, and is supplied with water from a never-failing spring about three miles away. Chesters is a great storehouse for Roman antiquities, standing as it does on one of the Roman stations, and a great number of objects of antiquity are cared for. Before the present additions, these were partially stored in one of the rooms of the house, partly in the portico, and other places. Mr. Clayton, however, has now built a museum near the entrance lodge, in which to store all the objects of antiquity. New stables have been built a short distance from the house with all the modern improvements. A new carriage drive is also being made, with entrance lodge and gates. The contractors for the work have been Mr. Walter Scott, of Newcastle; Messrs. Middlemiss Bros. for builders and joiners' work; Mr. Civil, of Hexham, for part joiners' work; Messrs. Watson and Sons, Newcastle, for plumbers' work and heating; Mr. Smith, of Hexham, for part plumbers' work; Mr. Baty, of North Tyne, and Mr. Charlton, of Stamfordham, for tiling and slating; Messrs. Wilkinson and Co., for plasterers' work; Mr. Ellis, of Hexham, for painting and glazing; and Messrs. Musgrave and Co., for stable fittings. The mansion has been carried out from the designs of Mr. Norman Shaw, of London, and the rest of the works in museum, entrance lodge, gates, stables, houses for coachman, gardener, &c., from designs by Mr. Frank W. Rich, of Newcastle-on-Tyne. After dining together at the George Inn at Chollerford, the party returned to Newcastle by the 8.25 p.m. train.

Somerset Archæological Society. — The forty-seventh annual meeting of the Somerset Archæological Society is being held in Bath this week, and has extended over three days. The proceedings opened on Tuesday, when Mr. H. D. Skrine, this year's president, took the chair at the annual meeting at the Royal Literary and Scientific Institution, which has been chosen as the headquarters of the association during the meeting. Mr. F. T. Elworthy read the report of the council, which stated that the society numbered 569 members, though the balance in hand had been reduced to 17s. 2d., against £49 4s. 2d. the previous year.—Sympathetic references were made to the deaths of Sir Jerom Murch (who was president of the meeting held in Bath nineteen years ago), Mr. Moysey, and Colonel Ewing. Nineteen new members were elected, and Mr. E. B. C. Trevellan (retiring president) and the Bishop of Bath and Wells were added to the list of vice-presidents. The president's address, which was of considerable archæological interest, dealt with the occupation of Hampton and Claverton Downs just outside Bath by the Belgic conquerors of the south of England.—After the annual meeting the Mayor entertained the society to luncheon at the Guildhall, and the afternoon programme included an inspection of the Roman remains and recent discoveries, as well as visits to the Abbey and Museum.—In the evening a meeting was held at the Literary Institution for papers and discussion. The Dean of Wells (Dr. Jex Blake) presided. Rev. Canon Church read some interesting notes which he had made on the cartulary of the Priory of SS. Peter and Paul, Bath. Rev. T. S. Holmes gave a paper written by Bishop Hobhouse on a map of the forest of Mendip; and the Rev. F. W. Weaver read some of the late Sir John Maclean's notes on the Clyveden family of Somerset. An excursion was made on Wednesday to Great Chalfield church and manor-house, Bradford-on-Avon parish church, and the Saxon church at Bradford; the Bridge Chapel, Kingston House, and the 14th-Century Barn having been viewed, Westwood church and manor-house, Hinton Abbey, Charterhouse Hinton, were also seen. Yesterday (Thursday) the first place visited was Chapel Farm, Lansdown, viewing the site of the battle of Lansdown, the camps, and the monument of Sir Bevill Grenville, thence to Cold Ashton church and manor house, and on to Marshfield church. The party then proceeded by Bannerdown and Batheaston, to Claverton Manor, and the camps in the neighbourhood.

CHIPS.

A new organ has recently been built by Messrs. Abbott and Smith, of Leeds, for the Church of St. Lawrence, Adwick-le-Street, near Doncaster, at a cost of £310. The dedication took place last week.

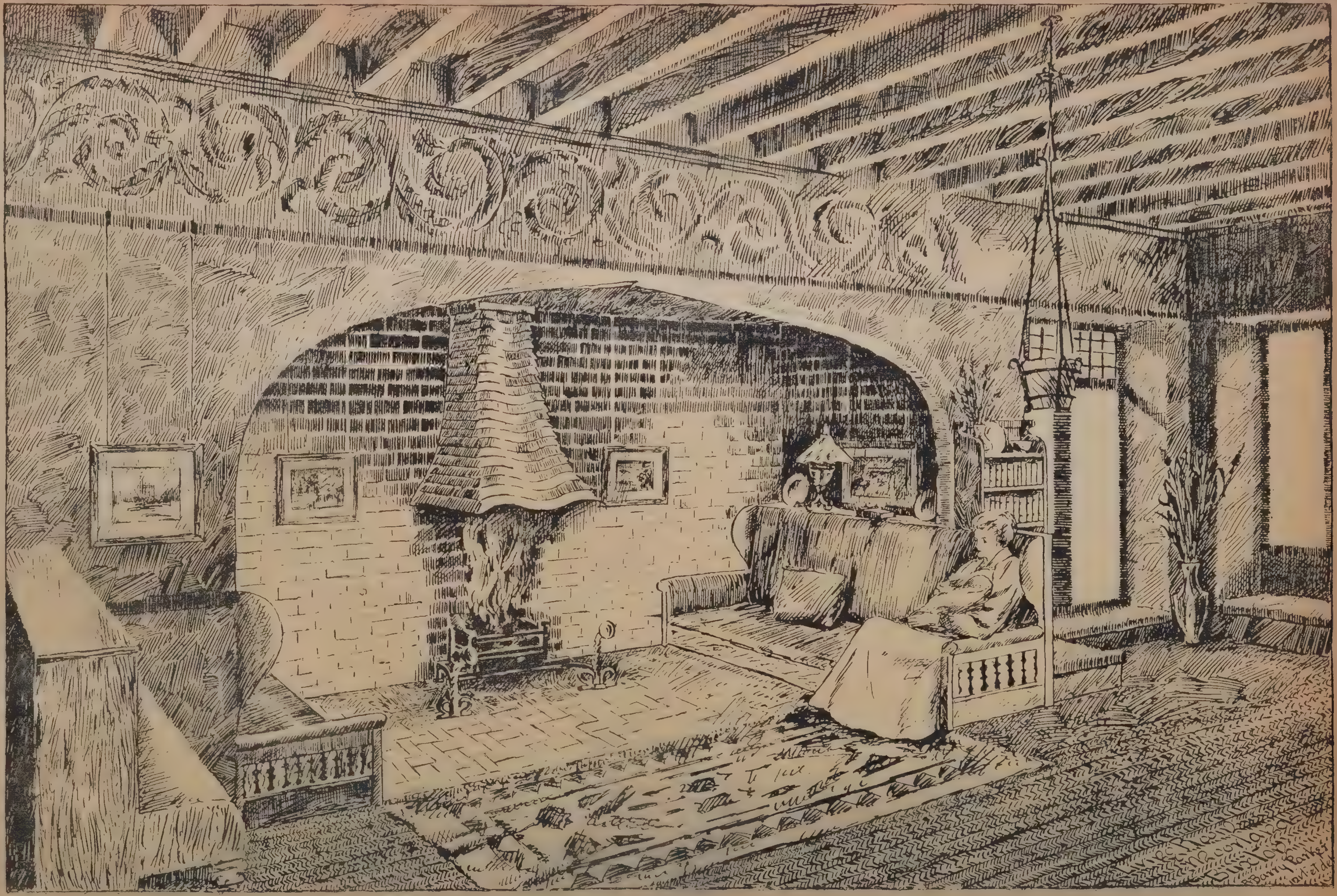
The Duchess of Albany opened at Leatherhead, last week, a three-days' bazaar in aid of the funds for restoring the tower of the parish church. The work of restoration is being carried out under the supervision of Sir Arthur Blomfield, and is estimated to cost nearly £2,000.

The Improvement Committee of the City Council of Birmingham finally considered, on Tuesday, the applications for the post of secretary and manager of the department, rendered vacant by the resignation of Mr. A. H. Davis. Originally there were 222 applicants. Of this number the committee last week selected four, and of this four they yesterday selected Mr. Peter Addie, of Fairhead, near Lytham, for the office. Mr. Addie is thirty-five years of age, has had large experience of the management of property, and for five years was steward to the Swansea Corporation.

Memorial-stones were laid, on Tuesday, in connection with the new district council chamber and public offices at Coseley. The building will consist of two stories. The old local board room, on the ground floor, will be converted into offices for the surveyor, sanitary inspector, and rate-collector, with hall and corridor; and the floor above, which will be an entirely new structure, will comprise a council chamber and an office for the clerk to the council. The work is being executed by Mr. T. Jones, of Roseville, to plans prepared by Mr. C. W. Shackleton (surveyor to the council), and will cost £450.

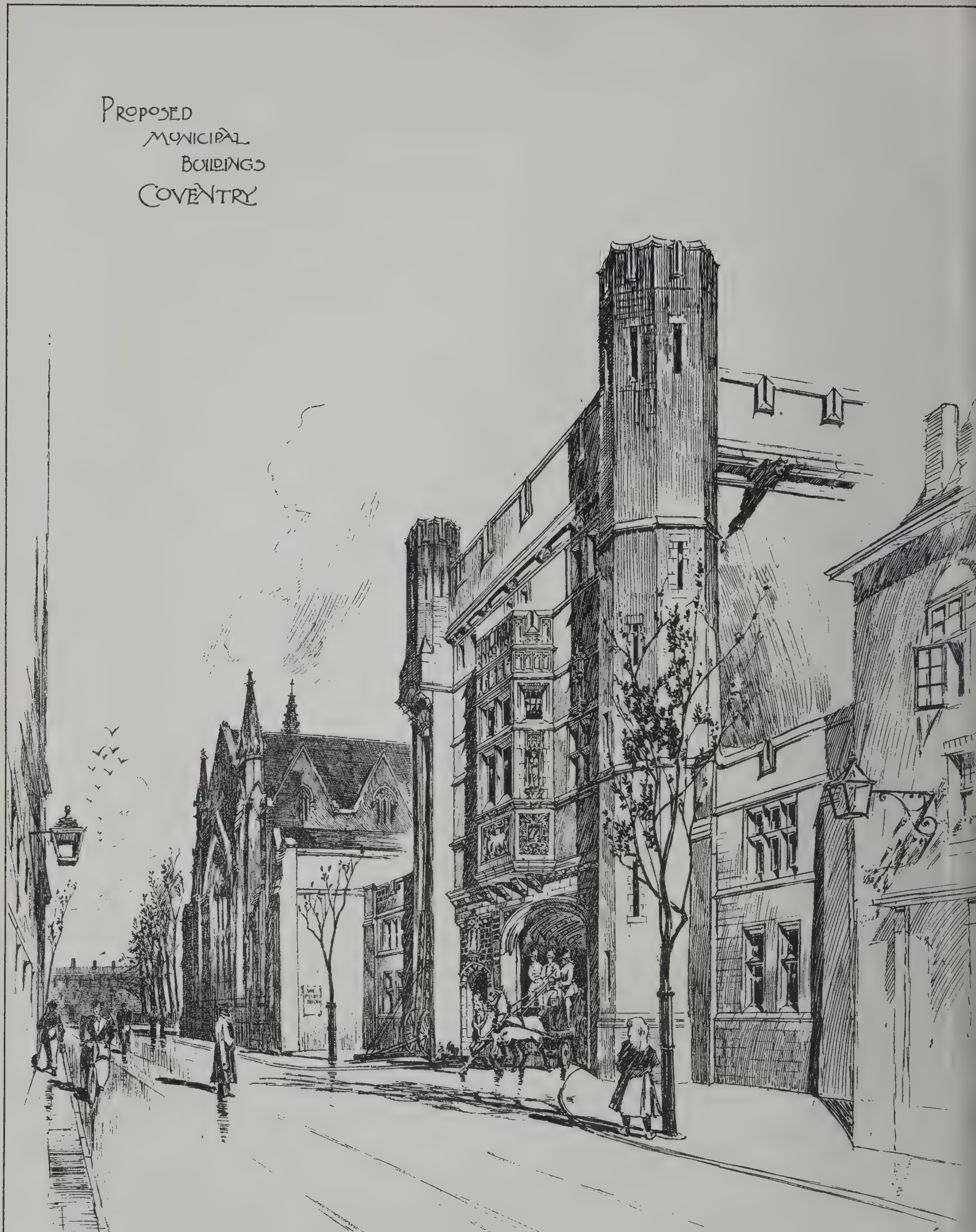
The half-yearly report of the City and South London Electric Railway states that in accordance with the resolution passed by the shareholders, plans have been prepared for the extension from King William-street, City, to Moorgate-street, and negotiations have been opened for acquiring some of the property involved. The line will diverge from the existing system at the Borough High-street, and proceed under the Thames by entirely new tunnels, a little eastward of the existing ones under the river. Preliminary borings have also been made in preparation for the authorised southward extension of the system from the present terminus at Stockwell to Clapham Common.

A service of thanksgiving has been held at Toppesfield Church, near Halstead, Essex, to celebrate the completion of some important repairs and improvements to the fabric of the building. The works carried out comprise the renewal of the whole of the windows in the nave in stone, and reglazing of them; a new east window in the chancel, of stone, the one removed having been constructed of wood. The original stone tracery being completely destroyed, it was found necessary to erect an entirely new window. The gallery in the south aisle has been removed, and the seating accommodation has been rearranged in the aisle. The old stone porch is being restored, but is not yet quite finished.


Barry Parker inv. et del.

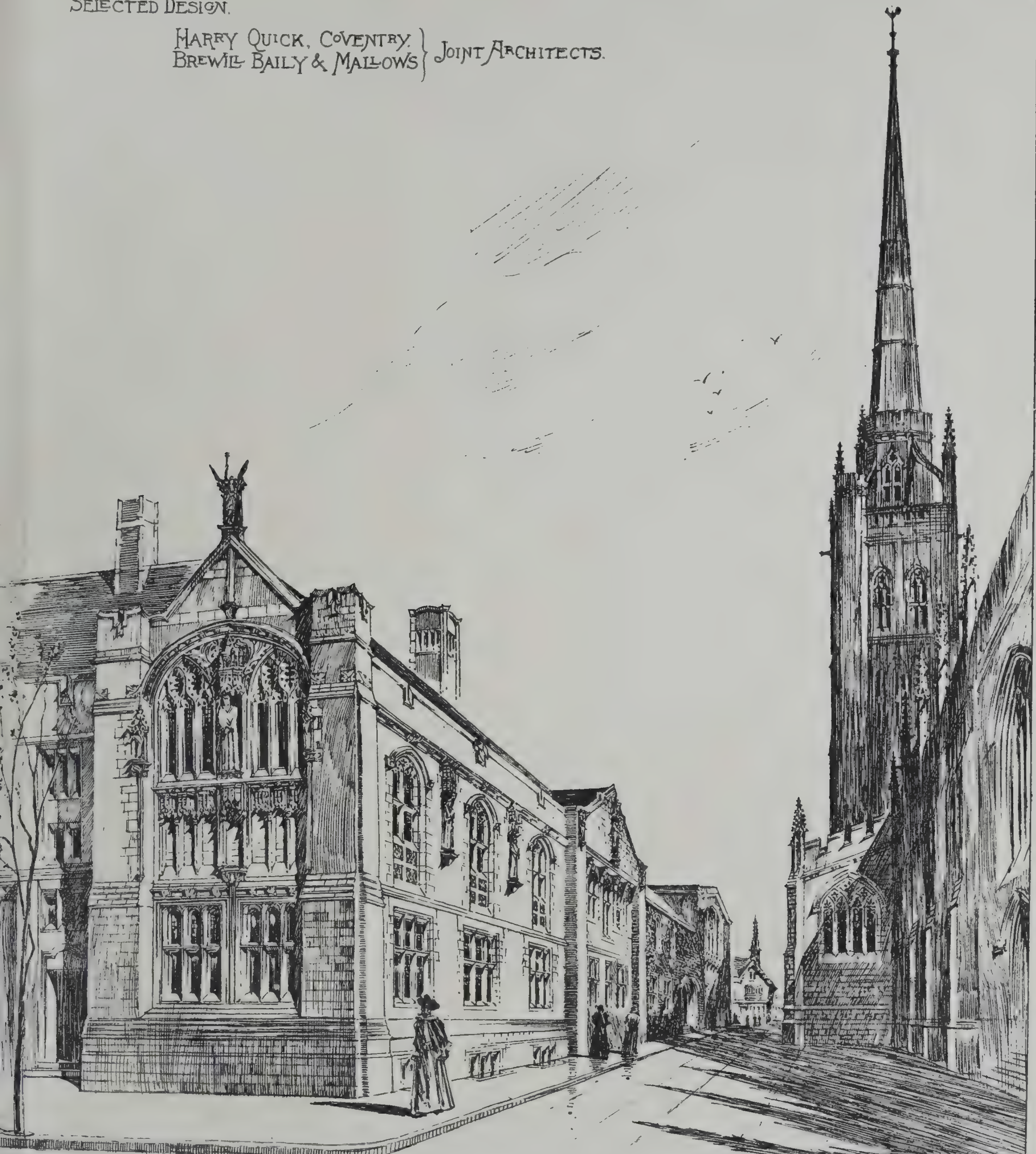
"OUR HOMES," by R. Barry Parker.

THE LIVING ROOM AT "MOORLANDS," BUXTON, THE RESIDENCE OF R. PARKER, ESQ., THE WRITER'S FATHER.


PROPOSED
MUNICIPAL
BUILDINGS
COVENTRY
VIEW OF FIRE BRIGADE
& POLICE ENTRANCE
IN HAY LANE
C·E·MALLOWS· DEL.

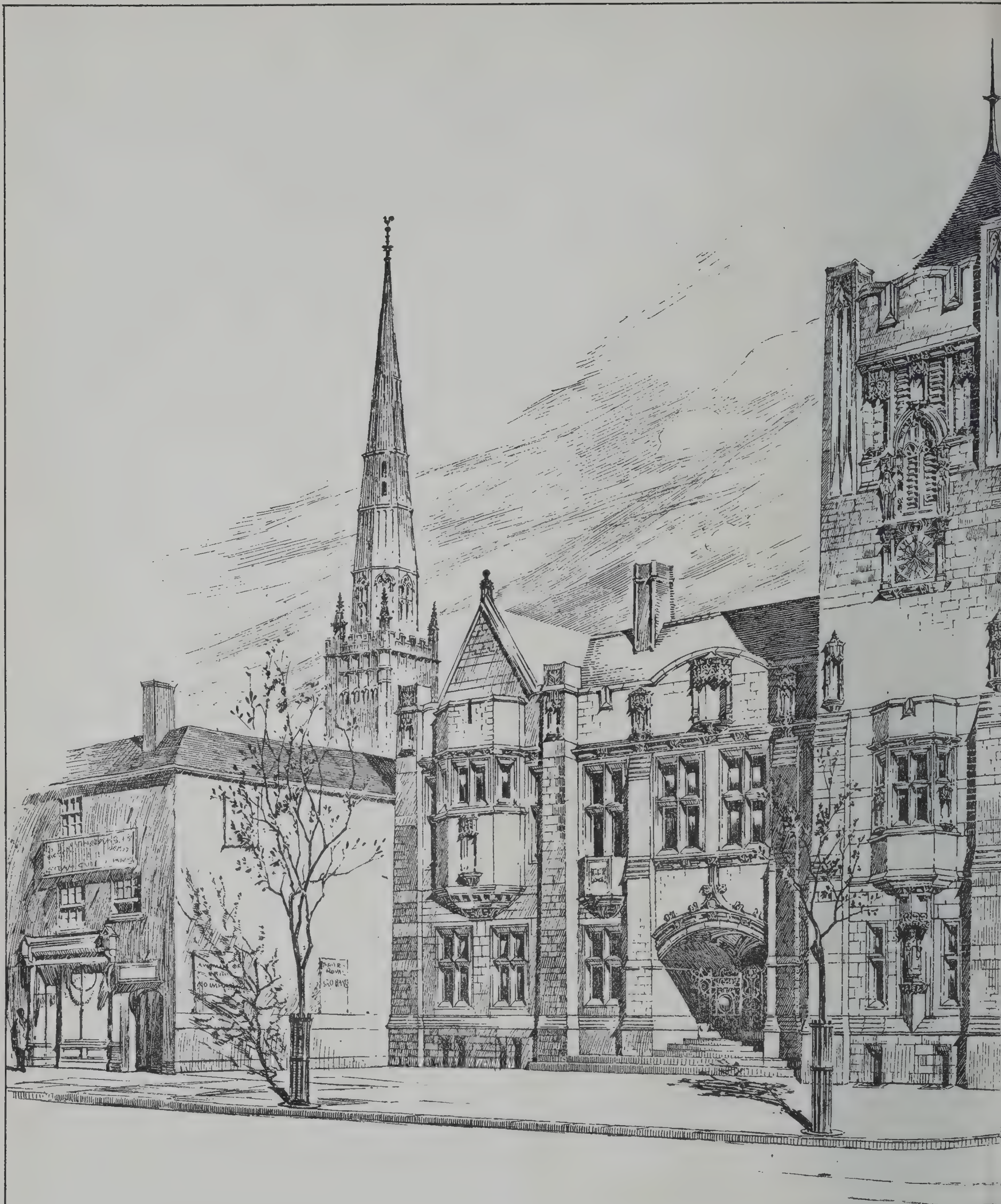
Selected Design.

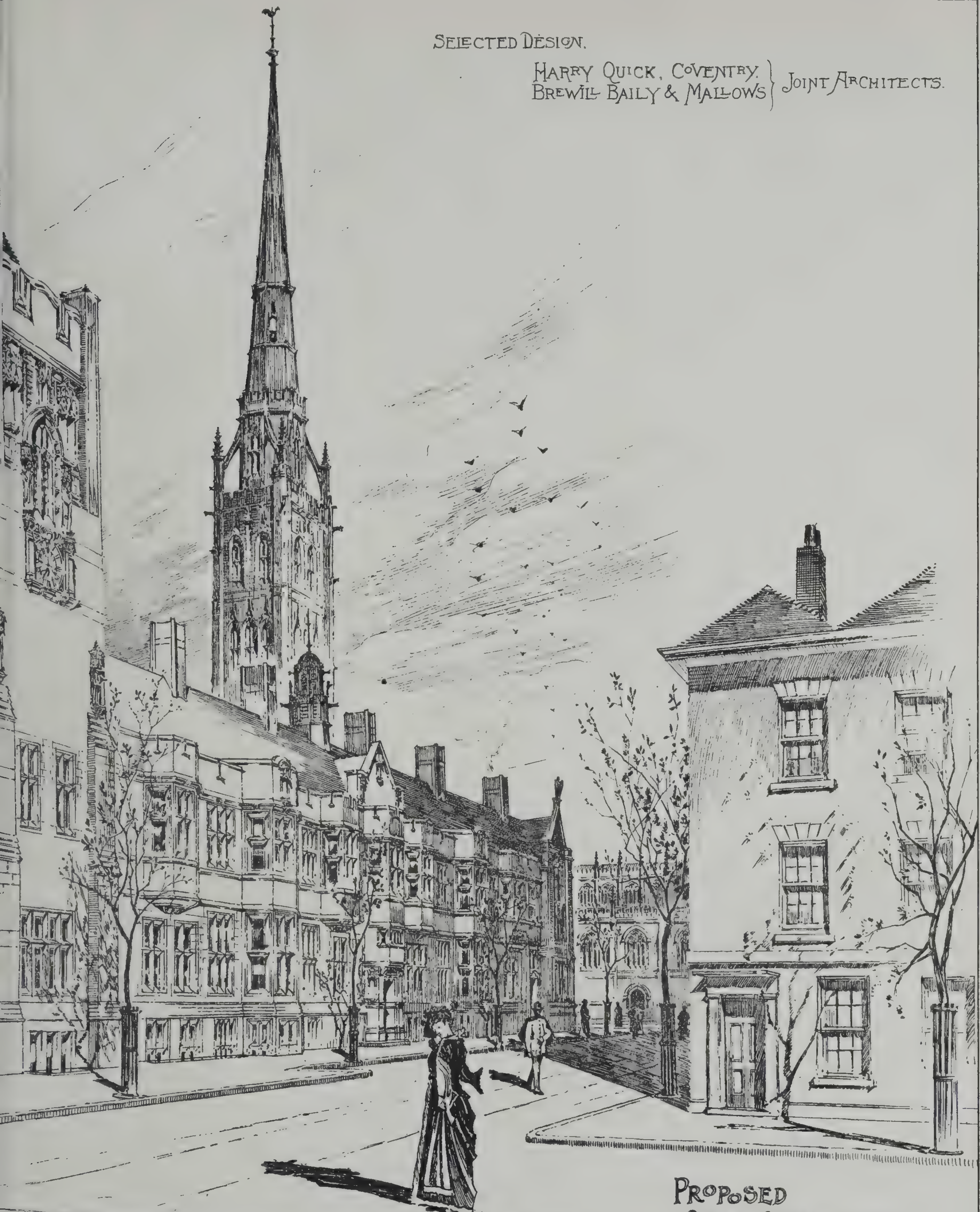
Harry Quick, Coventry. }
Brewill Baily & Mallows } Joint Architects.



View Looking West
Down Bailey Lane
Shewing S. Marys Hall
& Exterior of Council
Chamber.

Photo-Lithographed & Printed by James Akerman, 6 Queen Square, W.C


NOTE.
THE LOWER PART OF TOWER AND FRONT ENTRANCE IS HERE SHOWN AS AN ALTERNATIVE TREATMENT.
C·E·MALLOWS·DEL.

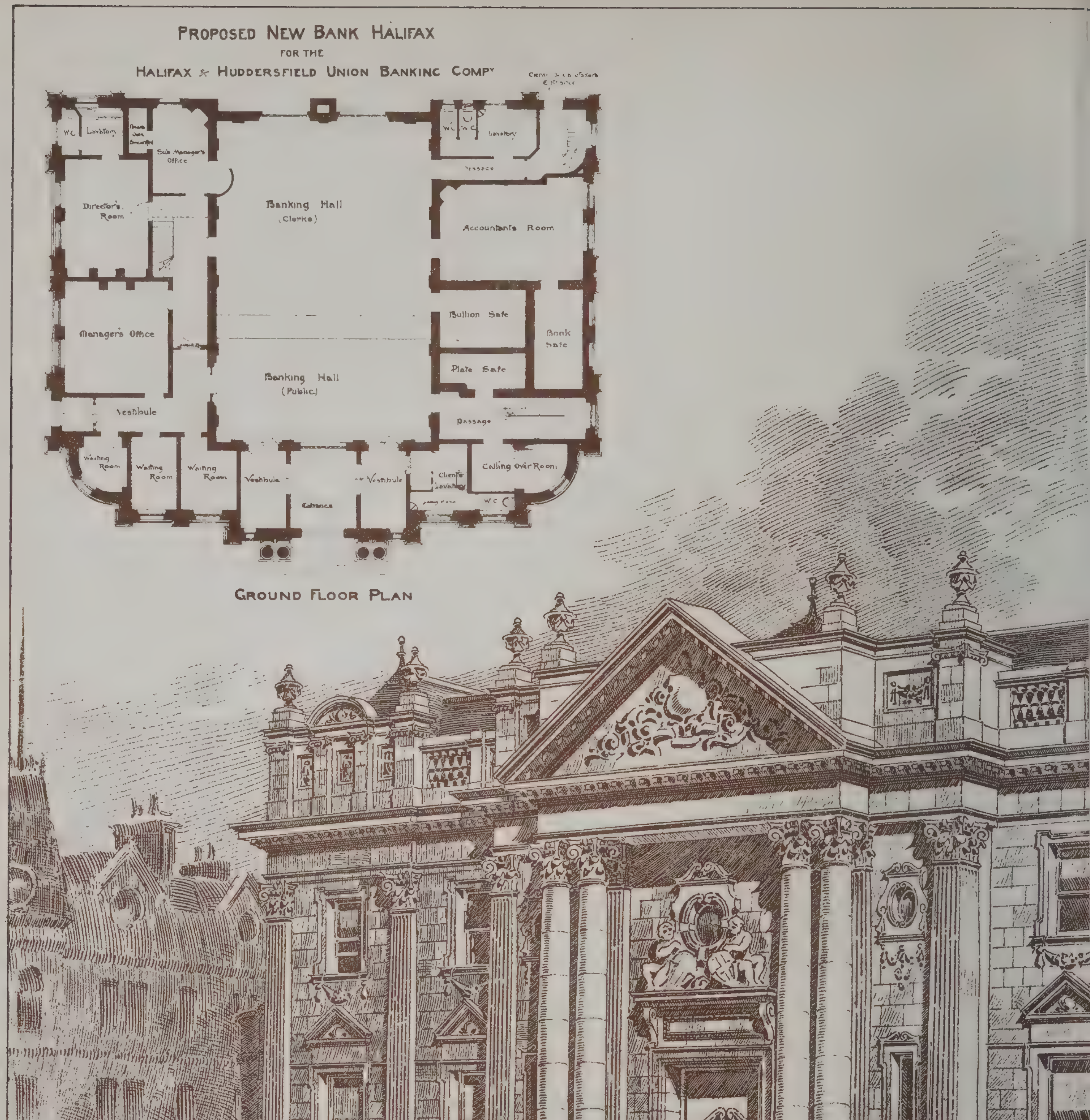


SELECTED DESIGN.

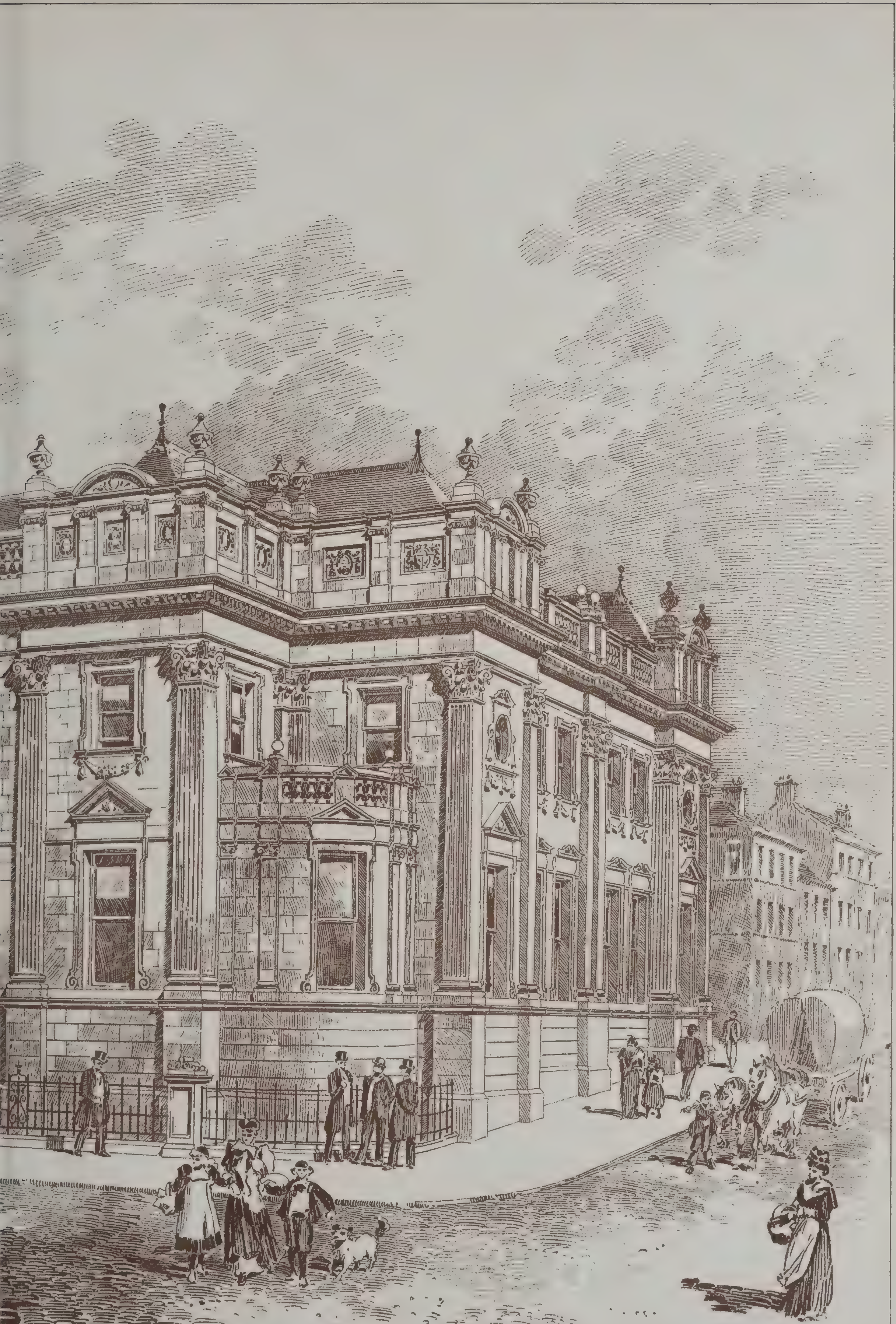
HARRY QUICK, COVENTRY.
BREWILL BAILY & MALLOWS } JOINT ARCHITECTS.

PROPOSED
NEW MUNICIPAL
BUILDINGS
COVENTRY
VIEW SHEWING FRONTS
To Earl Street
& S. Mary Streets
The Towers of Saint
Michael and Holy
Trinity in the
Background

Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C.

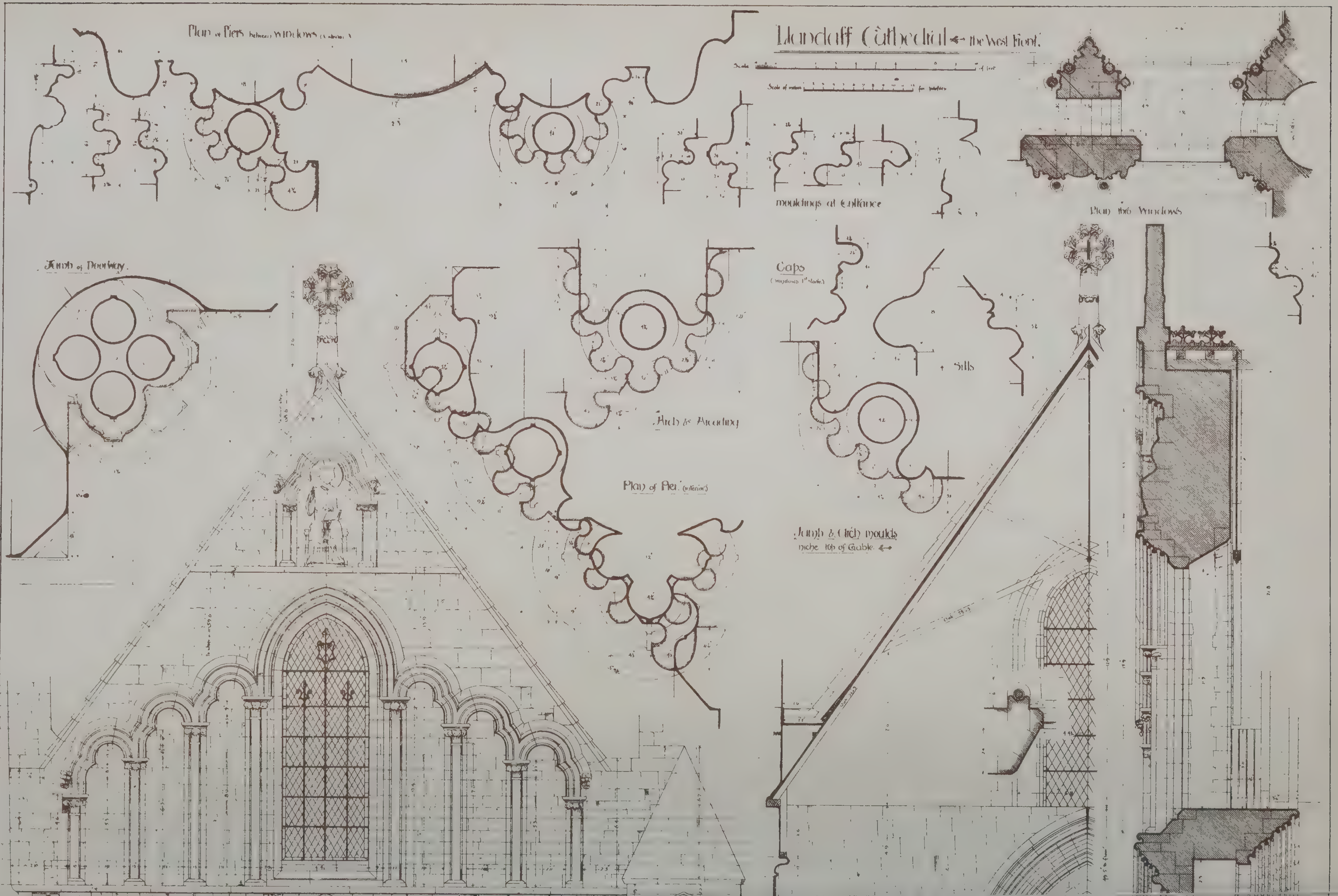


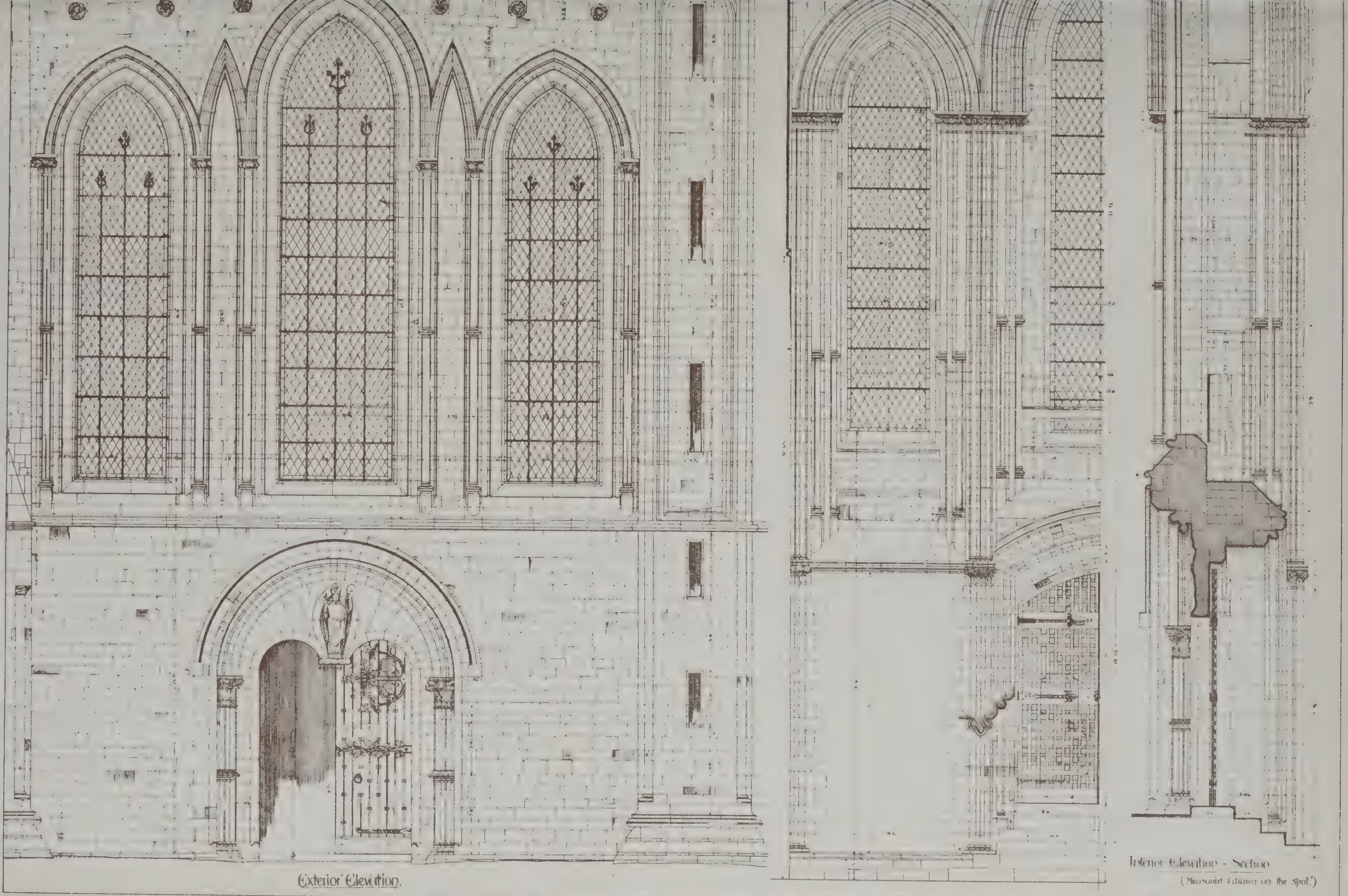
NEW·BANK·HALIFAX· FIRST·PREM



"PHOTO-TINT," by James Akerman 6 Queen Square London W.C.

TED·DESIGN· MESSRS HORSFALL & WILLIAMS·ARCHTS

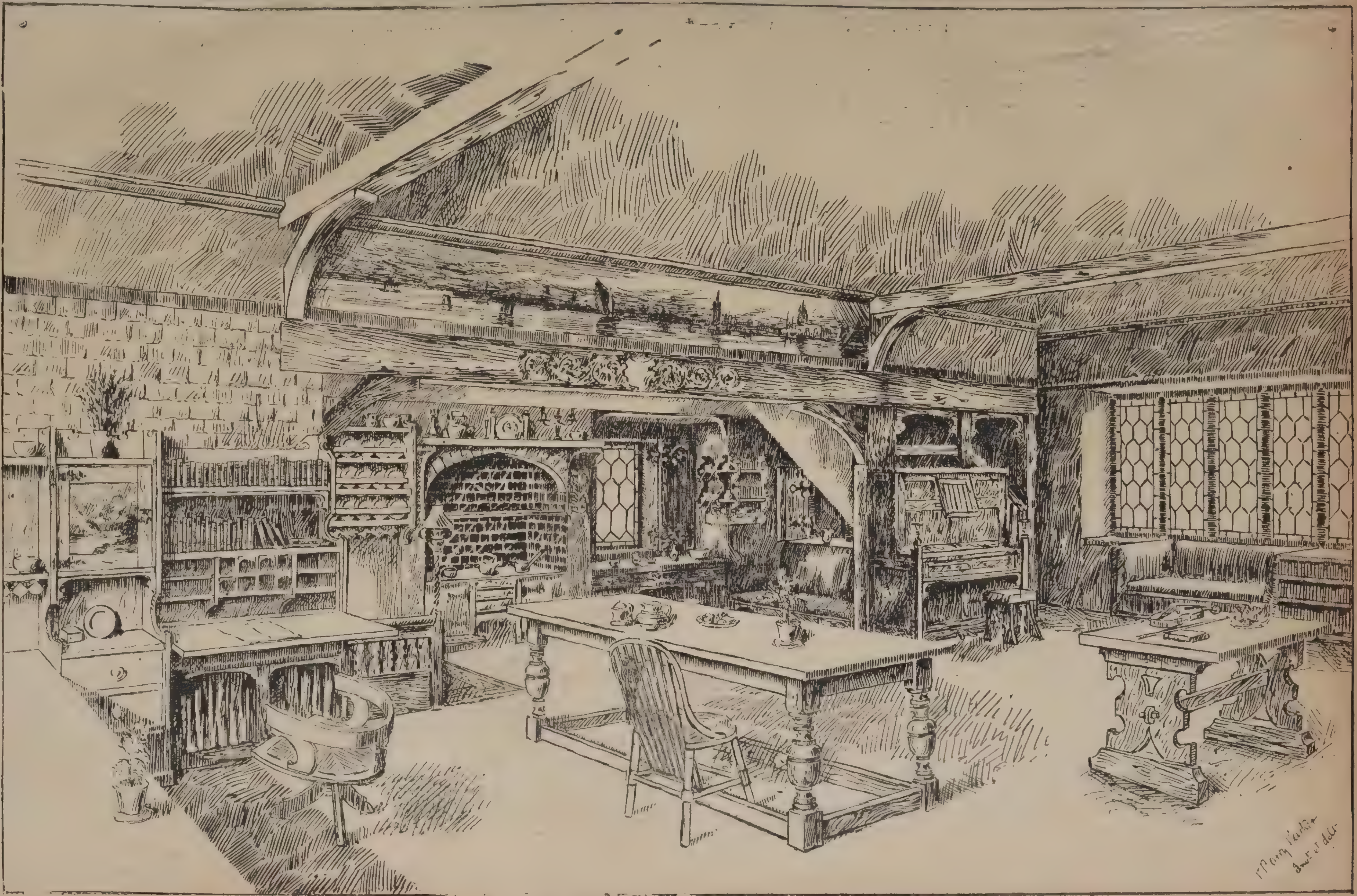

Llandaff Cathedral ← the West Front.
Scale of feet
Scale of mouldings for mouldings
Plan of Piers between windows (exterior)
mouldings at entrance
Plan thro' Windows
Jamb of Doorway.
Caps (windows 1st stage)
Sills
Arch & Arcading
Plan of Pier (exterior)
Jamb & Arch moulds
niche top of Gable ←



LLANDAFF · CATHEDRAL - R·I·B·A· SILVER · MEDAL · FOR · MEASURED · DRAWINGS

MEDAL OF MERIT AWARDED TO J.H. JAMES

Photo Lithographed & Printed by James Akerman 6 Queen Square W.C.



"OUR HOMES," by R. Barry Parker.

DESIGN FOR THE LIVING ROOM IN A HOUSE WHICH HAS THIS ROOM, SCULLERY, A LITTLE SANCTUM, PANTRY, LAVATORY, AND BEDROOMS ONLY.

Building Intelligence.

Edinburgh.—The Town Council of Edinburgh, at their meeting on Tuesday, ordered a block bill to be prepared for the extension of the city boundaries and the amalgamation of Edinburgh, Leith, and Portobello, and plans were submitted for the extension of the city chamber. By these plans the proposed new council-room, to occupy the first floor at the north-west corner of the Exchange-square, would, with galleries, have three and a half times the cubic capacity of the present chamber; the proposed new burgh court-room, on the floor level, under the new council-room, would be double the size, and have twice the cubic capacity of the existing court-room; much-needed additional accommodation would be provided in the town-clerk's and chamberlain's departments. An amendment that a more comprehensive scheme be devised, in view of the amalgamation of authorities, was rejected by 23 votes to 4, and it was decided that the scheme be sent back to the Lord Provost's committee for further consideration, and, if so advised, getting an estimate for the block immediately adjoining the present buildings on the west side of the square.

Exeter.—The new wing of the Albert Memorial Museum, Exeter, was opened on Friday last by the Duke of Devonshire. The style deviates slightly from that of the old building. The walls are of Pocombe stone with Hamhill dressings; the huge columns in front are of Devonshire granite polished. The tracery of the windows is of Hamhill stone. From the main entrance of the museum in Queen-street there is a passage way, on each side of which there is a class-room, 30ft. by 22ft., with wooden dados and floors of wooden blocks, which have been used throughout. On the Paul-street side there is a spacious museum-room, 57ft. 9in. by 41ft. 6in. Upstairs and immediately above this museum-room there is a very large apartment set apart for the art gallery. Upstairs there are also two well-lighted lecture-rooms, one about 48ft. by 22ft., and the other 48ft. by 27ft., both to be used for lectures in connection with the technical college. The chemical and physical laboratories, a portion of which was erected by means of the Jubilee fund in 1891, have been extended by the aid of the Kent-Kingdon bequests. There is now a lecture-room for teachers of chemistry, precisely the same size as the chemical laboratory, but not as yet fitted with students' benches. The architects are Messrs. Fulford, Tait, and Harvey; the builder is Mr. Woodman. Messrs. Easton and Sons supplied the stonework. The carving in connection with the new additions has been carefully and skilfully carried out by Messrs. Harry Hems and Sons, ecclesiastical sculptors, of Longbrook-street, Exeter.

Hackney New Free and Parochial Schools.—The foundation stone of these schools was laid last Monday week. The building, which is to supersede the old schools in Chatham-place, which has an unbroken record since 1714, is two stories high, and is designed to accommodate 300 boys and 300 girls. It is provided with a school-room and three class-rooms on each floor, with cloak-rooms at the rear near the entrances. The school is planned and fitted up to date in all requirements. The amount of the contract is £7,704. Mr. Alfred Cox, of 37, Baker-street, Portman-square, W., is the architect, and the contractor is Mr. W. Shurmur, Riverside Works, Upper Clapton, N.

Handsworth.—The new church of St. James at Handsworth was consecrated for public worship by the Bishop of Lichfield on Tuesday. The old church, which dated back to 1838, was not only inadequate in size, but in its interior arrangements it was entirely out of harmony with present-day ideas. The services of Mr. J. A. Chatwin, architect, of Birmingham, were accordingly requisitioned, and he submitted designs for the rebuilding of the greater part of the church. The original structure was an unattractive building with a huge gallery, very deficient in ventilation. Mr. Chatwin's proposal was to remove the old gallery and add a new nave, chancel, south aisle, baptistery, and organ chamber, at a cost of about £7,000, and, his designs being approved, the work was commenced about twelve months ago. The style of the open work is Geometrical Gothic. The old church now forms the north aisle, and the chancel becomes a morning chapel. Seats are provided for a congregation of about 1,200, or 350 more than could be accommodated in the old edifice. A debt of about £3,000 remains on the building fund. The baptistery at the west end and a south porch have yet to be added. The contract for the work was carried out by Messrs. Barnsley and Son, of Birmingham.

Landrake.—St. Peter's, the venerable parish church of Landrake, has had in the shape of a handsome reredos a seemly addition to its interior. The material of which the reredos is made is veined and polished alabaster, but the panels and statues, however, are of Castellino marble of the finest whiteness. Rising from the floor of the chancel, the principal portion of the reredos proper is, up to the massive retable, of plain polished alabaster. Upwards from this point the structure is divided into five compartments, of which the middle one is the largest, and each forms a niche or recessed panel. Filling the central one is a figure of our Lord ascending in the midst of glory surrounded by a vesica piscis, His right hand raised as if bestowing a blessing. The recesses on both sides contain statues of the Four Evangelists. The sculptors were Messrs. Harry Hems and Sons, of Exeter.

Richmond, Surrey.—The foundation-stone of the technical institute and secondary school now being built in Selwyn-avenue, Richmond, for the Surrey County Council, was laid by the Duke of Cambridge on Wednesday afternoon. The object of the building is to provide an efficient modern education in science, art, manual work, and commercial subjects during the day, for 350 to 400 scholars, and to serve all the purposes of a polytechnic, including women's classes in the evening. The premises will cost, when completed, £6,467. The portion now being erected will cost £4,626, towards which the Richmond Town Council contributes £1,250, and the Department of Science and Art £650, leaving the balance to be obtained from the County Council and subscriptions. The County Council, besides its grant of £2,500, has purchased the site costing £1,577, to the amount of close upon £500 a year. Chemical and physical laboratories, a school of art, class-rooms for carpentry, carving, and plumbing are all included in the portion now to be erected. This will be one of a series of new technical buildings erected or being erected by the County Council in the seven principal towns of the county, at a cost of over £20,000, supplemented by votes of nearly £6,000 from local rates or subscriptions. The architects were Messrs. Fryer and Barr, of Queen Anne's Mansions, Westminster.

Royal Free Hospital.—The Prince and Princess of Wales and their daughters visited the Royal Free Hospital, Gray's Inn road, on Monday afternoon, and the Princess opened the new front building, which is to be called the Alexandra Wing. The new front completes the reconstruction of the hospital, which was established in 1828, and now contains 160 beds. The cost of the new buildings, including a laundry at the rear, re-construction of the drainage system, fire-extinguishing appliances, and other necessary improvements, has been about £30,000, towards which sum £26,000 has been raised. The new buildings, which front on the Gray's Inn-road, have been designed by Mr. W. Harvey, and carried out by Messrs. G. H. and A. Bywaters and Sons.

* * *

The Secretary of State for Foreign Affairs has received a copy and translation of a notice issued by the municipality of Vienna, calling for tenders for plans, construction, and working of a network of electric railways in and round that city. The tenders must be sent in before the 14th of November next. The notice may be seen at the Commercial Department of the Foreign Office, S.W., between the hours of 11 and 6.

An inquiry was held at the Temperance Hall, Ossett, on Tuesday, by Colonel W. M. Ducat, R.E., of the Local Government Board, into an application by the Ossett corporation for sanction to borrow £3,300 for extending the Eastern Outfall Sewage Works. The works will deal with the sewage of a population of about 7,000 persons. They were constructed eighteen years ago from the designs of Mr. M. Paterson, C.E., of Bradford, and deal with an average of 300,000 gallons of sewage in twelve hours. In consequence of the growth of the borough, the corporation found it advisable to enlarge the works. Mr. Paterson was again consulted, and has prepared plans for the enlargement. Additional settling tanks, with a capacity of 180,000 gallons, are intended to be provided, and six or seven acres more land laid out for filtration purposes.

COMPETITIONS.

West Ham, E.—The Technical Institute competition, for which somewhere near seventy designs were received in June, is not likely to be settled for another month, so those who are interested in the contest may enter upon the holiday season without any undue anxiety as to being suddenly recalled to town to receive the premiums. Unforeseen difficulties have rendered it impossible to place the designs submitted in the hands of the assessor earlier than the 1st of August; but it is hoped that the result of the competition will be made known during that month.

CHIPS.

Mr. Ernest A. E. Woodrow, A.R.I.B.A., upon his retirement from the Theatres Branch of the London County Council, has accepted the invitation of the Actors' Association to become their honorary consulting architect. The appointment, we learn, was offered him by the council of the Association, upon the suggestion of Sir Henry Irving, on account of Mr. Woodrow's intimate knowledge of the requirements of theatres.

Messrs. Fambrini and Daniels' Architectural Concrete Works, Lincoln, are now supplying a series of decorative pierced panels for the new lifeboat house, Whitby, Mr. W. T. Douglas, Westminster, architect. Some of the above panels are over 15ft. long, cast in one piece, and are to be in a very exposed position. This firm have also appointed Messrs. Butson and Roberts, 67 and 69, Chancery-lane, W.C., as their sole agents for London and districts.

The Parks and Galleries Committee of Glasgow Town Council considered, on Tuesday, an offer from the trustees of the Bellahouston estate offering it for sale for £50,000. The committee drove to the estate, which extends to 170 acres, and the opinion was expressed that it would form one of the finest public parks in Scotland. Ultimately the committee unanimously agreed to recommend the council to accept the offer. The estate is situated south-west of the City and immediately to the south of Govan.

The steam tramway between Rye and its rising marine suburb, Camber-on-Sea, was completed last week, and was opened on Saturday afternoon.

The latest discoveries that have been made in the course of the excavations at the ancient temple of Delphi comprise a head of Hera, from a marble statue of that goddess belonging to the Classic period of ancient Greek art; likewise the marble head of an ox. Both pieces are in an excellent state of preservation, and have been deposited in the museum at Delphi.

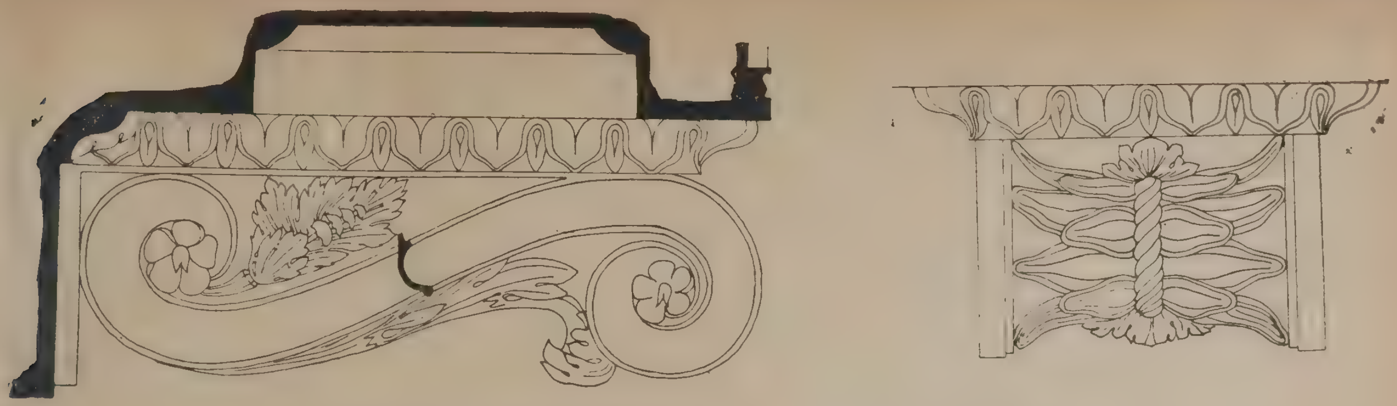
Signor Spartaco Vela, painter, son of the celebrated sculptor, Vincent Vela, has died at his native village of Ligornetto. He has bequeathed to the nation a châlet containing a gallery of art treasures, which is famous chiefly for a collection of the father's works.

Mr. Joseph Robson, of the firm of Messrs. Nowell and Robson, builders and contractors, Kensington, died at his residence, 22, Kensington-crescent, on Wednesday, aged 62 years.

At the half-yearly meeting of the London Brighton, and South Coast Railway, held on Wednesday, the chairman announced that the preliminary works on the new line between Croydon and Earlswood, including the long tunnel (parallel with the existing main line belonging to the South-Eastern Company), will soon be commenced.

On Saturday afternoon the corner-stone of the new south transept of St. Clement's Church, Chorlton-cum-Hardy, was laid with Masonic rites. The church itself, which replaced an ancient structure, was built some thirty-five years ago. A north transept was afterwards added, and the addition, of which the corner-stone was laid on Saturday, is a replica of it. It will provide accommodation for over one hundred worshippers, and will cost about £1,500. The architects are Messrs. W. and G. Higginbottom, of St. Ann-street, Manchester.

The Dean of Guild Court of Edinburgh have just passed plans for altering one of the few remaining ancient buildings of the High-street. The tenement adjoins the assembly hall, and was purchased last year for the Church of Scotland. It is situated in a court known as Boswell's Court, so called from one Dr. Boswell, who lived there about 1760. The plans now passed will complete the improvement scheme of the assembly hall. The architects, Messrs. Hardy and Wight, have provided on the two lower floors ample accommodation, much needed by the assembly. Committee-rooms, conversation-rooms, &c., and the two upper floors are arranged as commodious dwelling-houses. The external aspect of the old building will be carefully preserved in all characteristic features, and the rough walls roughcasted and repaired.



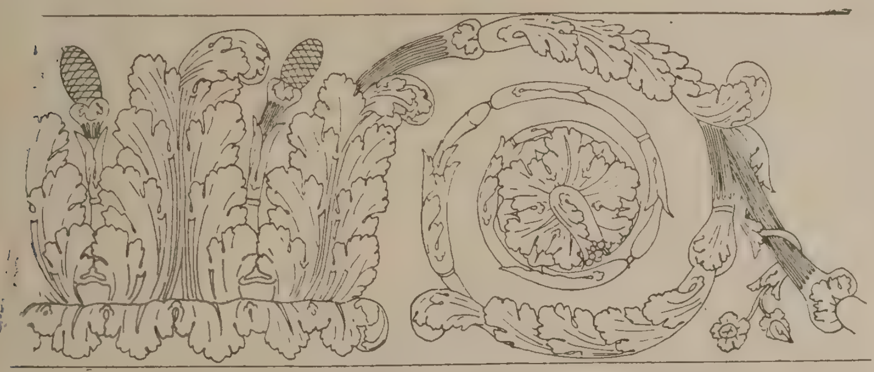
Cornice Console, Temple of Jupiter Stator, Rome. (From Taylor and Cresy.)

CLASSIC DETAILS AND THEIR APPLICATION.*

By G. A. T. Middleton.

V.—CLASSIC TIMES: THE CONSOLE AND THE SCROLL.

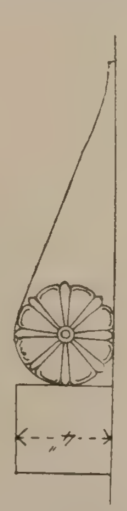
WHILE the cornice was usually the crowning feature of a building, yet even in Egypt, in the Theban period, it was commonly found also over the doorways to pylons and tombs, serving no other purpose than to mark these entrances; and from the few indications we have left to us, we infer it to have been similarly employed by the Greeks, knowing it to have been so used, at least, in the one Ionic example of the Erechtheium. In Egypt, however, the simple cavetto cornice, with its enrichment of the carved winged globe, was simply planted upon the face of the wall, and this want of apparent support was just the description of artistic blot which the Greeks would naturally be expected to remedy. The means adopted was that of the vertical truss or console projecting out of the masonry on either side of the door, which, while serving no constructional purpose, just satisfied the æsthetic needs of the case. The example illustrated herewith, from the Island of Kos, is of uncertain date, and exceptionally simple outline and small size; but these which flank the Erechtheium doorway are elaborate in their ornamentation, with crisply-carved acanthus leaves, and with a detached anthemion filling up the angular space under the volute of the truss, much as the bud does under the spiral in the Corinthian capital at Epidauros, already illustrated.



Portion of Frieze Scroll from the Maison Carrée at Nismes.

A detail like this, occupying a definite position to which it was well adapted, was not likely to be neglected by the Romans. Using it in its proper position, they produced several good examples, amongst the best being that upon the highly-refined Maison Carrée at Nismes—a building which, in spite of its late date, remains to us as one of the best of the Roman Empire, and upon this console, as illustrated, the use of projecting acanthus rosettes in the eyes of the volutes, and of the plaited hair ornament in bands down the front are noticeable, as is the form of the anthemion in low relief. Long before the date of this building, however, the Romans had employed the console elsewhere. In the Arch of Titus it is found forming the keystone to the great arched opening, and supporting the cornice over—a most questionable position for its employment when the order was a decoratively applied order only, presumably carried by the columns at the side, and not by the arched construction. More frequently, however, it is found with its greatest length horizontally in buildings of the Corinthian order, acting as a support to a greatly projecting cornice, the bed-mould being carried round it, and the effect, owing to its occurrence with but little space between, being much that of an elaborately enriched dentil course. As a rule, its employment in such a position seems legitimate enough, though it must be owned that it appears more often to depend from than to support the cornice over, this being in such cases due to error of design, not only the appearance but the actuality of support being intended.

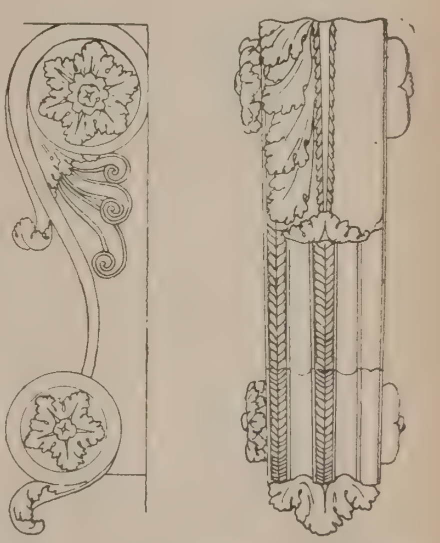
Its use as a bracket once established, however, its degradation was certain, and its employment to carry sills of niches, upon which sills rest small orders—as at the palace at Spalatro—can hardly be defended, their apparent weight-carrying power being insufficient for the task imposed.



Door Console from Charmyleion Pyli, in the Island of Kos.

(From Newton and Pullan's "Halicarnassus.")

Another detail which was eminently suited to Roman tastes, and which it was left almost entirely to the Romans to develop, was the acanthus scroll, and so long as it is found without the intermixture of natural forms, taken from either the animal or the vegetable kingdom—so long, that is, as it was entirely conventional—so long was it invariably pleasing. In fact, the scroll with which the frieze of the Maison Carrée is enriched has rarely been surpassed for richness and voluptuous beauty of design, without over-much of self-assertion, it being carved in sufficient, but not overwhelmingly powerful, relief, and being suitable to its position as a band of ornament, at a considerable height above the eye, upon a rich Corinthian building.



Door Console from the Maison Carrée at Nismes.

---

* All rights reserved.

DESIGNING OF STEEL BRIDGES, THEORETICAL AND PRACTICAL.—XX.

IT is not until one proceeds to the investigation, step by step, of the separate stresses acting upon the individual members of all open-web girders, frames, and trusses, that one becomes both theoretically and practically acquainted with what may be appropriately termed the anatomy of articulated structures. Under this category are included bridge girders, roof trusses, and all types of similar constructions, whether horizontal, curvilinear, or polygonal in outline or elevation, which are built up of distinctly separate parts, united together at their junctions by rivets, pins, bolts, gibs, and cottars, or other species of connections. Around these points which constitute the joints or articulations, the various members are supposed to be free to move, and, in fact, do move, and also deflect to an appreciable degree under concussion produced by the impact of a heavy passing or travelling load. Another *sine quâ non* in the definition of a properly articulated structure is that each separate member is considered to suffer stress solely in the direction of its own length, and should never be exposed to stresses of a transverse character. In badly-designed and proportioned girders, the different parts are no doubt subjected to the action of transverse stresses. It may be advanced that "After all, it does not much signify," as some of these defective girders do their duty satisfactorily. We are perfectly aware of the truth of that statement, and could point to existing examples; but it is nevertheless a practice more honoured in the breach than in the observance. The danger attending the placing of parts of an articulated truss under stresses of a transverse nature, is that they become liable to distortion and deformation. It is, moreover, a matter of notoriety, and abundantly proved by the examples of the failures of girders and trusses, that deformation and distortion have invariably preceded their collapse. Even cast-iron girders, brittle as they are, deflect and give some warning of their approaching destruction, unless there should be some very serious flaw or local weakness in the material itself.

When the great variety in the forms of trusses, girders, and other examples of steelwork is considered, it might not unreasonably be supposed that any arrangements of parts or different members, provided they were solidly secured at their junctions, would in themselves constitute a truss. Such a supposition would be entirely erroneous. Every properly and scientifically-designed girder, whether of the regular curvilinear form of the bowstring, crescent, or braced arch type, has to fulfil certain conditions with respect to the number of its parts and the angles they contain. It is true that a perfect system of bracing can be constructed of any polygonal figure, whether it be regular or irregular, symmetrical or unsymmetrical, provided certain rules are adhered to. The designing and construction of trusses, which are essentially braced structures, were very imperfectly understood until architects and engineers found it necessary to altogether abandon timber for bridges and roofs of large span. Previously to this period, some very fine specimens of timber roofs had been erected, and exist to this day; but they may perhaps be regarded rather in the light of a *tour de force* than in that of a legitimate use of the most suitable material. As a proof that bridges of timber are still built, even in countries near home, we may quote the example of one put up barely a year ago in St. Petersburg, and intended to connect the quarters of the old town with the district of Vassili Ostroff. Although of considerable convenience to the inhabitants, the bridge in other respects is a failure. It interferes to so serious an extent with the navigation that vessels which were formerly in the habit of frequenting the waterway crossed by it have discontinued their visits, and make instead for the newer and more commodious harbour of Gutuyeff.

FIG. 1

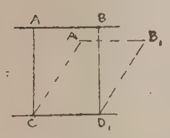
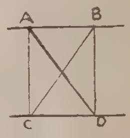


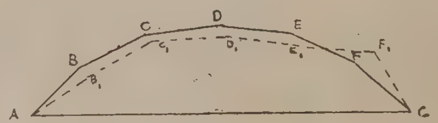
FIG. 2.



Three parts or members are the minimum number required to constitute the simplest form of truss or system of bracing, which gives us at once the triangle, the figure of all others the best adapted for the purpose, since it cannot undergo a change of form without altering the length of its sides. However complicated a truss may be—that is, however great may be its number of separate parts, it will be found that they are always so arranged as to form a series of triangles. In a trussed roof the principal or main triangle composing the rafters and tie is invariably subdivided or split up into a number of smaller or secondary systems of triangular bracing—a feature which is common to all polygonally-shaped girders, trusses, and frames. The first essential condition in every truss or system of bracing, simple or compound, is that it should be indeformable, incapable of distortion, twist, or alteration of figure without breaking. An illustration will best explain the necessity for this state of indeformability. Let A, B, C, D, in Fig. 1, represent one of the panel lengths of a bridge truss, which is purposely shown incomplete. It is evidently deformable since it can be shifted into the new position shown by the lines $A B_1 C D_1$, without altering the lengths of those lines—that is, of the sides of the figure which constitute the several parts, or members, of the truss. In order, therefore, to enable this quadrilaterally-shaped truss to fulfil this first requisite, it becomes necessary to add one or other of the braces A D or B C in Fig. 2. Both may be added, as is usually done in the central panel lengths of large bridges; but under other circumstances one only is needed, and the other is what is called a redundant member, as will be presently alluded to. This is a simple case; but without some general rule it would be impossible for the student and beginner to ascertain how many additional members were required to render any incomplete or defectively-designed compound truss indeformable. A certain number of parts are necessary, and no more. If the correct number is exceeded, some of the parts are redundant, and cause a waste of material, even if they are not productive of something worse. As a matter of absolute experience, an excess of material in the wrong place has frequently done serious injury to bridges and roofs. A skeleton elevation of a polygonally-shaped truss, A B C D E F G, is shown in Fig. 3, which is clearly deformable, as its form can be imagined as altered to that shown by the lines $A_1 B_1 C_1 D_1 E_1 F_1 G$ without altering the original lines or sides of the polygon. In Fig. 4 is introduced in the same truss a system of bracing which will prevent the possibility of the deformation in Fig. 3, or of any other form of distortion. It will be seen at once that the principle consists in dividing the original figure or primary truss into a number of secondary or subsidiary triangles, which should be as few as possible, consistent with certain practical considerations. It is not always possible to employ the minimum number of parts, which the theoretical rule lays down, for rendering a truss indeformable. A truss will, therefore, be deformable or indeformable, according to the relationship which exists between the number of the original sides or separate members, and the number of apices, corners or angular points in the primary figure. If we make S equal the number of sides in the primary truss, and A the number of apices, we shall always have for an indeformable, simple, or compound truss of any form whatever, the general equation—

$$S = (2A - 3).$$

FIG. 3



In the case of the simplest form of truss—that of a triangle, and of a triangle only—this equation has a special value of—

$$S = A.$$

Referring to Fig. 1, and applying the equation to it, we have S = 4 and A = 4, which gives a result of—

$$4 = (2 \times 4 - 3) = 5,$$

showing that the truss is clearly deformable. By the introduction of the additional brace, either A D or C B, but not both, we obtain, inserting the proper values for S and A—

$$5 = (2 \times 4 - 3) = 5,$$

which is an identity, satisfies the equation, and renders the truss indeformable.

The other example on a larger scale of a primary truss will, in Figs. 3 and 4, tend to make the subject much clearer. In Fig. 3, we have S = 7 and A = 7, so that the equation would give—

$$7 = 14 - 3 = 11.$$

The primary truss is, therefore, manifestly deformable, as shown by the dotted lines in Fig. 3. But if we apply the general equation—

$$S = (2A - 3)$$

to the same truss, systematically braced as in Fig. 4, it will be satisfied, for in that case S = 17 and A = 10, so that we equate—

$$17 = (2 \times 10 - 3) = 17.$$

It is evident that this theoretical rule, similarly to all rules of the same character, although it demonstrates very satisfactorily how to employ a sufficient number of parts in a primary truss, so as to render it indeformable, affords no information regarding the absolute smallest number that may be used. Neither does it—as, indeed, it cannot—indicate the best manner in which to arrange the system of bracing, for a truss may be braced so as to prevent all danger of deformation in a variety of ways, all of which would satisfy the general equation, but a large majority of them would be quite unsuitable in a practical point of view. The knowledge necessary to distinguish between proper and improper systems of bracing cannot be acquired solely from extraneous sources. It must depend upon the skill, the experience, and judgment of the designer, who can impart it himself to others. In Fig. 5 another system of bracing for the same truss is represented, which, while entirely unsuitable for construction, yet, as will be seen, fulfils the conditions laid down by the general equation. The value for S is 13, and for A is 8, so that we obtain the identity—

$$13 = (2 \times 8 - 3) = 13.$$

In this arrangement the number of separate parts is only thirteen instead of seventeen, as shown in Fig. 4, but, as already stated, the particular type is not adapted for practical requirements. The small angle made by the inclined struts, B O and F O with the horizontal, together with their enormously disproportioned length, would render them inadmissible in either a bridge girder or roof truss of even a fairly moderate span. It would also be inadvisable to have so many members of a truss meeting at one and the same point. The number of rivets, pins, or bolts would occasion a serious local weakness at the common point of junction. We must reserve for our next article the subject of redundant members or parts of trusses, for it must be borne in mind that all counter-braces are, in one sense, regarded as redundant members. Nevertheless, under certain conditions of a moving load, they are by no means redundant. On the contrary, they are as necessary to the safety of the structure as the principal or main braces, and must be designed with the same care and attention as the other parts of the truss or girder. Bridges have broken down for the want of proper counter-bracing. It is only comparatively recently that the subject has received the consideration which its importance deservedly calls for.

FIG. 4.

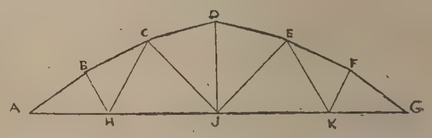
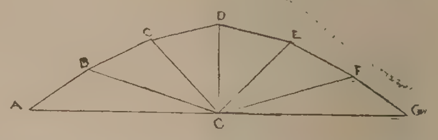


FIG. 5.



HOT-WATER HEATING IN A CHICAGO APARTMENT-HOUSE.

THE J. F. Matthews Apartment-House on California-street and Washington Boulevard, Chicago, Ill., is about 60ft. by 80ft. in size, and three stories high above the basement. Each of the three main floors is aranged in three nine-room suites, and the basement is fitted with billiard-room, laundry, storerooms, and janitor's rooms, intended to furnish in all a complete and well-equipped house for the best class of tenants. The building is heated by a hot-water apparatus installed by the Illinois Heating Company, Chicago, from whose working drawings and specifications this description has been prepared by the *Engineering Record*.

The heating system consists essentially of two vertical cast-iron heaters in the basement, with their flow and return pipes so connected that either or both may be operated or cut out at will, so that the maximum capacity can be secured in severe weather, or the service reduced and economy of fuel promoted by cutting out one heater in moderate weather, thus securing maximum efficiency of firing and fuel.

The flow-pipes from both boilers unite in a vertical pipe that rises above the attic floor and there branches into two horizontal mains that circumscribe the building, and are branched at

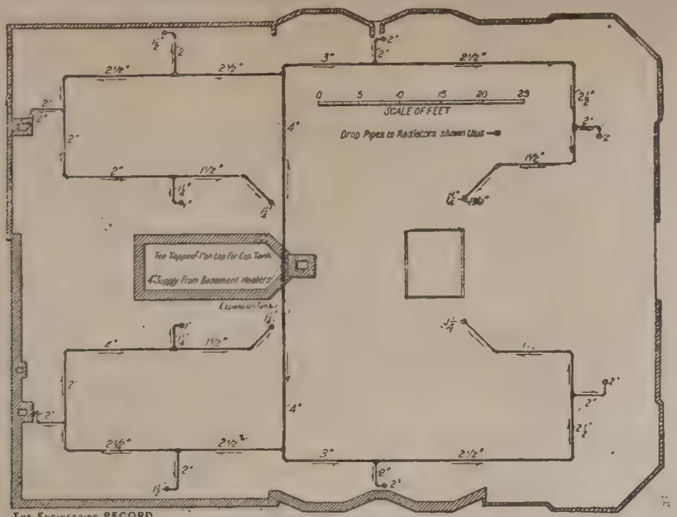

SCALE OF FEET
0 5 10 15 20 25
Drop Pipes to Radiators shown thus
Tee Tapped Top Up for Exp. Tank
Supply from Basement Heaters
Expansion Tank
THE ENGINEERING RECORD

Fig. 3. ATTIC FLOOR PLAN

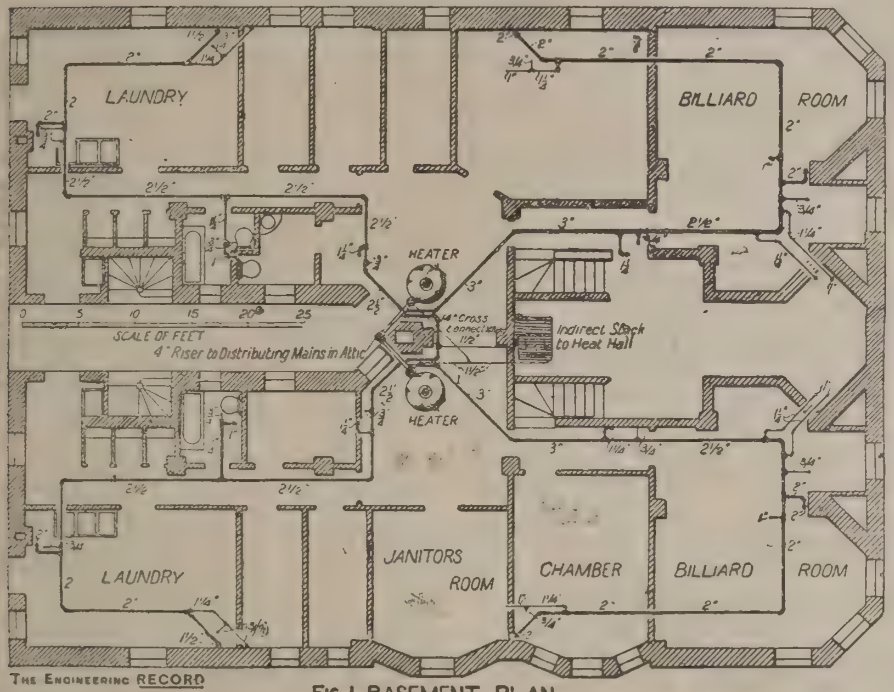


Fig. 1. BASEMENT PLAN

different points with twelve 2in. pipes and two 1½in. pipes that supply two 1½in., 1¼in., and 1in. vertical drop-pipes feeding the radiators which are disposed in vertical tiers beneath them in corresponding positions on the different floors.

These single drop-pipes, which are concealed in the partitions, also serve as return-pipes from their radiators. Each radiator discharges into it below the point whence its supply is taken; and at their bottom ends, in the basement, the pipes are connected to a belt-pipe on the ceiling that brings all the return-water back to the boilers and delivers into one or both of them as desired. Both this pipe and the attic pipe increase towards the boiler in proportion to the added number of radiators served.

All the radiation is direct, proportioned and located as shown in the plans, except one large indirect stack near the basement ceiling, which receives cold fresh outside air from the west side of the building, and delivers through a 16 by 24in. electro-bronze floor radiator into the lower hall, thus warming the whole entrance and stairway. The sectional hot-water heaters have round firepots and grates. The grates each have areas of about 9sq.ft., heating surfaces of 150sq.ft., and are each furnished with one hot-water angle thermometer, one 5in. dial altitude gauge, one ¾in. Jenkins pop safety-valve with water relief, one ¾in. Pratt and Cady check valve, one ¾in. drain cock, one ¾in. feed-cock, and are connected to the water-service and sewer system. The smokepipe is fitted with a cross-ratchet damper. The 16in. by 36in. heavy galvanised steel expansion tank is

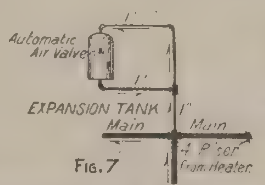


Fig. 7

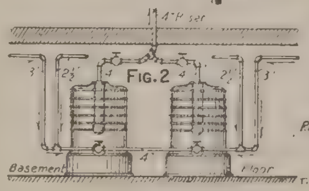


Fig. 2

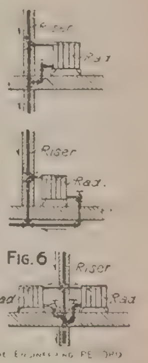


Fig. 6

connected with flow and return pipes to prevent danger of freezing. All pipe lines in the basement are supported by ring hangers securely fastened to the joist. Where pipes pass through floors the openings are fitted with old copper floorplates, and where pipes pass through walls in basement they are fitted with sleeves equal in length to the thickness of the wall, and on either side fitted with a pipe flange held in place with a set-screw. Each radiator is furnished with an old copper cherrywood wheel, quick-opening Union radiator valve, an old copper Union elbow, and an old copper air-cock with shield and key.

The direct radiation is decorated and the boilers and pipes in the basement painted black or maroon japan, two coats. The indirect stack is securely supported from the basement floor with 2in. iron-pipe columns, and is incased with matched boards and lined with red rosin paper, asbestos, and bright tin, the tinwork extending up to the face of the register. The 3,700sq.ft. of direct radiation is of the American Radiator Company's manufacture, and the 300sq.ft. of indirect radiation is of the standard pin type, made by the Standard Radiator Company, of Buffalo, N.Y.

The heating contractor guaranteed complete circulation with the temperature of water at 100°, that the apparatus should be noiseless in operation, and capable of heating all the rooms in the house to a temperature of 70° during the coldest winter weather, when the water at the boilers does not exceed 180°.

Fig. 1 is a basement plan showing location of heaters and size and position of return mains.

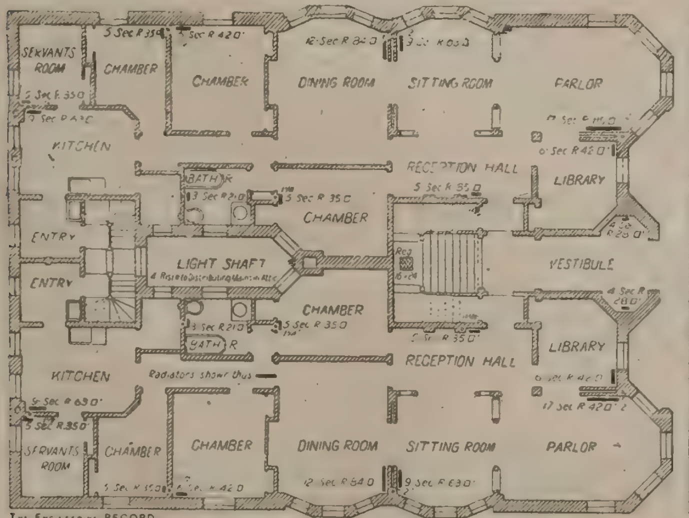


Fig. 4. THIRD FLOOR PLAN

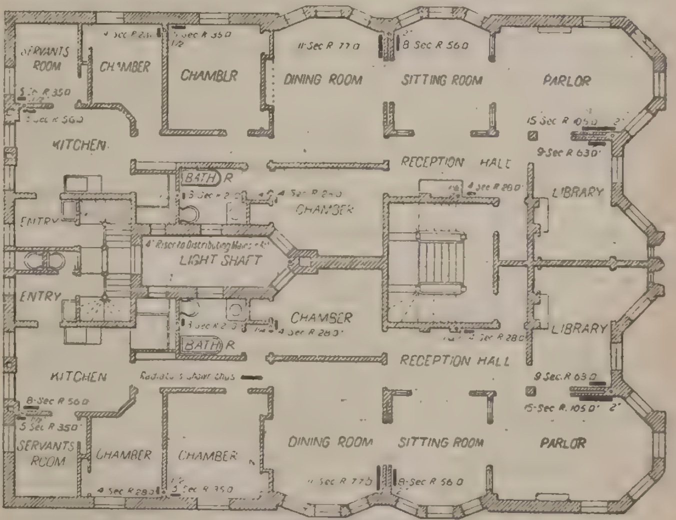


Fig. 5. SECOND FLOOR PLAN

Fig. 2 is an elevation of the two heaters, and shows the method of connecting flow and return mains.

Fig. 3 is a plan of the distribution main in the attic.

Figs. 4 and 5 show the arrangement and proportioning of radiators on the first and second floors. Those on the third floor are similar to those on the second floor.

Fig. 6 shows the different methods of connecting radiators singly and in pairs to the drop pipes, with valves on the return only, and Fig. 7 shows the connections made to insure circulation in the expansion tank.

CHIPS.

Damage to the extent of £2,000 was caused by a fire which broke out on Saturday night in the premises of Messrs. S. B. Dix and Co. at Cheltenham.

The result of the appeal that has been made to the City companies and the merchants and bankers of the City to combine in subscribing towards the celebrated Holbein picture, at Barbers' Hall, has admittedly proved very disappointing. Less than one thousand pounds have been subscribed towards the £15,000 asked for.

Although some of the larger properties offered failed to change hands, the aggregate for last week's sales at Tokenhouse-yard was fairly satisfactory, being £179,772. Messrs. Debenham, Tewson, Farmer, and Bridgewater held, on Friday, a sale of freehold ground-rents in Creechurch-lane, Leadenhall-street. Prices varying from 27 to nearly 31 years' purchase were realised, although the reversions will not fall in for upwards of 75 years.

Mr. Bruce Joy has recently executed for the Benchers of Lincoln's Inn a replica of the bust of Earl Cairns which he made some years ago for his family. The bust has been placed in the vestibule of the hall of Lincoln's Inn.

After ten years of quiet work in temporary buildings, the authorities of the Cambridge Training College for Women Teachers have been able to erect large college buildings by means of a grant from the Pfeiffer bequest and voluntary subscriptions. The new buildings will be formally opened on Saturday, October 19, by the Marquis of Ripon.

The Burns monument at Ayr, unveiled in 1891, will be completed by a bronze panel about the latter part of August, representing "The Parting of Burns and Highland Mary," the sculptor being Mr. George E. Bissell, Poughkeepsie, New York. Three sides of the monument have already been filled. The fourth panel, fronting the west, which was left for friends in the United States to complete, will therefore soon be occupied.

Kinghorn Parish Church, N.B., was opened on Saturday after entire reconstruction. The galleries have been removed, and a new roof has been put on. The building occupies the site of a pre-Reformation Church, and the old chancel-arch has been opened up and a new apse built behind it. A new west gable, tower, and entrance-door have been added. The architects are Messrs. Sydney Mitchell and Wilson, Edinburgh.

A committee of the city council of Bristol have under consideration plans prepared by the city surveyor, Mr. Yabbicom, for new meat and fish markets in Queen-street, Tower-hill, and Passage-street. The scheme, if adopted, would, after providing for the widening of the thoroughfares, provide two blocks of markets 37 per cent. larger in area than the existing ones.

Mr. W. Urquhart, the vice-chairman of the Fire Brigade Committee, laid on Monday the foundation-stone of the new fire station now in course of erection in Renfrew-road, Kennington, for the London County Council.

For the ventilation of the Balgray Girls' Industrial School, Dundee, now in course of erection, Messrs. James McLaren and Sons, architects, the latest improved form of the "Climax" direct-acting, invisible roof ventilators, and the "Climax" direct-acting, continuous-exhaust ventilators have been supplied by Messrs. Cousland and Mackay, entilating engineers, Glasgow.

M. Paul Alfred de Curzon, the eminent French landscape painter, has just died at Paris in his 75th year. Born near Poitiers, he first exhibited at the Salon in 1843, and six years later gained the highest distinction a landscape painter can obtain in the Ecole des Beaux-Arts. Among his best works are "Les Parques de Béranger," "Dante et Virgile sur le Rivage du Purgatoire," "Les Ondines," "Triptyque," "Graziella," "Le Bois de Boulogne," "Le Tasse à Sorrente," and "Les Fortifications de Paris." He also accomplished much work in lithography, etching, and pastels, including "Les Baigneuses," "La Sérénade," and "Le Tonnelier de Nuremberg."

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to The Strand Newspaper Company, Limited.

TERMS OF SUBSCRIPTION.

One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India, £1 6s. 0d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front-page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No Front-page or Paragraph Advertisement inserted for less than 5s.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page Advertisements and alterations in serial advertisements must reach the office by Tuesday morning to secure insertion.

Situations.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., LI., LIII., LIV., LVIII., LIX., LX., LXI., LXII., LXIII., LXIV., and LXV. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Received.—J. S. Parsons.—T. W. and Co.—V. R. G.—Bellagio.—J. D. R. and Co.—S. B. (Chester).

Correspondence.

THE ARCHITECTURAL PROFESSION IN THE NORTH OF ENGLAND.

To the Editor of the Building News.

Sir,—As one who has had an experience of twenty years in various architects' offices in the North of England, I cannot understand how an architect here could expect to win competitions in the way described by your correspondent, "An Old Subscriber."

In my experience I have been more successful in preparing competition plans in the South than in the North, and just recently I did the principal part in designing plans that were placed first in a large competition within a short distance of London, and if the competition had been in the North, I venture to say there would have been more able competitors.

As for the quantities, I cannot but think that the builder referred to by your correspondent must have got hold of a specification, not knowing which was which.

I frequently observe that architects in the North give more sketches in their quantities than those in the South. This I account for by the fact that they are taken off more by those who prepare the plans, and who are able to give better ideas of what is required than if taken off by a quantity surveyor.—I am, &c.,

Gateshead. W. S.

Lady Howard de Walden laid the foundation-stone of an enlargement in connection with Holy Trinity Church, Shoreditch, on Saturday afternoon.

The engineers of the Snowdon Railway have decided to construct it on lines similar to the latest Swiss mountain railways. The gauge will be 2ft. 7½in., and the sharpest curves will have a radius of four chains. The length of the line will be 4⅝ miles, and terminal stations will be erected at Llanberis and the summit. The locomotives are being manufactured in Winterthur, Switzerland.

Intercommunication.

QUESTIONS.

[11381.]—**Dancing Floor.**—Can any of your correspondents kindly give me particulars of the very best dancing floor that can be produced, expense being no object? Size, 40ft. by 21ft.—Philip T. Hopwood.

[11382.]—**Mastic for Wood-Block Floors.**—Can any reader say of what mastic used in laying wood-block floors is composed of, whether there are different makes with different materials, and which is the best, and how to make?—Enquirer.

[11383.]—**Fountains Abbey.**—Can any correspondent inform me whether any permission is required to measure at Fountains Abbey, and, if so, from whom? Is there any good work accessible without the use of long ladders?—Ivy.

[11384.]—**Damp Floor to Cellar.**—Can any of your numerous readers inform me of a thoroughly dry floor for a new cellar?—as the one that has been formed is not so. The subsoil outside the cellar walls (which, by the way, are built hollow work) is of a light-brown wet loam and clayey gravel, the strata immediately below this being the Oxford blue clay. The ground above the blue clay has been thoroughly drained to just below the cellar-floor level. The surface drainage does not sink below the level of the top of the blue clay. The cellar floor has been laid down in cement concrete of extra thickness, and rendered to a fine face with cement rendering. Now the trouble and singular part of it is this—viz., that in dry weather the floor becomes covered with moisture and dampness, whilst in wet weather the floor is fairly dry. There are "Rock" and other compositions in the market. Would a coating of any one of these effect a cure of the evil? It is a cellar to a large house, which is required to be used as a brushing room. The height must not be very materially diminished.—J. Feacey.

REPLIES.

[11377.]—**Water-Colours.**—I proceed to give a few hints from my own experience as to sketching from nature in water-colour, and laying on tints, &c., for the benefit of "A Sketcher." My first master was a water-colour artist of local distinction, after which I availed myself of the instructions given by the master of a school of art, whose sketches were above the average, and I took private lessons from him. But of course I had that intuitive feeling for colour which helped me much, and which has never left me. One of the first lessons I learned was to work with good materials; to use Whatman's thick rough drawing-paper damped and stretched on a drawing-frame or in the solid drawing-block, and work with good colours with sable brushes. "Atmosphere" was impressed upon me as of first importance, to secure which a general or local tint over everything was first put on. I would recommend "A Sketcher" to lay in a first tint of grey and brown, beginning with the grey at the top and working down, blending in the brown towards the foreground. Cover the white paper with this tint, except any high lights in the sky and foreground. You preserve air and space by this means. The after-tints for light and shadow ought to be put in with precision and boldness to the pencil outline, and they should be bright and pure, and flat. Take care to lay the tints to the edge of outline, and keep them clean and sharp; never retouch them, and use a full brush. Never retract, and be particularly careful to leave the edges of these tints untouched, the after-tints and detail being kept rather within. The next thing is to put in the detail on this general massing of light and shadow. Here, also, boldness and decision of touch is essential, so as to preserve the forms of the objects. Never mind raw edges: they are better than re-worked muddy edges, produced by retouching, so dear to the novice. It must be remembered that a sketch is not a finished picture. In fact, finish is often inimical to effect, and many painters regard their rough out-of-door sketches as more successful than their finished colour drawings made from them. Remember you require three washes to express your meaning: a general broad and flat tint for high lights, a middle tint, and shade. Contrast is another essential quality, and every shadow should be a true contrast to the light. Thus, blue is opposed to orange, red to green, and yellow to purple, and all contrasts are obtained on this principle of opposite colours. A shadow made by deepening the colour of the light, as, for example, the shadow of a stone building, would be tame and dull to an extreme, producing a dirty effect. Again, contrast is valuable to force the effect of colours, and to make a colour look light or cool or warm by its opposite. I wish to impress on the learner the value of a course of neutral tint drawing before commencing water-colours. My first drawings were monochromes of sepia or bistre; the system familiarises the hand with the handling of washes and tints. Colours like sepia and indigo, Indian ink and indigo, the latter for the distances. Indian ink or sepia will give every foreground tint, especially if a little of the warmer pigment be used in the details of foreground and parts in sunlight. This system is generally taught in the schools of art, and is an excellent preparation for colour sketching. A few well-selected colours (moist) are better than a large number of pigments of doubtful value. A box of 12 colours may include gamboge, raw sienna, yellow ochre, burnt sienna, crimson lake, light or Indian red, vermilion, cobalt, indigo, brown pink, Vandyke brown, Payne's grey, all these being given in some boxes. Brown madder, Prussian blue, sepia, burnt umber, and Chinese white are also useful. For stonework in sunlight, yellow ochre, warmed sometimes by a little lake or Indian red or brown pink, may be used in the strong warm parts, or a grey composed of light red and indigo for the shaded portions, the cooler blue tint prevailing. Blending the warm and cool grey tints in the first wash on a damp surface is sometimes practised with effect, and the rough texture of wall surfaces is sometimes imitated by scraping, by sponging, or sand-papering the granular surface of the rough paper. What are technically known as "dry touching" and "dragging," or "scumbling," are other processes which give the same effect, but these can only be used after some mastery has been obtained. For old stone buildings cool grey tones are most to be desired. Warm shadows are to be avoided, as they produce unpleasant contrasts with the lighter parts, and too yellow or warm tints generally give a cheesy appearance that is unpleasant.—G. H G.

Legal.

A BUILDING LINE CASE.

THE case from the City-road, London, has been confirmed on appeal (*Times*, July 17), and so it comes to this—that the long forecourts with dwarf walls and iron railings in front must remain as they are; at all events, for the present. It is true a future County Council may be persuaded to grant a license to build shops upon these useless gardens, as has been done in so many similar thoroughfares around London; but it is certain that, without this license, nothing can be done to render available this valuable freehold land. It appears that the owners of the house had begun by putting a hoarding on the dwarf wall, and against the iron railings, as an advertisement; but upon objection being made by the Council this was removed. Since then he had built a wall 11ft. high in place of the dwarf wall of some 3ft. and railings of about 5ft., and the question then arose whether that was not a building or structure beyond the building-line, and so should be removed.

The case has been fought right through, the architect's certificate that the line of the old house was the general building line of the road having first been appealed against and confirmed. Then the magistrate's ruling that this wall was "a building structure or erection" within the words of the Metropolis Management Act of 1862, and therefore illegal, as being beyond the building line, was made the subject of an appeal—first to a Divisional Court, and now to the Court of Appeal—only to be confirmed by both tribunals. The magistrate also found as a fact that the wall was intended to be used as an advertising station and as a boundary to the forecourt. The order to demolish the structure, therefore, stands good, and the owners have to pay all costs. It is rather difficult to see how they can have expected any other result. At the same time, the case is of much practical importance, as affecting the value of old property of this kind, which, having long ceased to be really residential, is more fitted for commercial purposes, for it shows that the conversion of such forecourts into shops may be made quite impossible by the action of the local authorities. **Fred. Wetherfield**, Solicitor.

1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

X. Y. Z.—Urban District Council.—Division.—Wards.—It does not seem to me clear that an election is rendered necessary. That is a point upon which the Local Government Board should be applied to for directions.

P. H. A.—Building.—City of London.—I do not know of any. But there may be general orders or by-laws, as to which it would be well to consult the Commissioners of Sewers.

LEGAL INTELLIGENCE.

Sewage Nuisance at Leyton.—Attorney General v. Walthamstow Urban District Council.—A motion was made on Friday last by the Attorney General on the relation of the Leyton Urban District Council for a sequestration order against the defendants, the Walthamstow District Council, for their disobedience to an injunction granted by the Court in 1875, restraining the Walthamstow local authority from discharging the sewage of their district into the Leyton Level Brook so as to cause a nuisance. The nuisance complained of had been a long-continued subject of complaint by the Leyton local authorities. The brook in question receives the sewage of Walthamstow, and after flowing through Leyton discharges itself into the tidal waters of the River Lea. After the injunction granted in 1875, the Walthamstow Board made a sewage farm extending over 160 or 170 acres, and sewage works. In 1884 the Leyton Board took further proceedings to enforce the injunction of 1875, and the Walthamstow Board gave an undertaking to comply therewith. Frequent complaints had been made since, but no further proceedings were taken until the present time. It appeared that the population of Walthamstow had increased from about 12,700 persons in 1875 to 24,800 in 1884, and 56,600 in 1895, and that the total sum expended on their sewage works by Walthamstow was some £112,000, of which £45,000 had been spent since 1884.—The Judge said the applicants had made out their case, and were entitled to the enforcement of their rights. He granted the order asked for, but directed the order to lie in the office until April 1, 1896, with liberty for the respondents to apply for further extension of time.—It was stated on behalf of the Walthamstow District Council that it would be at least two years before they could complete the new sewage works.

Infringement of School-Desk Patent.—Bennet v. Bruce.—In this action, in which judgement was given on July 20, in the Scottish Court of Sessions by Lord Low, James Dick Bennet, cabinet-maker, 40, Tennant-street, St Rollox, Glasgow, sought to have Alexander Bruce, joiner and builder, 37, Commercial-street, Maxwelltown, Dundee, interdicted from infringing his letters patent for improvements in schools-desks and seats, and from applying a registered design of which he is proprietor, to school-desks or seats. The respondent denied the alleged infringement. Lord Low held that there had been infringement of the patent, but not of the design, and, as regarded the former, granted interdict, but refused it as regarded the latter. The complainer was awarded expenses.

Speculative, but not High-class.—At Marylebone, John Sanders, a builder, of Lisburne-road, Hampstead, was summoned last week by Mr. William Smallpiece, the district surveyor for East Hampstead, for using mortar the ingredients of which did not conform to the requirements of the by-laws of the London County Council. The evidence in support of the summons was that the defendant was the builder of a house in the Constantine-road, Hampstead, in the erection of which he had used mortar deficient in lime to the extent of 15 degrees. For the defence it was admitted that the defendant had committed a technical breach of the by-law, but it was urged that similar mortar had been commonly used in the Metropolis for years past, and that if the prescribed amount of lime were used, the mortar would set too quickly. A witness called by the defendant stated that the mortar used was good enough for "speculative buildings," but it was not "high class." The magistrate said it was clear that the mortar was not up to the standard which the public had a right to expect. The public were absolutely at the mercy of the builders, and if they used inferior mortar it was nothing less than a fraud upon the persons who took the house. He imposed a fine of 40s., with 23s. costs.

Customs of Foremen Joiners in Southport.—At Southport County-court, on Tuesday, a foreman joiner, who sued a contractor for moneys out of pocket, and wages in lieu of notice, said some of the money disbursed was in treating a clerk of works on each visit—a well-known custom, he averred. Plaintiff added that, in the interest of his employer, he had made out false time-sheets, and had stolen windows. He denied that he was summarily dismissed for deceiving his employer, but admitted that he entered a man on the wage-sheet at 8½d. an hour, of which the man was only to get 7d., while plaintiff pocketed the difference for the loan of two planes and other tools—another well-known custom. The defendant denied all knowledge of any of these practices, personally or in the trade; and said that, on finding the irregularity in the wage-sheet, he summarily dismissed the plaintiff, who, as he had admittedly been drinking, might not remember exactly what passed. As to the charges made by the plaintiff, he warned him of their seriousness, and of the danger to himself.—His Honour (Judge Collier) held that the dismissal was warranted, and gave judgment for the defendant with costs.—Defendant said he had no vindictiveness against plaintiff, and he would forego a counter-claim for the difference between the 7d. an hour which the man actually received and the 8½d. which plaintiff obtained from him.

In re Saunders and Leadam.—The bankrupts, who had traded as merchants of foreign hardwood at 5, New London-street, under the style of Godfrey S. Saunders and Co., applied for their discharge. The receiving order was made in November upon the petition of the Comptoir National d'Escompte de Paris, and proofs amounting to £45,480 have been lodged, about £2,750 further being outstanding. The assets have realised £6,608, and £842 further is expected to be received. The Official Receiver (Mr. A. H. Wildy) opposed on statutory grounds. Mr. Registrar Linklater, in giving judgement on Monday, said it was reported that the bankrupts had continued to trade, and had contracted the whole of their indebtedness, amounting to about £48,000, with knowledge of insolvency. Saunders had previously failed, but had not profited by that experience, and now failed again. He held that the charge of trading, after knowledge of insolvency, had been substantiated, and he regarded it as a serious offence. A charge of misconduct in relation to certain trust moneys had also been made out in the case of Saunders, but displaced as to Leadam. A charge of rash and hazardous speculation had, in his (the Registrar's) judgment, fallen to the ground; but, with regard to Leadam, it appeared that he had contributed to his bankruptcy by unjustifiable extravagance in living. The discharge of Saunders would be suspended for six years, and that of Leadam for three years from the date on which the public examination was concluded.

Damages from Sewage-Farm Flooding.—Clayton v. Croydon Rural District Council.—In the Queen's Bench Division, on Friday, before Mr. Justice Grantham and a special jury, this action was tried, in which the plaintiff, a farmer, sought to recover £160 damages for injury to his crops in consequence of the overflow of a sewage farm constructed and worked by the defendants at Merton. For the defence, it was contended that the overflow was caused by excessive rain, and was therefore such as nobody could be reasonably expected to anticipate or prevent. The plaintiff quoted the printed reports of the sanitary authority's own engineers, who, since March, 1893, had called attention to the leakage of the sewers and other defects, and had suggested remedies, which the authority had been considering for two years, and were still considering. The following cases were relied on for the defendants:—"Dixon v. Metropolitan Board of Works"; "Whitehouse v. Birmingham Canal Company"; "Thomas v. Birmingham Canal Company"; Box v. Jubb"; "Nitrophosphate Company v. St. Katharine Docks Company"; "Nichols v. Marsland"; "Fletcher v. Rylands," and it was urged that the case ought not to be submitted to the jury. A verdict was, however, returned by the jury for the plaintiff for £115, for which judgment was entered, execution being stayed for a fortnight.

Covenants to Repair.—Jaquet v. Edwards.—An action was heard by Mr. Justice Wright, without a jury, last week for the recovery of some premises in Bermondsey for breach of a covenant to repair. The premises in question were a hat manufactory at 132, Long-lane, and had been granted on a repairing lease to the defendant in 1889. Previous to the execution of the lease there had been an agreement between the parties whereby the defendant agreed to accept a lease after certain repairs had been executed by the plaintiff. One of the points of the defence was that some of the repairs now alleged to be necessary were repairs that the plaintiff was liable to do under that agreement, and it was said that the execution by the plaintiff of these repairs was a condition precedent to the defendant's liability. "Neale v. Ratcliff" (15 Q.B. 916 and "Coward v. Gregory" (L.R. 7 C.P., 172) were cited in support of the contention, but Mr. Justice Wright decided against it. The defendant, besides denying that any repairs were necessary, further contended on the authority of "Skinners' Company v. Knight" (1891, 2 Q.B. 542) that the notice required by section 14 of the Conveyancing Act, 1881, duly served on him before the action, was bad on two grounds—(1), because it included among the repairs therein specified, a charge of £39 10s. for drainage which the plaintiff had been compelled to incur at the instance of the sanitary authority—a charge which had now been abandoned—and also included the repairs above alluded to, which the plaintiff ought to have done; (2) because the notice gave six weeks within which the repairs were to be done, and that time was an unreasonable one, looking at the amount of the work required; and, in addition, there being a covenant in the lease to repair upon six months' notice, that time must be taken to have been agreed upon as a reasonable time. For the plaintiff it was argued that the covenant to repair and the covenant to repair upon notice were distinct covenants, and that the Act not having required that any time should be named, the notice was not invalidated by its specifying too short a period, so long as action was not brought within a reasonable time afterwards. Neither was a notice bad merely on the ground that it included things which were not afterwards insisted on. Mr. Justice Wright found that there had been a breach of the covenant to the extent of some £5 or £6 in respect of repointing a certain wall, but not to the extent claimed; so he gave formal judgment for the plaintiff, and granted relief to the defendant on his executing the above repairs.

CHIPS.

Christ Church, Ilfracombe, has just been restored, receiled, and reseated from plans by Mr. H. W. Weir, of that town.

The commemoration of Archdeacon Denison's jubilee will take the form of the restoration of the cross in the churchyard at East Brent, the base of which has been standing for some five centuries. The work has been put in hand, and will be completed by Saturday week.

The loan exhibition at the Guildhall Art Gallery closed on Sunday evening, the number of visitors since its opening having been 262,810, and the average attendance on Sundays 1,518. The total number of those who have visited the four exhibitions organised at the Guildhall is 908,921.

Our Office Table.

Three fresh pictures have just been hung at the National Gallery. Of these, the principal one is the work by John Sell Cotman (1782—1842), "A Galliot in a Gale," recently acquired for the trustees at a sale at Christie's. It represents a vessel sailing under mainsail on a stormy sea, a town perched on rising land being seen to the right. The work is the second example in the collection by the leading spirit of the Norwich school, is numbered 1456, and is hung in Room XX. No. 1459 is a portrait group, by Gerbrant van den Eeckhout (1666-95), a Flemish artist not previously represented in the Gallery, and is hung in Room XI. It is a large work, showing four men consulting a drawing and book on a table at which they are seated. In front is a terrier. The third work, No. 1460, is "Smugglers on the Irish Coast," by Julius Cæsar Ibbotson (d. 1817), also a new name in the Gallery catalogue. A crowd of men and women are transferring casks and other contraband goods from the shore to carts.

Mr. Edgar Barclay, who exhibited three years ago in the Conduit-street galleries a number of oil-paintings representing Stonehenge from every aspect and under every condition of atmosphere and lighting, has just published a quarto volume on the remains, entitled, "Stonehenge and its Earthworks." Mr. Barclay gives an exhaustive summary of all the writers who have attempted to account for the circle of great stones on these high-lying downs, from the time of Inigo Jones to the present day. His own conclusions are thus expressed:—(1) That Stonehenge is a temple, not a tomb, though many funeral barrows are in its immediate neighbourhood; (2) that it is not pre-historic, or of the Bronze age; (3) that it is not so late as James Fergusson would have placed it—the time of the Saxon conquest; (4) that it is not, as Dr. Guest conjectured, the work of the Belgæ; (5) that the blue stones are certainly foreign, and must have been transported over sea; (6) that the work is in all probability one of those undertaken by Agricola to pacify and employ the people of Southern Britain.

The remarkable collection of objects made and utilised by the so-called "New Race," found by Professor J. E. Flinders Petre, with the assistance of Messrs. Grenfell, Price, and Duncan, along the desert edge between Ballas and Nagada, and about 30 miles north of Thebes, are now on view at University College, Gower-street. The conjecture is that the remains date from about 3,000 B.C., and that they are the work of the people who overthrew the first great civilisation of Egypt at the fall of the VI. Dynasty, and were in turn overthrown by another Dynasty rising at Thebes. The earliest remains found are Palæolithic flints from the top of the plateau, and in the gravels of the Nile plain; but there are also pieces of pottery of many shapes and primitive ornamentation, and various other objects found in the graves of the New Race. Not the remotest traces of anything approaching Egyptian civilisation—and, indeed, nothing Egyptian—has been found in their graves, and the pottery, made by hand, indicates ignorance of the potter's wheel which was in use with the earlier race. With their dead were placed many large jars containing ashes of the funeral feast, though the body was never burnt, also drinking vessels, and before the clenched hands of the deceased was a slate with malachite ground on it, and a pebble grinder, and sometimes a bag of malachite and galena in one of the hands. Many beads were found on neck, arms, wrist, fingers, and ankles. The remains excavated represent nearly 2,000 graves, and two small towns built of mud-brick. The flint implements show very fine workmanship. The pottery includes a group of jars with marks scratched on the surface, the nearest approach to writing discovered in the doings of the New Race, and there are also black incised bowls.

In connection with the 63rd annual meeting of the British Medical Association, to be held in London next week, a series of conferences on hygienic subjects will be held under the auspices of the Sanitary Institute, at the Parkes Museum, Margaret-street, W., on Tuesday, Wednesday, Thursday, and Friday next, between the hours of 4.30 and 6 p.m. On Tuesday the subject of the positions of medical officers of health in regard to the administration and working of the Infectious Diseases Notification Act will be introduced by Sir Thomas Crawford. On Wednesday Professor A. Wynter Blyth will give a demonstration of the teaching of hygiene, as illustrated by the Parkes Museum. Thursday's meeting will be devoted to a discussion on the pollution of streams, a subject to be brought forward by Dr. George Reid, medical officer of health to the Staffordshire county council; and at the closing meeting on Friday, Aug. 2nd, Professor Percy Frankland will lecture on the "Bacterial Purification of Water."

The Birmingham Architectural Association second annual sketching excursion is to be held at Ludlow and the neighbourhood on the 3rd, 4th, 5th, and 6th of next month. The number is to be limited to twenty, and photographers are requested to bring their cameras. Messrs. Charles E. Bateman and Herbert T. Buckland are the hon. secretaries. The Feathers Hotel, Ludlow, will be made the headquarters, and the various excursions from Ludlow (with the exception of the visit to Richard's Castle on Sunday) will be made in a brake. On Saturday, Whitton Court, Burford, and Tenbury will be visited. It is proposed that Sunday should be devoted to Ludlow and the vicinity. A walk of about three miles takes one to Richard's Castle, where an old church, with detached bell tower, and a new church, by R. Norman Shaw, R.A., are to be seen. On Monday, the party will drive to Stokesay Castle. The church contains some Jacobean panelling and pews. The Rev. J. D. La Touche has kindly promised to exhibit some ancient drawings and other objects of interest (bearing on the history of the castle) which he has collected. On the return journey, Bromfield Church will be visited. It is proposed on Tuesday to leave by train for Church Stretton. Plaish Hall, a quadrangular Elizabethan stone mansion of much interest, will be visited. From here it is proposed to go on to Church Preen, a fine house by R. Norman Shaw, R.A., and an old private chapel. Hughley, about two miles from here, will be taken on the way to Presthope Station for the journey home. The church is a good example of Late Decorated work, containing a good rood screen and half-timbered bell-turret.

Some time since it was stated that the old Rolls Chapel in Chancery-lane was to be transformed into a museum, and thus made the connecting link in the chain of buildings forming the old and new Record Offices. The necessary authority for stopping the services and generally preparing the way for the alteration had been granted, but even now the services are being continued, though the new Record Office, which faces Chancery-lane, is almost completed, and quite hides the ancient chapel from public view. The services will be stopped next month, and the chapel will then be placed in the hands of the builders, who, while they have to retain as far as possible the historic portions of the building, have several alterations to make in order that the structure shall become perfectly proof against fire, for its walls will contain some of the most valuable documents that the nation possesses, including autograph letters of our leading statesmen, papal bulls of great antiquity, and, above all, Doomsday Book. The chapel will be so inclosed by the outer walls of the new Record Office that it will be necessary to provide a top light, and this will necessitate several extensive alterations, while the Rolls House, formerly the residence of the Master of the Rolls, is to be swept away, in order to make room for the wing of the new building.

The annual meeting of the general committee of the Palestine Exploration Fund was held at 24, Hanover-square, on Tuesday. Mr. James Glaisher, F.R.S., occupied the chair. The report of the year's work includes an account of the excavations at Jerusalem, which have resulted in the discovery of an ancient wall running south of the present city wall down towards the eastern valley, where, at a point south of the Pool of Siloam, it turns towards the north. In this wall several towers and two gateways of great interest were found. Herr Baurath von Schick also reports the discovery of a stair and postern in the old north wall of Jerusalem, between Damascus Gate and the north-western corner of the city. Another discovery of importance is that of a Latin inscription of the period of Trajan, built into the wall of Neby Daûd. In the spring of the year Dr. Bliss, who is in charge of the work of the fund, made a journey to the country of Moab, visiting Madeba, Kerak, and other places of historical interest, in the course of which he discovered remains of an ancient Roman fort and a Roman town, which do not appear to have been previously observed.

On Friday last the annual exhibition of drawings, needlework, and other handwork executed by scholars and pupil teachers attending the London board schools was opened at the Hugh Myddelton School, Clerkenwell. Work has been sent by six classes of deaf children and 26 special classes of physically and mentally defective children; 175 schools are represented by needlework exhibits, 55 by kindergarten work, 150 by laundry work, 52 by various occupations, 100 by drawings and designs, 18 by clay models; and there are 53 centres showing woodwork, and eight evening continuation schools a variety of articles. Many of the studies in light and shade are particularly well done, as are also the outlines from plants, casts, and models. There are some artistic designs in coloured paper, a subject which is taught to give dexterity of hand, to quicken the colour sense, to cultivate the sense of taste and design, and a better appreciation of form. The clay models, which include some portrait medallions, deserve praise, and there are many highly-finished and accurate specimens of woodwork.

The Canadian Government have given fair trials during the past few years to the systems of executing works of engineering and building carried out by day-labour or by contractors, with the result that public opinion in the Dominion is in favour of letting the work to contractors. The town council of Toronto are, however, trying a fresh experiment as their own contractors for the completion of the municipal buildings in that city, which will be watched with interest. The municipal buildings were begun under contract, but had only reached some 20ft. above the ground level, when the contractor (Captain Neelon) was dismissed in July, 1892. Owing to difficulties in obtaining satisfactory tenders for the completion of the works, it was decided to proceed with them by day-labour. In the mean time, the late contractor is seeking compensation in the law-courts, basing his claim on the allegation that he was dismissed owing to the bad faith of the architect, Mr. Lennox.

"The Hospital" refers to the new ailment said to have been produced on rather an extensive scale, as a result of the action of the prolonged dry weather on the wood pavements of the London streets. The symptoms, which are very distressing, manifest themselves chiefly in the mucous membrane of the nose. The membrane becomes inflamed and thickened, the blood-vessels are turgid, and on very slight provocation there is bleeding to a considerable amount. The affection is said to be due to the millions of small particles of straw and other *débris* that lie in the wake of the vast horse traffic which from morn till midnight congests the leading London thoroughfares. Last year the same, or a similar, ailment was complained of, and certain steps were then taken by the central and local authorities with the object of mitigating the danger. Those steps consisted almost entirely in flushing the principal thoroughfares well with plain water once or twice a day, and in adding to the water a percentage of Condy's fluid for those particular localities where the street debris seemed to be most offensive and dangerous. No remedy in our opinion will ever prove effectual. The wood pavements are dangerous to health in dry weather, and damaging to clothes and house fronts in wet.

The late James Renwick, of New York, who was a rich man for an architect, left to the Metropolitan Museum of Art in that city a collection of pictures which he had been many years in forming, and which is said to contain some good examples of Italian masters of the first rank of the Cinque Cento period, besides a number of pictures by painters of the same school, but of the second rank—such as Bronzino, Carlo Dolce, and others less known. Under his will, the pictures are to kept together in a room by themselves, and designated by name as the Renwick Collection, in the same way that the Wolfe Collection of modern French pictures is shown in the same museum, which, hitherto, has been exceptionally poor in works of the Italian schools of the 16th century. A considerable portion of the collection just bequeathed originally belonged to the late William H. Aspinall, whose eldest daughter married Mr. Renwick.

◆

A memorial bust of the late William Alexander, LL.D., of Aberdeen, the author of "Johnny Gibb, of Gushetneuk," has just been executed for subscribers for erection at Aberdeen. Mr. Pittendreigh Macgillivray, of Edinburgh, is the sculptor.

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXIX.—No. 2117.

FRIDAY, AUGUST 2, 1895.

SALISBURY SPIRE.

THE report of Sir Arthur Blomfield, A.R.A., on the critical condition of the western turrets and spire of Salisbury Cathedral, which we published last week, will be received with some anxiety by all admirers of that graceful and unsurpassed structure. For some years past attention has been bestowed upon the question of the condition and stability of this structure, poised so beautifully and elegantly over the crossing of one of the finest Early English cathedral churches of our land. Not many years ago —in 1875, we believe—the late Sir Gilbert Scott was engaged in strengthening the tower and spire, which was done by a system of iron ties, devised by Mr. Shields, C.E. We have no doubt that eminent engineer succeeded in temporarily securing the spire, and in preventing any further deflection from the vertical; but whether the presence of so much ironwork in the stone structure was judicious we very much question. In his report Sir Arthur Blomfield, in speaking of various adverse agencies which have been gradually at work, alludes to the "numerous iron bands, rods, and ties which have been introduced from time to time, many of them in the most injudicious manner." The gradual declination of the spire, which had been noticed, we believe, in Wren's time, has been the cause of many efforts and tinkerings. Several methods had been devised before Sir Gilbert Scott took the structure in hand, and Price, in a work published in 1750, describes some of them. We believe, indeed, that the great architect of St. Paul's was engaged by the Dean and Chapter of his day to do something to the spire, and that he introduced an internal framework or scaffolding for the purpose of checking any further deflection. We know that, at Chichester Cathedral, Wren (on the authority of Elmes) constructed a pendulum stage in the upper part of the old spire to counteract the south-westerly gales which had forced it out of the perpendicular. From the finial stone was suspended a balk of timber 80ft. long, loaded with iron. At the bottom two oak floors a trifle less than the interior masonry were suspended, and when the wind blew the spire out of the vertical, the pendulous floors touched the lee side of the spire, and tended to restore the equilibrium. The failure of this spire owing to the instability of the piers ought to be a warning to all custodians of our great churches having central towers. The spire of Salisbury is stated to be 404ft. high from the pavement; its thickness at the bottom is only 9in., diminishing to 7in. at the top. The necessity of lightness for a spire of this height is a sufficient reason for reducing the spire walls to the least thickness compatible with safety. Probably, in these days, if we had to erect such a spire, a light iron-framework to support the shell of stone might be used, as was done in the re-erection of the spire to St. Stephen's Church, Vienna.

The unique design and beauty of the Salisbury spire can only be appreciated by those who have seen it from all points of view—both elevationally, in front of one side, of the tower, and diagonally. With the exception of the beautiful spire, with its clusters of pinnacles and turrets, of St. Mary-the-Virgin, Oxford, very few structures can be compared with it. St. Michael's, Coventry, can show a very elegant arrangement at the springing; but the beauty of Salisbury is unquestionably its double tier of turrets at the angles, the upper tier being set within the lower anglewise, thus giving a pleasing contour to the base of spire, especially when seen in the diagonal view. Besides external design, the advantage derived from these turrets at the corners in a mechanical sense is important. The thrust of the spire, which, as Sir Arthur Blomfield says, is great, and is "continually active," is met and neutralised to a large extent by the weight and mass of the angle-turrets, which tend to divert the lateral thrust, and to verticalise its direction in the same manner as a pinnacle does which receives a flying buttress. The report says, truly, "Nothing can be done to lessen or modify this last element of danger (the thrust), but it is imperative to render the angle-turrets, which receive so much of it, as sound and strong as they can be made." For this purpose "small repairs or patching" are pronounced not only useless but dangerous, and, the report says, the work called for is "not one of restoration, but of repair," which should be complete and thorough. It is recommended to deal with the north-west turret first, to be followed by the repair of the corresponding one on the south side. Care will have to be exercised in the removal of any of the stonework, so that no great lightening of the weight of the turrets should be attempted. Theoretically, the object should be to bring down the weight of the turrets within the angles of the tower, and this is generally accomplished by corbelling the angles of the tower inside to receive the weight of the splayed sides of the spire across the angles—*i.e.*, what is technically known as constructing "squinches," or a series of arches across the inside angles to receive the alternate sides of the octagon spire. By this device the weight of the spire is brought down and distributed over the tower walls. But there may be practical difficulties in the way of lowering the weight, and, further, it would be obviously undesirable to increase the load on the existing central piers, which by some authorities are supposed never to have been intended to carry a spire, but only the tower.

In any repairs, the existing ironwork will have to be cautiously dealt with. Iron bands, ties, and rods have been introduced from time to time, and to these must be attributed much of the split and fractured stonework. We believe that most of the damage to the spire and the fractures of the turrets is due to the tampering with the stonework when these iron bands and ties were put in. They must also have become much corroded by age. As the report informs us, attempts have been made to protect the iron with lead; but these have failed in many cases, rendering the iron more exposed to the wet and corrosion. At the bases of many spires, or inserted within the masonry of the tower at the springing of spire, bands of iron or chains are introduced to prevent the thrust, and these bands have been sometimes used at intervals in building the spire. Unless these are properly imbedded in the masonry and made secure against the intrusion of air and moisture, they are subject to corrosion, and are more prejudicial than useful as ties. The stonework becomes fractured by the oxidation of the iron, or frost enters, which also does incalculable injury. The care and maintenance of our great towers and spires is a duty which requires considerable care and architectural appreciation. No other portion of our historic edifices needs greater skill or caution. The steeples of many of our finest churches, including that of St. Mary's, Oxford, have suffered from bungling "restorations" and repairs, where portions have been rebuilt, turrets taken down and restored in the worst possible taste, regardless of the original detail, and even stucco and cement substituted for stone. For instance, at Ely, Wyatt substituted the then newly-inverted Roman cement for the lantern and great part of the west front, and there are records of other substitutions and disfigurements to our cathedrals made by Wyatt, Blore, and others, who appear to have thought little of taking down and substituting for the old, poor copies, or modern ideas of stone masonry, devoid of all the spirit and feeling of the original work. It would have been far more cautious if our tower and spire "restorers" and mutilators had paid more attention to the root of the mischief, and instead of tinkering at the summit, had made sure of the foundations, and strengthened the supporting piers of these structures. In many of our cathedrals the central piers have been found defective and weak, much too weak to bear the weight of a spire, which was generally a later addition.

* * *

RAILINGS, FENCES, AND GATES.

A RECENT law case, relating to property in the City-road, has drawn attention to what is and what is not permissible in the matter of London street fences. A dwarf garden wall and railing had been removed, and a solid brick wall 11ft. high substituted. The magistrate ruled that this was a "building structure or erection" in the legal sense of the term, and as it was beyond the building line of the houses, he condemned it. His decision was confirmed on appeal. But the facts were somewhat peculiar. They do not justify the inference that whoever has railings must have railings still, for the wall went 2ft. higher than the ironwork which it superseded; and, moreover, the magistrate found, as a matter of fact, that it was meant to be used for an advertising station. This case, therefore, does not show us what would befall the man who simply took away his railings and built himself a boundary wall of moderate height, and still less what would happen if he put up some other kind of close, or nearly close, fence instead of his open one.

The objection to close fences in towns, unless they are kept very low, is that they hinder the circulation of air. But the one-story appendages which, in the long-run, are built over so many London gardens, hinder it much more, and yet their number is constantly being increased. The strips of ground in front of a terrace grow dingier and dingier, the rents fall, the class of tenants who once occupied them move further out, and then, if permission can be obtained, the proprietor's only idea seems to be to bring out shops to the pavement line. Where it pays, no doubt, this will continue to be attempted. But it does not always pay, and then it might be worth while to consider other ways of making such unattractive property more popular. Look, for example, at the Euston and Pentonville roads. Measured across from front to front, they are of admirable width. For many people, who must live in-town, they are conveniently situated, and yet how depressing it would be to reside there. With such an outlook, on grimy gardens, box-like houses, and soot-covered trees, even Mark Tapley himself could hardly have kept up his jollity. The shops that have been brought forward here and there do not seem to prosper much, which is probably the reason that there are no more of them. But something could surely be done, even in a case like this. If a dozen gardens, here and there, were thrown into one, the trees thinned out, so as only to leave two or three of the best ones, and the open space planted with a succession of the flowers (numerous enough when sought for) which will really flourish in spite of smoke, half the repellent look of the place would be gone. A road, of course, would have to be formed between the houses and the flower-beds, and the latter inclosed so as not to shut out the view. The buidings might, at the same time, have a little outward beauty bestowed on them, and they would once more become, in the dialect of the auctioneer, "desirable residences."

This brings us back to the nature of the inclosure. It is too hastily assumed that iron railings are essential because of the difficulty of climbing them. But anybody who really wants to get over a fence, looks out for an easy point, and he seldom fails to find one. Either at the gate, or at the ends, where there is a pier or a junction with some other fence, there is pretty sure to be a satisfactory foothold, and then what is the use of all the difficulties that have been put in the way of climbing at intermediate points? When this is once realised, it becomes clear that many other materials are quite as suitable as metal. Open work in terracotta, or even in brick, combinations of brick and stone, brick and wrought iron, or wrought iron and concrete, are all available, and any of them may be made to look incomparably more cheerful than the ordinary cast-iron bar with an "ornamental" head on the top of it. They must be reasonably troublesome to surmount. We do not advocate anything over which the street rough can vault, pull up his handful of flowers, and vault back again. But there is reason to hope that the street rough of this type is growing scarcer. Even he may be educated to some extent by trusting him, and the ordinary passenger, of whatever rank, would soon learn to protect, instead of to injure, whatever was designed to make ugly places brighter.

In the country a wider range is possible. Low quickset hedges are cheap and pleasant-looking, but they do not keep out dogs. They are liable to be thinned near the base by the first stray goat that takes a fancy to them, and, moreover, they encourage the precise class of insects which do most harm to rose-trees. Holly hedges will keep out both dogs and cats, but it takes years to grow them. Yew hedges grow still more slowly, and the giants which the gardener sometimes tried to clip out of them, in the "topiary work" of two centuries ago, were apt, as Pope remarks, to be rather stunted. All hedges harbour snails, and these, with a man who grows flowers of any rarity, is reason enough for avoiding them. Rubble walls built without mortar do the same thing, but they offer some compensation in furnishing places for many interesting plants. But in some parts of Cornwall they have a system which retains their good and gets rid of their evil. The walls are built with mortar, and the coping is made with long, sharp-pointed stones set on end. These are not merely put *on* the top horizontal course, as is the fashion elsewhere: they run down below it into the wall here and there for a foot or more, and are securely bonded in. At irregular intervals one of them is omitted, and this omission produces a kind of rough square box, without a lid, amongst the coping stones. This box, which may be as big as a large flower-pot, has only to be filled with earth, and it then forms a place in which anything will flourish which affects that sort of position. Succulent plants do well there, and the wall-tops in summer are as gay as the garden borders elsewhere.

In Norfolk reed fences are not uncommon. They are less frail than might be supposed, for round the Norfolk Broads the reeds grow long and stout. A light wooden framework serves to stiffen them, and though a foot, or even a fist, can easily be thrust through them, they do sometimes serve to keep out, or even to keep in, cattle. It makes one think that cows and horses must have a kind of conscience—a rudimentary sense of right and wrong—since they could walk through these fences without the smallest effort, if they did not feel it to be improper. Split oak fences last long and answer well. The boards are thin, but they are supported at top and bottom by triangular rails. Sometimes there is a capping in addition; but this is a doubtful improvement. It certainly adds nothing to the appearance; boards cut alternately short and long, after the manner of battlements, look much better. If any dressing is given to woodwork of this class, Stockholm tar is about the least objectionable. Paint and stains are an abomination on it. An old red-brick wall, when the bricks are worn by age and overgrown here and there by climbing plants, stonecrop, and similar things, forms a picturesque and interesting boundary. What with the wild bees which burrow in its mortar, and the still brighter winged insects which watch their movements in the hope of plundering their nests, there is always something going on there, at least in sunny weather. Walls of stock brick rarely gain any charm from time. Their originally ugly tint grows uglier, and nothing loves them or takes to them. Open fences in which posts and rails are crossed by light spars arranged lozenge-wise look well in small quantities. They make, for instance, a good inclosure to a churchyard; but their pattern is too pronounced to bear much repetition. This is where amateurs go wrong in ordering goods from illustrated catalogues. They pick out what strikes them as prettiest when only a yard or so is shown in the sketch; but it does not occur to them that 50 yards of it—not to say 500—will be more than mortals can bear.

A good fence is often spoilt by a vulgar gate. For this those laggards in the race for improvement, the "ornamental" ironfounders, are commonly to blame. Their gates are as bad as their grates, and sometimes even worse. It is best to keep quite clear of them, and where an iron gate is indispensable, to design a simple wrought one. For wooden ones, ash is nearly as good as oak, and much cheaper. Yet a wholesale manufacturer of gates stated not long ago that he had never made an ash gate in his life, and was sure (because he had never tried) that they would not last. This is the sort of groove into which the mechanical repeater of stock patterns naturally gets. He learns nothing and forgets nothing, and nothing can be taught him. The "ornamental" gate of the villa garden is usually badly framed, and nearly always badly designed. Very often it has no bracing at all, and if it has, the lower end of the brace, instead of being tenoned into the heelpost, frequently rests on the bottom bar. At other times one sees it framed like a roof or a quarter partition—that is, as if it were supported at both ends, and not merely at one. But its mechanical necessities are easily mastered. Its possibilities as to architectural design are varied enough. Here manufacturers' pattern-books are useful as a warning, for they illustrate nearly all the faults into which a beginner is likely to fall. We should advise the student, therefore, to preserve them carefully, and to consult them with the same intention with which orthodox Mohammedans are said to ask the advice of their wives—that, namely, of doing the exact opposite of whatever they recommend.

LIGHT IN TOWN BUILDINGS.

THE extent to which the London Building Act has restricted building in the Metropolis, or, rather, restrained the free hand of the architect, especially in the more crowded parts, raises the question of the means of lighting our many-storied buildings and warehouses in all close-packed neighbourhoods. At the best of times our City offices and warehouses have suffered from a want of light, and all kinds of devices and expedients have been called into requisition to meet the difficulty, such as lens-lights in the pavement and areas, reflecting surfaces of white glazed bricks, silvered reflectors, light areas, &c. Yet still the difficulty increases year by year with the erection of loftier buildings by the covering of larger areas of ground and by other causes. The London atmosphere gets, if anything, thicker and denser with the rapid increase of the number of coal fires, and to all these causes we must add the restricting provisions of the new Building Act, which, by insisting on a certain angle for light, compels owners to raise the height of the remaining portion of their premises. And another section, the setting back of building lines, operates also in the same direction. As light, imponderable an agency as it is, can only penetrate in two directions—from above vertically downwards, and laterally at a certain limited angle to the sides of a building, or in a street building only through two sides, front and back—it follows that a street building can obtain light only in two ways, either directly through the roof by means of skylights, or in a slanting direction through the windows of front and back. These are the only possible ways it can be admitted. From which it will be seen that the architect's power is restricted very much. He can only obtain light through skylights when he has a top floor to deal with, or only a ground-floor story with nothing over it; but for all intermediate floors top light cannot be used. For all these intermediate stories, then, he can only get light through vertical windows, and these are to a large extent obstructed by adjacent buildings and other causes. He can, it is true, make his window openings large and place them high, so as to get all the light he can; but, as a rule, a large window is only practically available for a part of its height—the upper portion—as lateral obstructions often render their lower areas almost useless. In fact, the craze for large windows and plate-glass has not solved the problem of lighting in town streets. Very few rays of light can enter a window horizontally in the lower stories of a street house; in fact, it has been generally recognised by all competent observers that below an angle of forty-five degrees with the horizon the light from the sky is practically *nil*, and this limit has therefore been generally accepted, though repudiated by the Bench as a test of sufficiency of the amount of light. The idea of the angle of 45° arose, no doubt, from the Building Act Amendment Act, 1862, which determines the width of the street by the height of the houses; but for all that, it is a useful and reasonable test of sufficiency of light, if the angle be taken from the zenith, and we believe any court would consider such an angle of light sufficient. Taking it as some measure of adequacy, we can say that all buildings in streets whose width is equal to their height, or nearly so, are well lighted in front; but such a happy condition by no means exists in many of the London streets. In a large number of them, the width between the houses is not more than half the height to the parapets, which practically means that only the upper half of the houses on either side are sufficiently lighted, the lower half being in comparative gloom during the greater portion of the day. The direction of a street has, of course, a little to do with the light, and the northern sides of streets are necessarily worse off than their southern sides. Practically, however, in this northern climate, where the sun is seldom seen during the winter months, the diffused light from the sky is all we depend on, and therefore the luminous sky-area is the main source of light to our windows. To obtain as much of this sky-area through our windows as we can is what the architect desires. How to calculate the area of light by means of squares is laid down in treatises on light, and Professor Banister Fletcher's work on the subject shows, by diagrams, an excellent means of calculating the amount of light each window receives, and the way of estimating the amount of obscuration resulting from buildings near. There is also a certain angle on each side of a window within which light may come. How to secure this light is the question for the architect to consider. Building legislation has done little for him; in fact, the London Building Act, 1894, only provides for a minimum of light under certain conditions, and has in its 41st section laid down an angle (63½°) with the horizontal line which is quite inadequate for domestic buildings and offices. This rule only applies to the space at the rear of domestic buildings abutting upon streets laid out after the commencement of the Act. Another section provides a space in the rear of habitable basements of not less than 100sq.ft., and the 45th makes it necessary that every window of a habitable room opening into an inclosed court shall have a certain space in front of it equal to half the height from the sill of such window to the top of the court. This last rule, it will be seen, is equivalent to the angle made by the diagonal of a double square, or is equal to the statutory angle of 63½° with the horizontal, so that the real angle of light measured from the zenith would be only the complement, or 26½°. The practical effect of this rule is that no window lighted from an inclosed court is to be placed lower than a certain distance from the top.

These are the ordinary means of obtaining light in the architect's hands. If internal courts are to be of any use, they must be made large enough to secure the necessary angle of light to the lowermost window, in which case the width of every inclosed court must be equal to half its height. Thus a building 60ft. high must have a court nearly 30ft. in width. In many of the large blocks of offices in the City and Victoria-street the courts are very contracted, and the light received through the lower windows so small in amount that the offices require gas or artificial light all day. Here and there reflectors are fixed below the windows to reflect the top light through them; but those remedial measures are, at the best, subterfuges, and beg the real question. What other constructive methods are open to us? One principle must be acknowledged—namely, that top light directly admitted is worth all the light that can be obtained laterally through windows, and if we can admit this top light to every intermediate story of a lofty building the problem is solved. The plan we are about to propose will no doubt be objected to by those who are anxious to make all their floors of equal area, so as to utilise every foot of space they can, even at the risk of having gloomy rooms. The tenants and the occupants, however, of our large city buildings have an interest in the question quite as much as the owner; the public have a voice in all that affects the well-being and health of those engaged in mercantile business and in city offices; and those in whom the sanitary laws are vested have the obligation imposed on them of securing by the best means in their power the attainment of an object so essential.

The effect of the statutory diagonal line for the regulation of lofty buildings in the rear is to make a series of offsets backwards from the vertical to a sloped line, as shown by the diagrams in the Amendments of the L.C.C., embodied in the new Act. The principle we propose is to utilise as far as possible the offsets for the purpose of giving light to the intermediate stories. The setback of each story within the lower to be utilised to form a series of glass roofs or skylights, which, if made flat, and covered with Hayward's semi-prism lens-lights, might form a series of balconies. Or these top lights might be applied only to the lower and darker stories. And, of course, the same principle of sets-off may be adopted to the front of a building in a lesser degree; thus the façade would form a succession of stories each set back within the lower one, or the lower stairs only, each flat forming a top light and a balcony. Architectural variety would be introduced of a kind impossible with a vertical front. Constructionally, each wall thus set back over the ceiling of the room below would be carried by an iron girder, the ends resting on the party-walls. This method of raking back the rear walls of town houses and warehouses has been followed in several City buildings, but we are not aware that the flats or roofs have been made useful for the admission of top light in the way suggested. The plan deserves at least a trial. Vertical, and therefore the most valuable, light is obtained over the front of every story, which it would be easy by refracting semi-prisms to direct into a room of considerable depth. The principle of catching the vertical light, and of then reflecting it, is one deserving of attention. How far it would be possible to introduce projecting lens lights over the upper portions of ordinary windows we cannot say, but in narrow streets and courts we think the experiment worth a trial. We know, for instance, how, by the use of these means, a narrow pavement of lens lights can be made to illuminate the whole interior of the basement, restaurants, and Turkish baths below the street level. What can be done in basements ought to be more easily accomplished in the lighting of upper stories, where the light is less obscured and stronger. The ordinary methods of obtaining light by courts, and by borrowing through other rooms, are at present very insufficient in our towns, owing to the increased height of adjoining premises and the very limited area of the courts. Under the old law there has been nothing, excepting the law of easements (which is applicable only to a few buildings), to prevent one building owner raising his premises to such a height as to materially darken the windows of all rooms and offices in its vicinity. Submission to or acquiescence in such interruption of lights is sufficient to establish the right of such interference.

And it is worth notice in this connection that the general effect of building regulations like those of the new Act, and also of a right to the access of light by the Prescription Act, or by prescription at common law, is to make our town buildings conform more and more to a sloped or diagonal line in their section, such as we have noticed, by setting back the rear walls of buildings. The back walls and inclosing walls of courts will have to be more and more sloped back, to satisfy dominant owners and the local authorities. An inclosed court will thus assume the shape of a truncated pyramid, with its larger end uppermost—the only natural form of well for admitting light and air to the backs of buildings. The existence of "ancient lights" in so many of our old buildings which have been exposed by street improvements and rebuilding necessitates the reconstruction of the new buildings on this plan, and as the tendency to erect high buildings increases, so will the necessity arise of increasing the angle of light as measured from the zenith. So that out of evil good will come by the maintenance of those statutory rights of light which every building owner is supposed to have. The effect, indeed, of these rights will either be to increase the angle or to limit the height of buildings.

MR. ALMA TADEMA ON ART TRAINING.

IN the lecture theatre at South Kensington, Mr. L. Alma Tadema, R.A., has distributed the medals and prizes gained by the students of the National Art Training School in the sessions of 1893-94. The holders of the travelling scholarships were Miss Lilian Simpson, with the gold medal; Mr. George Scott, with the silver medal; and Mr. William B. Dalton, with the bronze medal. The report, read by Mr. J. C. L. Sparkes, the principal, stated that more than 27,000 students have passed their apprenticeship in art in these schools.

Mr. Alma Tadema, addressing the students, observed:—Art teaching is a field in which I have had some experience, for I have been a frequent visitor to the Royal Academy schools for the last 20 years. True, my work there was confined to teaching drawing and painting from the life model, but that is the highest in art, by which all the other branches are guided. Did not the Greek art, the highest of all, emanate principally, if not completely, from the study of the human figure? The human figure contains the completest curves and balances in lines that exist, and is consequently the best guide for all art, and, therefore, it is a great advantage for an art teacher to know the human figure as completely as possible. Of course, knowledge alone is not art; but, then, art without knowledge is incomplete and unsatisfactory. I should like to insist on the word "traditions," for art is not spontaneous. Art is not so much the outcome of an individual brain as it is the continuity of experiences which, concentrated in one specially gifted brain, produces those incomparable artists which are the crowning features of their time and country. Art is, with literature and music, the flower of civilisation, and, like civilisation, it is a development of what was done before. The Egyptian and Babylonian art shows the origin of the Greek forms as developed under new conditions. The Roman art was the outcome of the Greek, and the decayed trunk being grafted with Oriental experience produced Byzantine art. The Norman art was believed by their architects to be the continuation of Roman architecture, as it was the dream of Charlemagne and later German Emperors to reconstruct the German Empire, until, with the new religion, came the neglect of old civilisation. The fresh blood and the new contact with the Orient produced the Mediæval art, the beautiful northern flower that gave us our cathedrals. Little by little things forgotten were reinvented, and antiquity asserted itself once more, this time grafted on the Mediæval art, and our modern times begin. To speak of days near to us, we know that Constable and Turner are the fathers of modern French landscape painting; and in 1870 Daubigny, the French painter, said to me, "Without those great men we should not exist." Géricault, the father of Romanticism in France, had studied in England the art of the Reynolds, and the Gainsboroughs, who themselves had derived much from Van Dyke, as the last words of Gainsborough prove they believed themselves. Therefore, go on in study, in order that you may know much of what has been done, in order that you may be able to teach the real art, which is tradition, refreshed by modern feeling and temperament, and the world will gain and you will gain the world's gratitude. I insist on this because I see all around us a kind of painting produced and praised as the highest aim of art where one cannot distinguish an apple-tree from a pear-tree, an Ionian cap from a Corinthian—a world of mist, a regular bubble-and-squeak, which somehow does not satisfy me. I have heard a youngster say that he was saved by the visit he had paid to the painters at St. Ives, as now he painted the mast of a ship with horizontal touches, and not, as everybody else had always done, with a stroke perpendicular, according to the formation of the wood. Surely art is higher than painting with points or lines, or trying to imitate Berlin woolwork, because nobody has ever painted in that way before? And teaching must go deeper into the study of the human figure than time studies can teach. But you are here in a better *milieu*, for serious work is still done in this school. The great work of South Kensington is its museum and its teaching of what is now generally called the minor arts. At the Paris International Exhibition of 1878 there was an English house which took the French quite by storm, and left a decided mark on their production afterwards. The influence of the minor arts is, perhaps, greater than the one exercised by pictures and sculpture and architecture, because it goes deeper into the daily life of the people. The weavings of, and prints on, cloths, carpets, hangings, and wall decorations surround us every moment of our lives, and we form our standard of judgment in art matters very much from them. When Whistler painted the whole of his dining-room canary yellow, and had hangings and carpets and furniture to match, the yellow in which he moved must have had a great

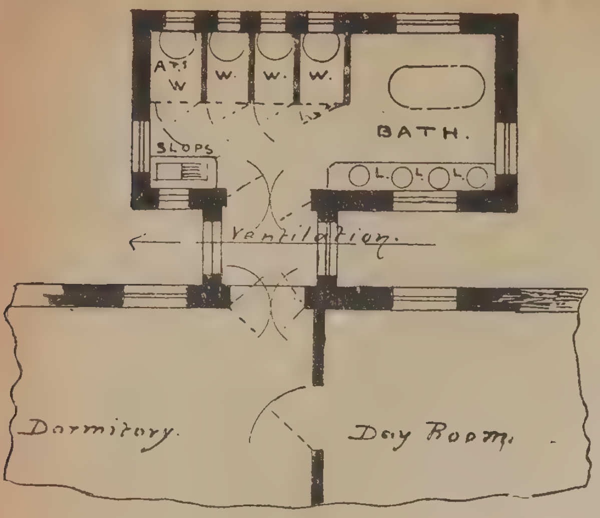


Fig. 38.

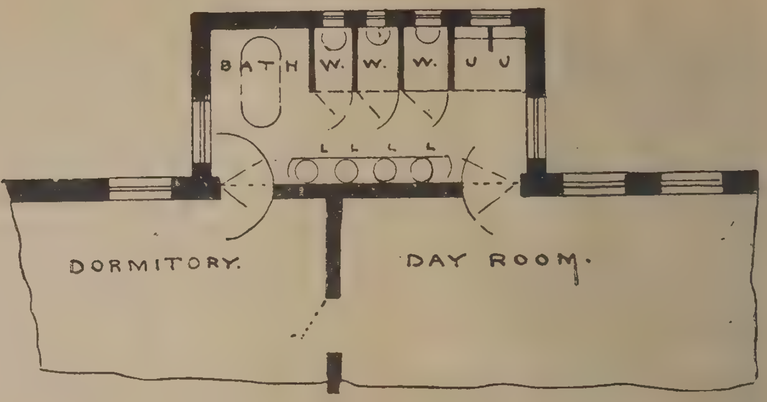


Fig. 39.

nfluence upon his eye. When I found that the black Pompeian decorations of my early Antwerp studio made me paint my pictures too heavy, I had my next studio painted red. Then they got too hot. So, arriving in Brussels, I painted my studio light green; and, when arriving in London, my first studio was blue and green, &c. The influence of all that was such that you can classify my pictures by the influence produced by the surroundings. If such is the immediate effect produced upon the work, it stands to reason that the influence exercised by the surroundings upon the taste of the man who lives daily amongst them must be equally great. Therefore, do not underrate the value of what are called the minor arts. Art is everywhere, and the more it is considered the better for every one; the more you take you vocation *au sérieux* the better it will be; and the more you know about it the better it will be for those who have to learn from it. To know in art is of the greatest necessity. If you know how a plant grows you will be able to render it. If you do not know you will mistake forms for what they are not; for nature is much too complex and far too complete for an untrained eye to understand without knowledge. For instance, a shepherd knows every individual in his flock. I am afraid that few of us would distinguish one sheep from another sheep. A gardener in midwinter will tell you which is an apple-tree and which is a pear-tree. How many landscape painters are there who would be able to do the same? I do not mean that a work of art must give everything the artist can see. What is required is that every touch, every line, slight as they may be, must render the feeling of what it has to represent; and that is not to be done without the necessary knowledge. Some say anatomy is superfluous; but is it possible to find anatomical errors in the masterpieces of the Greeks or the Italian Renaissance? So they must have known anatomy, as it is impossible to be correct without knowledge. I defy ny painter to paint a view of a building without any knowledge of perspective, or to draw a hand without any knowledge of the bones that are within. When a Velasquez summed up in after life with a few well-understood touches and was able to give us those incomparable masterpieces, it was because he had begun so very elaborately. In his picture, belonging to the Duke of Wellington, "The Water Carriers," even the drops of the water running down the pot are finished to the utmost. And so in Rembrandt's so-called "Night-Watch," which is still preserved in the Amsterdam Museum, when looked at quite near, you can well make out the pattern of the lace on the yellow man in the centre, and the drum to the right is rendered so minutely that not a nail fails. Everybody knows by now, through the interesting photographical researches of Mr. Muybridge, that the horses on the Elgin Marbles are the only ones of which the action is true. Are they not the more beautiful for it? And are not those horses preferable to the rocking-horses of the 17th and 18th century? How could a writer give in a few words the deep thoughts and feelings he succeeds in giving if he did not know them thoroughly? If a Holbein succeeds in giving with but an indication of a line more than another artist can do, it is because he knows more about it. To know enables one to render; not to know enables one to blunder. To know enables one to teach; but who can teach without knowing?

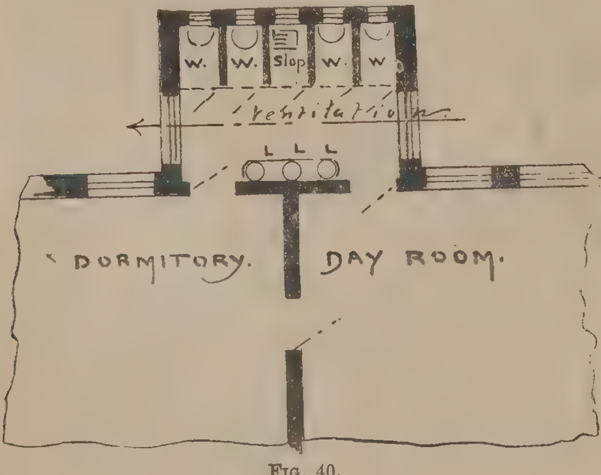


Fig. 40.

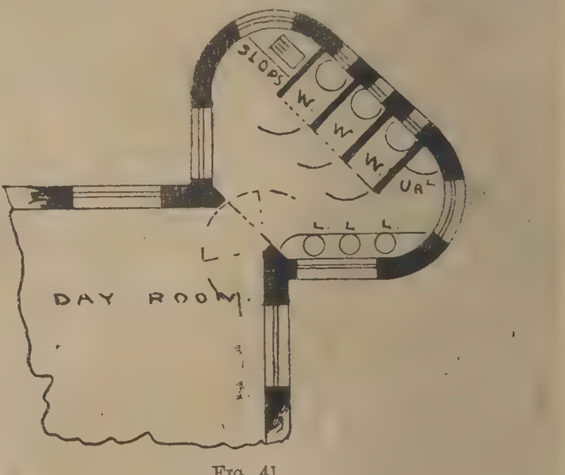


Fig. 41.

* * *

COUNTY LUNATIC ASYLUMS.—XXIII.

By George H. Bibby, F.R.I.B.A.

SANITARY BUILDINGS.

However perfectly an asylum may be constructed, lighted, heated, and ventilated, unless there be a thoroughly complete system for the removal of refuse and waste matters, there must always be a risk of the outbreak of typhoid fever, diarrhœa, diphtheria, cholera, ophthalmia, and other diseases; therefore the thorough and speedy removal of all waste matters is of the utmost importance.

A medical superintendent states that "in few asylums is the provision of water-closets sufficient for the population, and the insufficiency leads to constant squabbling and contention among the patients." The proportion, he says, should not be fewer than one to twelve.

In many asylums the closets are placed in small buildings, or annexes built away from the wards, and connected therewith by narrow neck-passages in the manner frequently to be found in modern hospitals, the idea being to obtain cross ventilation between the closets and the main buildings. Some authorities, however, contend that such arrangement (however excellent, to a limited extent, in connection with fever and other hospitals), are unsuitable for asylums, and for the following reasons:

In the first place this arrangement of the closets occasions considerable difficulty in reference to the necessity of a sufficient supervision and *inspection* of patients in the closets—a matter manifestly of the utmost importance if the liability of many of the inmates to commit suicide or misconduct themselves be duly considered. In the second place, some authorities are of opinion that where the closets are cold and the wards warm, there is a tendency for the air to pass from the closets into the main building through the neck-passages (vide Fig. 38 and 43).

Another medical authority prefers that the water-closet buildings should be connected with the wards in such manner as is shown in Figs. 39, 40, 41, or 42.

In Fig. 38 is shown an annexe containing three patients' closets, one attendant's closet, four lavatory-basins and slop-sink. It will be observed that the windows of the dormitory and day-room are placed opposite to windows in the annexe, for the special purpose of affording the attendants and nurses an opportunity of keeping the patients in view, to some extent, without having to actually follow them—which latter precaution, however, is frequently necessary with certain

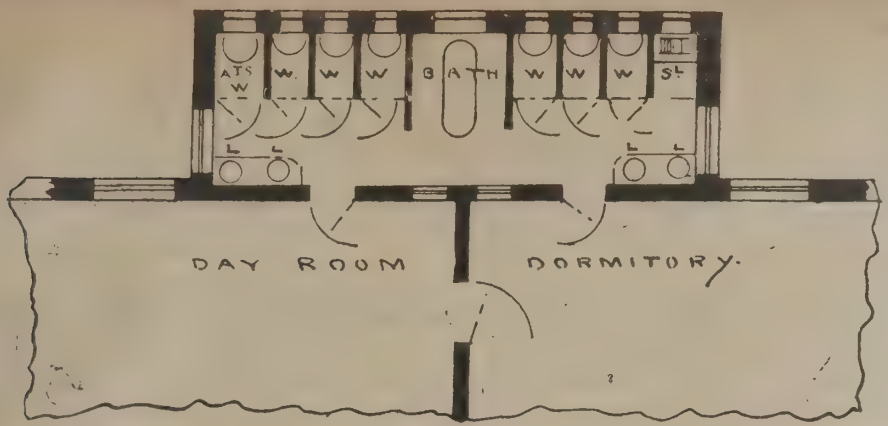


Fig. 42.

classes; many are less capable than very young children, and have to be treated with great care and attention to prevent them from becoming offensive to themselves and those with whom they have to associate. With this difficulty in view, a bath may conveniently be placed in the annexe, as well as a few lavatory basins.

In Fig. 39 is shown an arrangement of water-closets, urinals, bath, and lavatories in which the lavatory is made to answer the purpose of separating the closets from the wards; the doors between the lavatory would have glazed panels, and would serve, therefore, as inspection windows. The partitions between the closets would be about 6ft. in height: it would be unnecessary to make them higher, or to box them up to the height of the ceiling. The doors would of course open outwards, and it would be well to provide these with light closing-springs. To facilitate the work of the attendants, the doors of the closets should not come within 1ft. 3in. of the floor; there should be no projections, brackets, bars, or fixtures of any kind to which it would be possible for a patient of suicidal tendencies to attach a rope. The inside walls and floor should be made perfectly impervious, so that impurities cannot soak into them. For this purpose there is nothing better than glazed bricks or tiles: they form a perfectly smooth surface, and are easily and thoroughly cleaned. If the expense of such a method be objected to, then let there be a dado only of glazed tiles, say 6ft. in height, and the space above covered with hard cement, which may be afterwards painted and varnished.

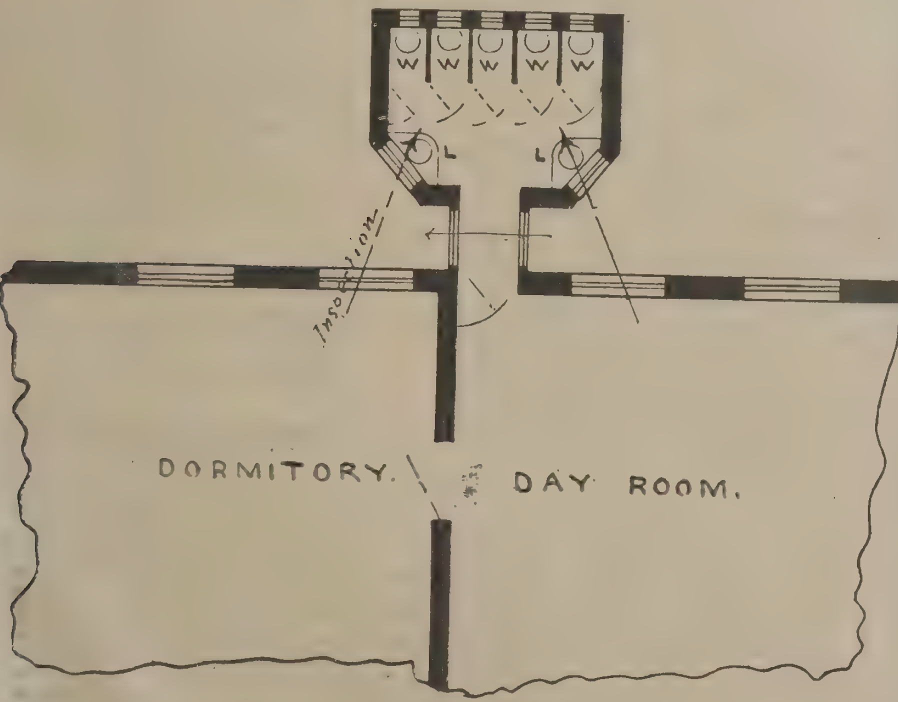


Fig. 43.

In Fig. 40 is shown a small annexe for water-closets, lavatories, and slop-sink only. This is suitable for the use of those patients occupying an adjacent day-room and dormitory, and who, being of clean habits, would take their baths elsewhere in the asylum. The closets are sometimes used as urinals (having a lifting seat), and may then be used also for slops, &c. A great point in the arrangement of asylum water-closets for patients is that the whole shall be schemed so as not to be unpleasantly and obtrusively brought under the observation of the inmates generally, but at the same time with full facilities for inspection without the nurses, &c., having necessarily to leave the day-rooms, or dormitories.

In Fig. 41 is an arrangement of a plan for an annexe when at the corner of a day-room, where it may occasionally be convenient to place it, and where, as in this instance, it is required to secure exceptionally close observation of closets which may be occupied by dangerous, suicidal, epileptic, or troublesome patients. The outer doors having glazed panels, it is obvious that the interior of this annexe would be well under the inspection of a nurse or attendant in almost any part of the adjacent day-room. Here it may be mentioned that for epileptic patients the old form of seat is to be preferred, as it protects them, to some extent, from falling *sideways* to the floor during their fits.

In Fig. 42 is shown another arrangement of an annexe, in which due provision is made for the attendants' and patients' closets, a bathroom, lavatories, and slop-sink. Here the glazed panels in the doors and inspection windows would afford a sufficient means of observation of the patient by the nurses, &c.; but it may be noted that an *excessive* provision of inspection windows is to be deprecated, as it is detrimental to the patients' interests that they should in *all* cases *know* that they are constantly under close observation. Attention has been already directed to a similar point in reference to the patients' single rooms.

In Fig. 43 will be found another form of annexe for closets and lavatory only (unless the closets should have the lifting seats for urinals and slops). Here there are three means of inspection: through a door, and two windows from the dayroom and dormitory. An advantage of this plan is that the annexe would not unduly obscure the light for the dormitory and dayroom windows.

Opinions are divided as to whether or not automatic flushing arrangements (actuated by the door, seat, or other means) should be used in asylums. A medical man writing upon the subject states: “Our object is not to treat insane patients as reasonless animals, but to give them an opportunity for the exercise of their faculties, and to encourage and urge them to give those faculties employment. If everything is to be done for them by automatic machinery, they will not recover their faculties by using them.”

In making arrangements for the sanitary buildings of an asylum, it is most necessary that the comfort and convenience of the attendants should be thoroughly provided for. The habits of the patients are in some instances revolting beyond all powers of description, and anything constructionally practical that the architect can suggest, with a view to mitigate their distressing duties, cannot fail to be acceptable.

An association has very recently been formed, having for one of its objects the purpose of drawing public attention to the classes of persons of both sexes who are engaged in performing the duties of attendants in asylums. In a speech upon this subject Sir Benjamin Ward Richardson remarked that: “He had never yet been able to meet with a correct description of these ‘asylum attendants,’ as they were generally called. Beyond this, the establishment of such an institution as that which was now about to be founded (the Association of Asylum Workers), would bring home to the mind of the nation some idea of the anxieties and responsibilities which fell to the lot of asylum attendants. It would show how much those persons had to do, the heavy and sometimes appalling duties they had to perform, and how hardly they were occasionally treated. It would be the object of the society to make the lives of these people better and happier, and, at the same time, to more thoroughly fit the attendants for their duties. The great aim of the association would be to inculcate among those with whose interests it was intended to deal, patience, firmness, kindness, courage, knowledge, and judgement, so that as public servants they may be made thoroughly competent for their respective positions; beyond this, the society would endeavour to render whatever service it could to the insane themselves, through their attendants. In general hospitals there had been during the last half-century a revolution in the matter of nursing the sick, so that sick-nursing had really become a sort of highly-educated profession, to the immense benefit of the sick; *while no commensurate improvements had taken place amongst the attendants of asylums.* It is for the interest of the insane that asylum attendants should have the highest position compatible with their work, so that the varied and yet limited and repeated phases of insanity might become scientifically known, with proper methods of management scientifically familiarised. Lastly, every effort should be made to relieve the attendants of asylums, to the advantage of the insane themselves, and rendering insanity less dreaded and unconquerable as a disease.”

The lavatory basins should be sufficiently divided from centre to centre so that the patients using them shall not be liable to jostle each other. They should be supplied with both hot and cold water; but the pipes for supplying hot water to each range of basins should have a valve so arranged that the attendant or nurse may be able to turn off the water from all the basins, so that patients may not be able to scald themselves, as some of the more demented are liable to do. The basins should not be cased-in below, but be open and free for inspection and cleansing purposes.

In all sanitary annexes attached to dormitories there should be provided slop-sinks, supplied with both hot and cold water, also a cupboard or receptacle for a *given* number of brushes, &c., all arranged so that if one be *missing*, the circumstance shall be known at once, and for the special reason that a brush-handle may become a dangerous weapon in the hands of an insane patient.

The sanitary annexes should never include within them the sculleries: these are best kept quite separate (and should be kept locked up from the patients.) They should also be supplied with hot and cold water, with plate-racks, dressers, table, towel-roller, &c., and be planned by the architect with special reference to the wards of the particular class of patients for whose benefit they may be intended. For instance, minor cooking operations, and the warming of the food for sick patients, need not be provided for in the sculleries attached to the wards for the able-bodied patients.

(*To be continued.*)

THE CORROSION OF UNDERGROUND PIPES

SOME years ago pipes, whether of cast or wrought-iron, steel, or other material, when laid underground in soil fairly favourable to their durability, might count upon a tolerable longevity. Notwithstanding the large number of all sorts and sizes placed in almost complete juxtaposition, they were good friends and neighbours and lived happily together. In the end, they had certainly all of them to succumb to the inevitable *tempus edax rerum*, but the cause of their gradual deterioration and final decay proceeded from what may be termed natural agencies, and not from the insidious attacks of foreign foes, which, we are about to point out, prevail at the present time. That natural agencies, due to the analytical constitution of the substratum in which the metal pipes are imbedded, and to the leakage always present to some extent, however slight, in gas-mains and frequently in water-mains, do give rise to a certain amount of chemical action, inimical to the life of the underground pipes, is incontrovertible. At the same time, this action, even when the pipes are laid in ground partly saturated with nitre, ammonia, and other ingredients and salts of a most deleterious and corrosive character, will not account for the examples of the violent and rapid manner in which gas and water-pipes are now constantly assailed. It must be kept in view that this is a subject deservedly demanding the closest and most attentive consideration, and also one the importance of which is only equalled by its enormously extensive sphere of action. In the whole of the United Kingdom there is not a town or village possessing a population worth counting in which metal pipes are not laid underground for some purpose or other. If this new cause of sudden and swift deterioration, to which we shall refer, were productive of no other results than the destruction of the mains and subsidiary pipes themselves, and the consequent cost of the renewal of them, the matter would be serious and grave enough; but when, in addition to the mere cost of numerous new pipes, are added the injurious effects which, it is very probable, may be exercised upon the public hygiene from the duplicate leakage both out of and into pitted and corroded metallic pipes, the gravity of the situation becomes very considerably accentuated. Experiment and analysis have previously determined that the subsoils of all roads and streets, independently of the manner in which, and of the material with which, the surface may be paved, contain very appreciable proportions of various soluble chemical salts, all of which are more or less injurious to the life of metallic pipes. Among the principal of these pipe-corroding ingredients, in virtue of the destructive chemical reaction they set up, may be included the nitrates and chlorides of potash, soda, and ammonia. Under these circumstances, which it must be borne in mind have always existed ever since pipes were laid underground, the ordinary duration of the life of a metal pipe might be put at from eighteen to twenty-two years. Pipes have lasted very much longer under exceptionally favourable conditions, but these cannot be fairly included in arriving at a general average of longevity. When, therefore, we find, on undoubtedly sound authority, that an underground metal pipe, 7in. in diameter, was so extensively corroded after about half-a-dozen years of service as to require renewal, it is evident that we must look to some other source than simple chemical reaction for results of a nature so destructive and possibly so disastrous.

It is only very recently that the investigation necessary to discover this new mysterious and dangerous agent has been set on foot. The inquiry and experiments, invariably inseparable from all scientific and technical researches of this character, have led to the utter abandonment of the theory that the corrosion of metal pipes of the magnitude recently discovered could be attributed solely to chemical reaction constantly and always pre-existing. They pointed in the most unmistakable and conclusive manner to the fact that there must be some other agent, hitherto secret and hidden, which must be held responsible for the destructive work so speedily and thoroughly accomplished. It had not escaped general notice that it was not until the introduction of electric installations for lighting and for tramway and railway haulage, with all the accessory conductors, wires, and return currents, that the normal comparatively sound condition of underground metallic pipes was so seriously and suddenly impaired. Clearly that invisible, imponderable, and irresistible electric power was concerned in the change. To what other agent could the eating away of a pipe in the course of a couple of months be attributed? The conclusion arrived at—and from the evidence available it appears to be the only one that could be arrived at—is that the mischief is occasioned by the electrolytic action of the return currents, exercised either directly upon the metallic pipes themselves, or first upon the soluble salts in the subsoil, and subsequently by secondary reaction upon the pipes. Into the question as to which of these two hypotheses has the better claim to the truth it is not our intention to enter, although it is but fair to state that the second appears to have the best of the argument. Either cause would be sufficient to effect the corrosion by itself, and it is not at all improbable that both may have their full share in the work of destruction.

Without entering into any electrical details of a purely technical nature which are not quite suited to the columns of the BUILDING NEWS, it is a simple matter to explain briefly the character of the occurrence and the means to be adopted to counteract it. Our readers are well aware that in sending a current of electricity from one station to another there must be some means provided—that is, some conductor—by which the return current can transport itself back from the second or receiving station to the first or sending station. Until this return is properly effected, the "circuit will not be closed," and there will be no manifestation of any electrical result whatever. In the early days of the old needle telegraph two wires were laid, one being the supply or leading conductor and the other the return wire; but in 1838 Steinhill discovered that the earth itself could be employed as the return wire or conductor, and he so used it. This led to the disuse of the second or return wire. It is just possible that in those times, when electrical conductors underground or along the surface were few and far between, there was, so to speak, plenty of room for the return passage of the current "by earth," and of the metallic pipes, also few and far between. The case, however, is now widely different. Scarcely a week—we might almost say a day—passes without some roadway, some footway, frequently almost immediately after it has been renewed and relaid, undergoing the process of being ruthlessly ripped open and literally torn to pieces by a gas, water, or, perhaps, a rival electrical installation company. The consequence is that the return current, in countries where very extensive systems of railways and tramways exist, does not find its way back through the tangled congeries of metallic pipes and conduits without experiencing considerably more resistance than the sole conductivity of the earth would give rise to. In, as it were, retaliation for the obstruction it is subjected to, it attacks the pipes and seriously pits, corrodes, and, in some instances, has been known to actually perforate them through and through. The whole of the injurious effects described is known to be due to the imperfect character of the return circuit, and a radical cure can only be accomplished by making the return circuit by means of conductors possessing as high a degree of conductivity as those constituting the supply circuit. In a word, the aid of the earth as a conductor must be altogether neglected. When electric tramways and railways were in their infancy, the ordinary rails of the track, which were not insulated, were relied upon, in conjunction with the earth, to convey the return current back to the sending station or generator. Experience shortly demonstrated that the current refused to restrict itself to this particular route marked out for it. It is now well established that the true means for averting an evil which recently promised to be of a very formidable character, consists in uniting the different systems of rail tracks, water and gas-pipes, so as to provide as perfect a return current as the circumstances of each especial case will permit of. Electrolysis and the subsequent destruction of the pipes, primary or secondary, will then practically be at an end.

CLASSIC DETAILS AND THEIR APPLICATION.*

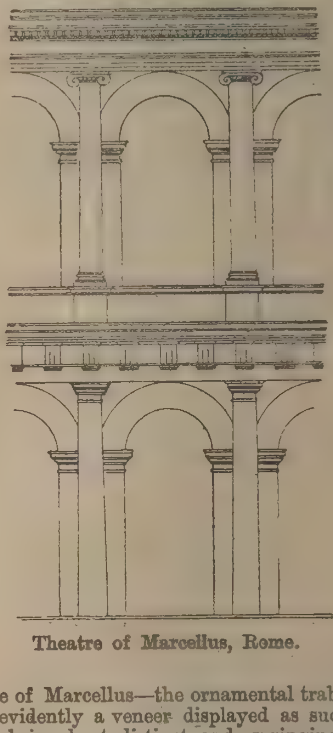
By G. A. T. MIDDLETON.

VI.—CLASSIC TIMES: THE ARCH.

THOUGH known to previous races, the arch was first used as an architectural feature by the Romans, and it was employed by them to so large an extent that arcuated construction was far more common in Roman work than was trabeated. By its employment large spans could be bridged even where the only available material was a stone of small dimensions, and vaults and even domes were rendered possible.

In spite, however, of the great gain thus secured, and of its large employment by the Romans, they did not spontaneously develop an architecture based upon the arch, but imported the trabeated forms of Greece; and thus came about the reign of an architecture whose construction was arcuated and whose ornament was trabeated.

At first always, and afterwards generally, this was boldly acknowledged, the result being somewhat like that of the example illustrated—the Theatre of Marcellus—the ornamental trabeation being evidently a veneer displayed as such, the arches being kept distinct and springing from imposts of their own, mere mouldings passing at the springing level round the supporting piers, and interpenetrated by the columns of the applied Orders. With careful proportioning, the effect was good, and, in spite of the entablatures being apparently carried principally by columns, which in reality did no work at all, and at intermediate points by just the crowns of arches which did all the work, there has been but little outcry against the practice.

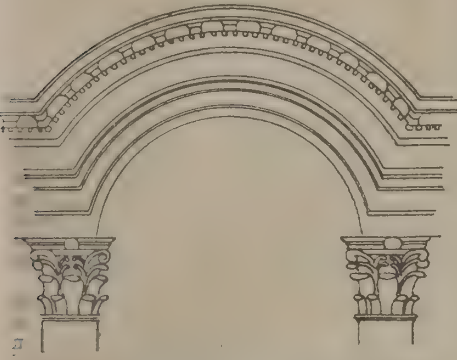

Theatre of Marcellus, Rome.

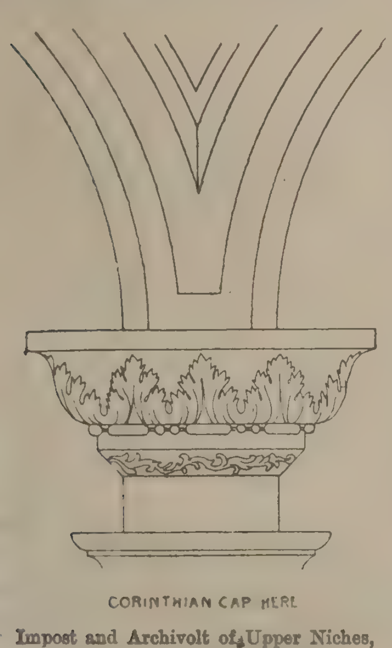
Much less defensible were two other methods of combining the Orders and the arch, which came into use in the later Roman period, and of which illustrations are given, both taken from the Palace at Spalatro. In the arch to the porch of the vestibulum it will be seen that the horizontal entablature has been bent round to the arch curve, as if solid stone were pliable; and in reality the effect is much worse than this drawing would lead one to expect, as there is a pediment over, the raking lines of which clash with the curved lines of the arch.

Bad, however, as this bending of the entablature was, it seems to have given the inspiration for the true method of decorating an arch by mouldings, as in Romanesque and Gothic work, even the hood-moulding being present in the form of the cornice. An intermediate step towards this, indeed, is seen in the upper niches to the Porta Aurea at Spalatro, where the detached columns are each crowned with a complete entablature (debased, of course), forming a species of deep abacus above the cap, from which the arches spring—a method of treatment which was by no means uncommon. It can rarely, if ever, be considered satisfactory, and certainly the whole meaning of the entablature must have been lost sight of before it could have been dealt with in such a way; but its interest is considerable as a stage in the development from the Classic of Rome to the Byzantine of the East and the Romanesque of the West. In fact, in the example before us there are already indications of Byzantine feeling, in the reintroduction of the spiked acanthus, in its very low relief (or, rather, in the slight sinking of the background upon which it rests), and in the use, immediately above the architrave, of a splay instead of a moulding, and this enriched with a scroll completely wanting in design.

---

* All rights reserved.


Arch from the Porch to the Vestibulum, Palace at Spalatro.



Impost and Archivolt of Upper Niches, Porta Aurea, Palace at Spalatro.

With neither the Eastern nor the Western styles which arose upon the remains of the Roman can the student of Classic work have much concern, and to him Classic architecture may well be said to have died with the migration of the seat of empire to Constantinople, to be revived only in the time of Brunelleschi.

* * *

THE INTERNATIONAL HEALTH EXHIBITION AND CONGRESS, PARIS.—II.

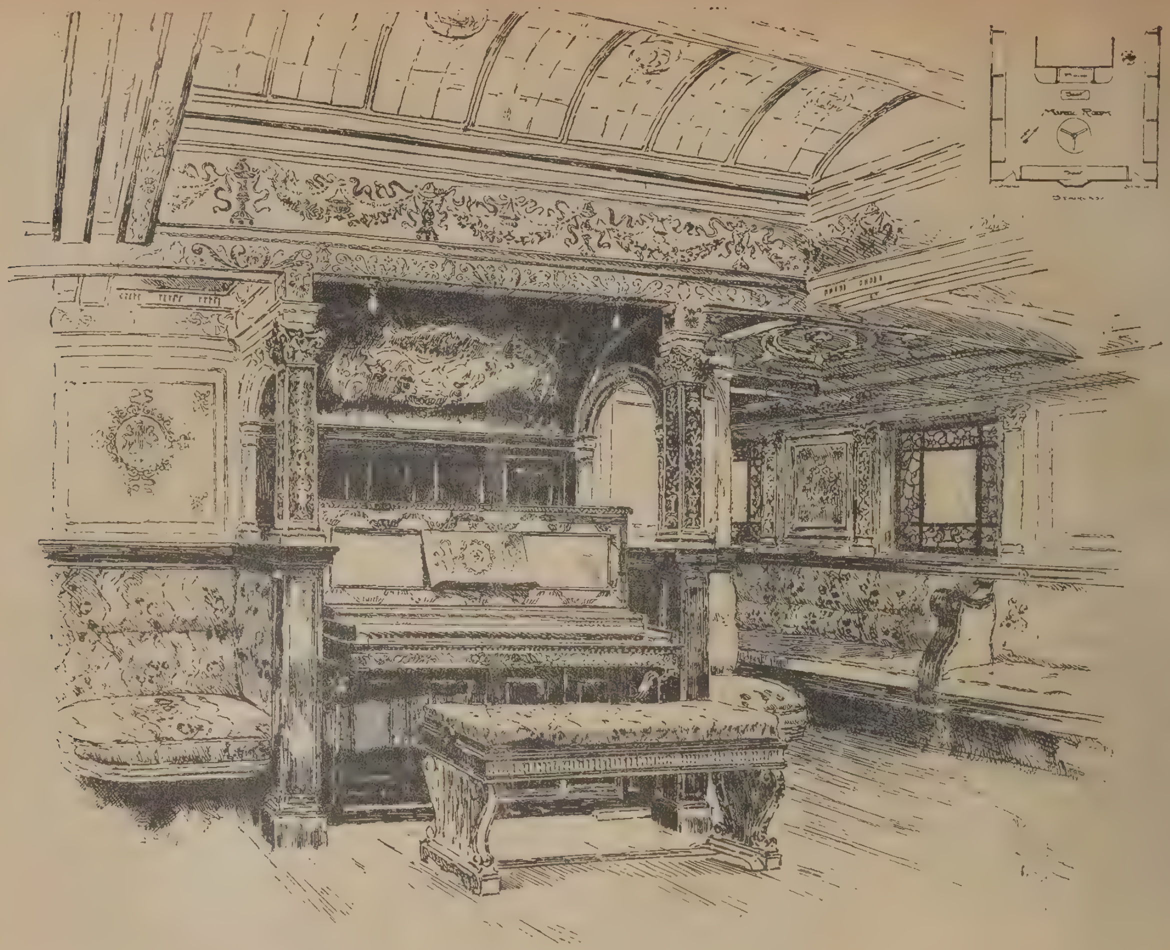
THE interesting Sanitary Exposition at the Champ de Mars, and the important Congress of Sanitary Architects and Engineers which has just been held at Paris, prove that France is now waking up to the great importance of the proper study of sanitary science and its practical application, and the fast-growing Society of Sanitary Architects and Engineers, which has just been formed, will show us that the Frenchman is not going to be the last to do all that is possible to help making life worth living, in at least as far as concerns all the comforts and conveniences which sanitary science and modern industry can produce, in teaching and encouraging workmen and those whose duty it concerns to use their best efforts in furthering this end, and in interesting the general public in this great question, and lead it to appreciate to a greater extent the utmost importance of cleanliness in sanitary measures in everyday life. And the remark made to me by M. d'Esmerand, chief secretary to the Society, and moving spirit in the vigorous organisation of the Exhibition and Congress, that before ten years have passed we on this side of the Channel shall have left you others far behind us in sanitary science and practice, although seeming somewhat of a boast, on second thoughts may not be devoid of reasoning, when it is considered that the Frenchman, almost ignorant up to a very recent time of sanitary matters, is now studying up the question in a very earnest manner, and although basing his first principles and practical application on what he has learned from his neighbours, and especially from his English neighbours, will certainly follow up the matter in a spirit entirely his own, and suited to his special needs and ideas, producing by natural evolution a result which his neighbour, hampered by tradition and experience, may possibly not attain.

The first duty of the Congress was an invitation visit to the inauguration of the aqueduct of Achéres, and the lands for spreading and purifying drainage matter coming from Paris. The opening ceremony was performed by M. Foubelle, Prefect of the Seine, who delivered an interesting speech, giving the history of the work of sanitation already done. The Prefect stated that the main sewers from Paris delivered into the Seine about 14,000,000c.ft. of sewage per day, or over 5,000,000,000c.ft. per year, containing at least 10,000 tons of nitrogenous substances estimated as valuing £800,000, a therefore important annual loss of fertilising matter. Since three generations, engineers such as Alphand, Mille, Couché, and Durand Claye had been endeavouring to prevent this waste, and now at length an important result had been achieved, and the principle of all drainage to the drains, nothing to the river, was accepted, and was being put into practice. When visitors from all parts of the world will be flocking to Paris to pacifically celebrate the arrival of the new century, at the 1900 Exposition, they will be able to admire the perfect organisation of the drainage system, and the healthy state of the French capital. The Prefect continued with an extremely eloquent discourse, putting forward the benefits to be derived from the careful and proper study of sanitary science and practice, likening the sanitary organisation of a large town to the working principles of the human body with its canalisations, circulation, supply, arteries, and veins. M. Baudin, member of the Chamber, spoke of the extreme desire of the Paris Municipality to avoid endangering any of the interests of the districts surrounding the city; but rather by the sending of the sewage over the dry plains to enrich the resources of agriculture, and put under culture a large surface of land which was up till now unfertile—almost useless. Several speeches were made by members of the Congress, followed by a luncheon-banquet at Argenteuil. A visit was afterwards made to Achéres, where an inspection was passed of the 2,000 acres of land destined for the spreading of Paris sewage, and an inauguration of the first trenches was made. In the evening, the members of the Congress were invited to a reception given by the Minister of the Interior, and a well-earned stroll and repose in the vast gardens of the palace—repose, however, somewhat disturbed by the unpleasant odour and noise of a cesspit pumping-machine, carrying off the drainage matter from a neighbouring mansion, recalling the members to a sharp sense of their coming duties.

The serious work of the Congress commenced on the following morning at the Palais des Arts Liberaux, in the Champ de Mars, the meeting being presided over by M. Monod, chief of the Sanitary Service of France, who gave a flattering welcome to the representatives of the British Association of Sanitary Inspectors present at the Congress. Each member received a printed report of the chief subjects to be brought up for discussion, each subject having its appointed reporter, and terminating in a series of resolutions. Each member was therefore well aware beforehand of the various subjects on which he would have to vote.

The first important question discussed by the Congress was that brought up by M. Petsche, engineer, relating to the disposal and utilisation of domestic refuse, town dustbins, and waste matter. This engineer pointed out that from 7lb. to 11lb. of nitrogenous substances, worth about 4s. to 6s., were contained in a ton of Parisian domestic refuse; from 7lb. to 11lb. of phosphoric acid, worth from 10d. to 1s. 3d.; 5lb. to 9lb. of potash, worth from 9d. to 1s. 2d.; also from 65lb. to 90lb. of lime, worth from 3d. to 5d.; in fact, roughly speaking, the estimate of the value of a ton of house refuse might be put at from 6s. to 9s. This refuse from the houses of the whole of Paris, worth about £200,000 per annum, is sold by Parisian contractors for from 8d. to 1s. 3d. per ton delivered on railway trucks, the charge by the railway companies for transit being from 2s. to 2s. 5d. per ton; the cost of the manure placed on the fields comes to from 2s. 8d. to 3s. 8d. per ton. The utilisation of this refuse will probably greatly increase, but M. Petsche asks if the danger of carrying to all parts of the country such a large quantity of refuse, portions of which may be highly infected, is not a great one. The reporter followed up with a description of the various systems and destructors employed in England, America, and other countries, giving his opinion on these various methods, and asking the members of the Congress to discuss the matter with him. M. Bechmann, engineer of the town of Paris, proposed that the building of shafts down which all refuse from kitchens could be thrown, be encouraged for all the large immeubles; in this manner no rubbish would remain for any length of time in the apartments. It was suggested by some of the members that it was doubtful if such shafts could be kept clean, and would not, sooner or later, emit foul odours. It was remarked that such shafts existed some time since in a number of the Victoria-street flats at London; but as Mr. E. Tidman, sanitary inspector for Westminster, was unfortunately unable to be present at this first meeting, his information as to the working of this system was not forthcoming, to the regret of all. M. de Montricher explained the successful system he has employed for fertilising the dry plains of Crau by means of town rubbish brought from Marseilles. He stated that the refuse was carried away and loaded at night-time on railway tracks situated at a depot at some distance from habitations and away from the passenger stations. The first question of getting rid of refuse from the kitchen of apartment flats becomes of more importance each day, for the number of houses built as flats is increasing rapidly in the large towns, and the use of dust-bins in the yard is almost impossible in such cases. The discussion was also taken up by MM. Richou, Tasson, Lucas, Baume, and Smith (chief correspondent of the *Lancet*), and the following resolutions were passed:—That the collection of domestic refuse should be made daily, very early in the morning, the rubbish being carried away by special carts, with covered iron reteptacles permitting easy disinfection; that, in order to facilitate the utilisation of such refuse, the railway companies should reduce their tariffs, and arrange for special isolated depots for loading the refuse; that the destruction by fire of such refuse was the most satisfactory solution in a health point of view, if the conditions and temperature of the combustion was sufficiently high and could be sufficiently prolonged. In this case, such a solution was the most economical in practice, and that all encouragement should be given to make further researches after a means of utilising the products given off during combustion and those remaining. A further resolution was made that the various municipalities should encourage, by every possible means, and especially by the reduction of the scavenging tax, the direct and daily evacuation of house refuse from the interior of dwellings.

M. Jourdan then read his report concerning the regulations of private roads, raising a vigorous discussion on this subject. The reporter said that the general state of these roads left much to be desired in a sanitary point of view; no regulations determine the minimum width of private roads, or again (except at Paris) the maximum height of the bordering houses. It often happened that the construction of buildings of an exaggerated height in streets much too narrow prevented both the air and sunlight from freely penetrating into these kind of passages. In many cases, also, the



MUSIC ROOM, "TANTALLON CASTLE."

maintenance of the roadway was deplorable; water was often lacking not only for the use of the inhabitants, but also for the proper cleansing of the gutters, and it often happened that even drainage had been neglected. Such being the case, it was not surprising if such streets often became a very nest of sickness and infection, and it was high time that something should be done to regulate this matter. It is here that the municipality has the right to close in these private streets at their outlet into the public roads, if the proprietors are not willing to provide the proper and necessary sanitary work; but, again, the municipality has not the power to determine the nature and importance of the work to be done. In several cases the proprietors prefer having their street closed in, to going to the expense necessary for sanitation work. The Mayor of Marseilles remarked that in his town there existed a large number of streets which were to all purposes public thoroughfares, but being private property he had no right to inspect or control them, and that this was the case in many towns. The reporter desired that no private way could be opened without the authorisation of the municipal authorities, who would fix the minimum width of such roadway. The height of the bordering building should also be regulated, the proprietor being enforced to construct his roadway according to one of the methods established for public roads, to arrange proper drainage and water canalisation, lighting, and street cleansing. The Congress passed the resolution that all roads and ways frequented by the public and inhabited by different persons, not the property of a town or commune, should be subject to the same rules and regulations, inspection and control, as regular public thoroughfares.

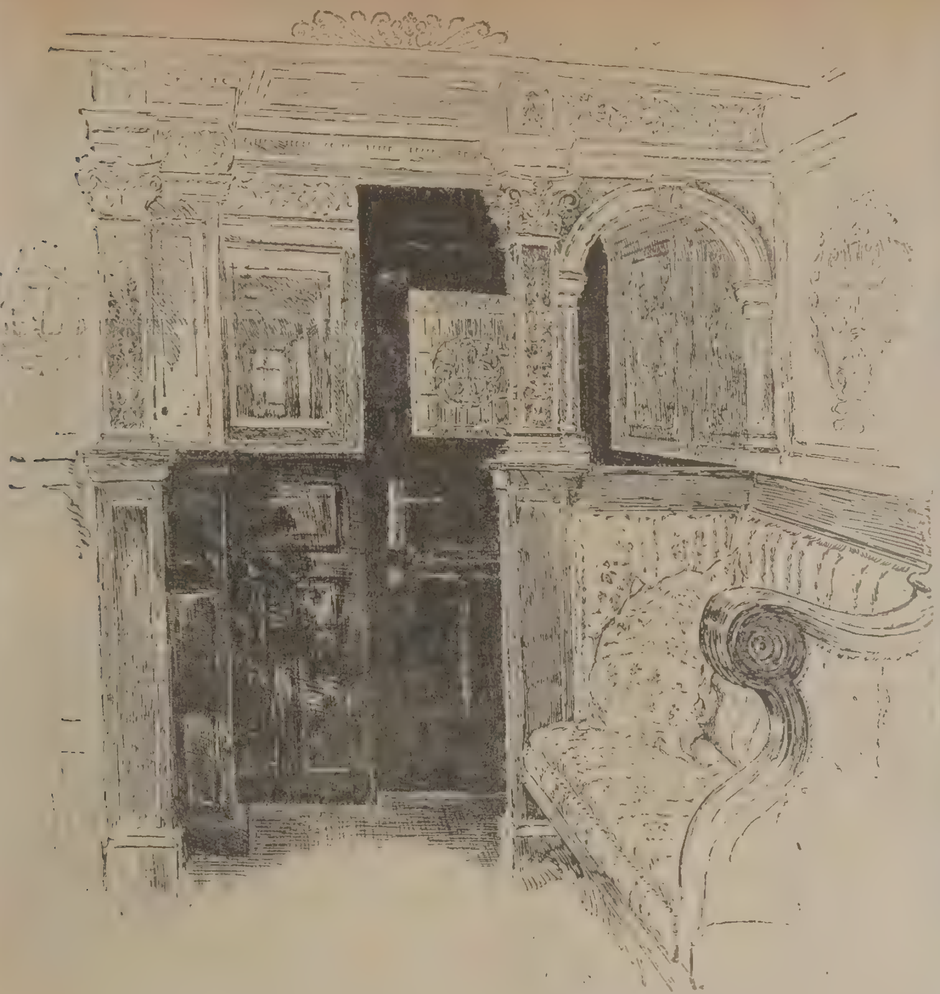
At the afternoon sitting, M. Chardon, engineer, explained the system of pneumatic drainage now applied at Levallois-Perret. This is an adaptation of the well-known Berlier system, in which the complete combustion of all gases arriving from the vacuum drainage pipes was obtained by making them pass through the furnaces of the boilers. The application of this system made at Levallois-Perret was perhaps not perfect, even in the idea of the reporter; but, in any case, the foul-smelling cesspits had been abolished, and all sewage was now removed from the dwellings without any fouling of the sewers, and all escape of evil-smelling sewer-gas was obviated. A visit was made to the works at Levallois-Perret, and the members of the Congress were enabled to judge of the efficiency of the system, and study the arrangement of a powerful but economical steam-jet producing the vacuum in the reservoirs, receiving the matter from the drains by pneumatic suction. The system is stated to be an exceedingly economical one, the simple steam-jet producing the necessary vacuum, and doing the work as easily and as well as steam machines, of which the cost was many times that of the steam-jet. The Congress visited afterwards the municipal disinfecting station of the Rue des Récollets, arranged after the plans of M. Bouvard, architect, the working of the disinfecting furnaces (system Geneste and Herscher) being explained by Dr. Martin, chief of the service of dwelling sanitation.

ARTHUR VYE-PARMINTER.

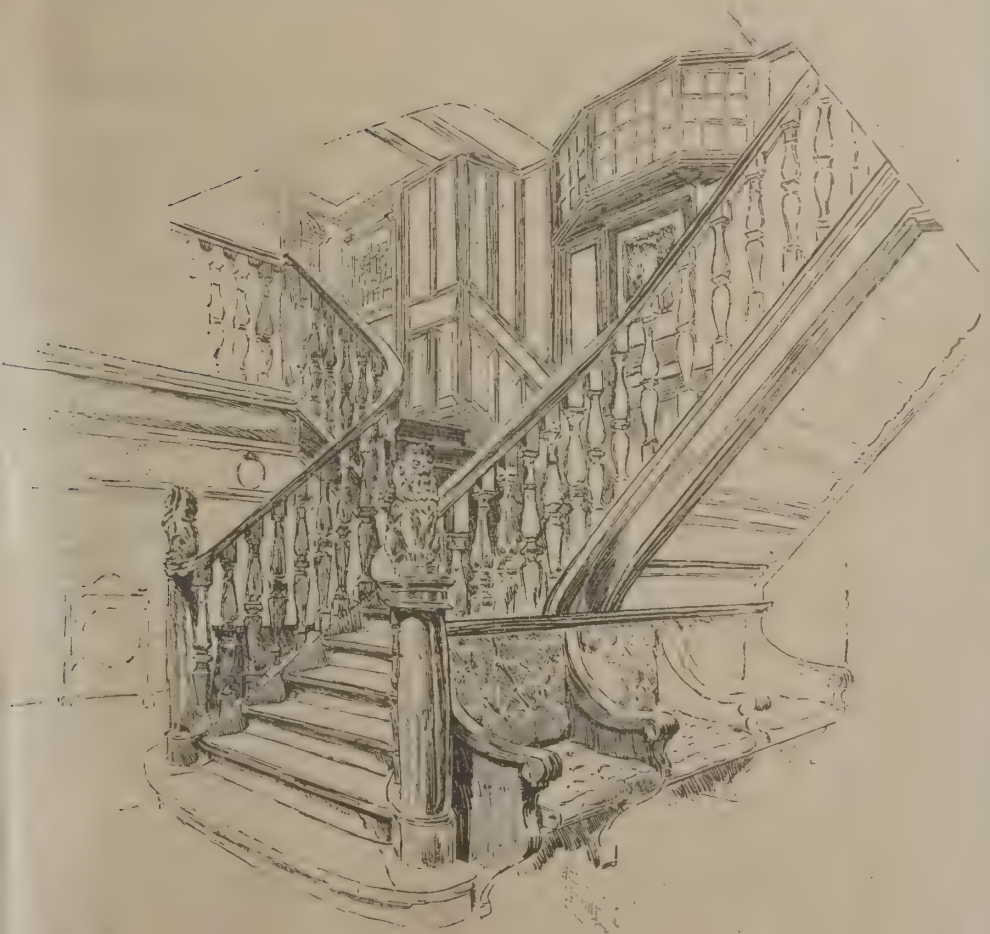
THE "TANTALLON CASTLE."

SIR DONALD CURRIE'S desire to see a complete series of drawings published of this great Castle mail liner has been admirably realised, and the sketches are from the pencils of Messrs. W. L. Wyllie, A.R.A., W. Hatherell, R.I., Joseph Pennell, A. S. Hartrick, N.E.A.C., and D. B. Niven, A.R.I.B.A. The story of the Castle and of the ship is told by Elizabeth Robins Pennell in a handsome folio, in which the pictures are incorporated, showing, as the preface says, that a beautiful book may be made of a beautiful ship. The graphic authoress describes the stronghold of the Lords of Tantallon as it stands at the entrance of the Firth of Forth, rising sheer and inaccessible from the sea, the safeguard for the Douglas who dared to defy both king and barons. Its walls re-echo in fancy the commands of Archibald Bell-the-Cat, and the arches resound with the horseshoe iron of the troopers of Red Douglas. Tantallon Castle to-day personifies peaceful stillness, its happenings are of the past, and the ruin stands silent and alone in stately loveliness, in staunch massiveness, overlooking the great North Sea. The steamer fulfils the conditions imposed upon her at her christening: she has the strength and grace of her name. She rides more easily than larger boats over the Bay of Biscay, and passes unscathed under a tropical sun. Her length is 456ft., and she is 50ft. and more wide, the registered tonnage being 5,700 tons. The part of the vessel which interests us primarily is, of course, the fittings, which, needless to add, are of a particularly handsome and sumptuous character, entirely in keeping with the structural spaciousness and ample convenience of the ship. We are enabled to print some few sketches of the interior, which will give a good idea of the character of the work to which we refer. The decorators of the *Tantallon* know that all steamers need not be turned out upon the same pattern, though some things must remain virtually similar in shape and proportion. The music-room, shown by the accompanying views, has pale gilded walls, with damask in rose-strewn green for the long-cushioned seats. The piano is delicately inlaid in scale with the rest, and situated prettily in a coved recess. The staircase is an exceptionally handsome one, and the dining-hall is as gay and airy as any similar apartment to be found on shore. The white panelling is picked out in gold traceries, and the skylight is handsomely enriched with coloured glass. The kitchens and cabins are equally appropriate for their several uses; no expense having been spared to render the boat in every sense a floating palace in which the comfort of every class of the passengers and crew have been accorded suitable consideration. No horrors of steerage, and no cruel overcrowdings find a place, while the second-class quarters satisfy the most fastidious wants of the most exacting traveller, and there is air and space everywhere. The barber aids the daily enjoyment, and marble baths are provided. Even a printer and his press form part of the equipment, and electric-light is used throughout the *Tantallon*.

Decision has been given by Mr. Wm. Crouch, C.E., arbiter in the claim by Messrs. Charles Brand and Son, contractors, against the Glasgow District Subway Company for £45,667 11s. 6d., being the balance and extras in the formation of three sections of the subway tunnel. Mr. Crouch found the claimants entitled to £26,697 10s. 11d.



IN THE MUSIC ROOM, "TANTALLON CASTLE."



STAIRCASE, "TANTALLON CASTLE."

ENGLISH GOTHIC.

ENGLISH Gothic architecture, as exhibited in our cathedrals, was held somewhat cheap some years ago by Prof. Moore, of Harvard, who held that we never caught the full meaning of Gothic art. An article in the *Atlantic Monthly* for August, in which an American architect contrasts the cathedrals of England and France, shows that all Prof. Moore's professional colleagues do not share his opinions, especially that in France alone do we find the "whole structure of a cathedral and fully organised and visible framework which the wealth of the applied ornament only serves to emphasise." Mr. Peabody, the writer, of course, notices that the apsidal east end of a cathedral is almost unknown here save at Westminster Abbey, though Norwich, Peterborough, Lichfield, and Canterbury have circular ends, while, on the other hand, the square east end, almost universal in England, is found abroad only at Laon and a few lesser places. Then, again, the English cathedral is low and long, rather than narrow and lofty in its proportions. The splendid western front at Wells is 31ft. wider than that at Amiens, yet it is only half as high; and "the nave at Wells is but twice as high as it is wide, while that of Amiens is three times its own width." Yet, "by a strange contradiction," Mr. Peabody is ready to admit, "there is nothing about these English churches carried to a greater degree of perfection, or which brings them greater glory, than their clustered towers and their groups of heaven-seeking spires." The English architect clung firmly to the belief that a central spire, combined with the western towers, would produce a more pleasing effect than those towers alone, as the French designer thought. The result is that "no French church possesses a single central spire to compare with that of Salisbury or of Norwich," though "the western towers of the great French cathedrals, taken by themselves, are more grand and stately structures than similar features in England." The rich mouldings and clustered piers of Early English Gothic contrast with the plain capitals and simple shafts of the same age in France. English sculpture was developed more regularly, and from the first, in all but the figure, could bear comparison with the best French work. Taking up one point after the other in this way, Mr. Peabody makes it clear that the difference between the cathedral-builders of Mediæval England and France was principally a matter of temperament. The French architect always kept in view the great principle of Gothic art, which, in Freeman's words, was "an upward tendency of the whole building and of its minutest details." He delighted to exhibit his constructive skill in lofty naves and arches, in "a brilliantly conceived framework of pier and vault, of buttress and pinnacle." On the other hand, "the Frenchman," writes Mr. Peabody, "never formed such harmonious features of church and scenery as one sees at Salisbury and Lincoln—never massed spires in such gracious composition as we find at Lichfield and Lincoln." English Gothic, in fine, has its own place, though not perhaps the first place, in the master art.

BUILDERS' BENEVOLENT INSTITUTION.

THE 48th annual meeting of this charity was held on Thursday, 25th July, at the offices, 35, Southampton-row, Bloomsbury. Mr. Basil P. Ellis, the president, occupied the chair, supported by Messrs. George Plucknett, J.P. (hon. treasurer), Thomas Stirling, W. Scrivener, E. M. W. Goslett, and other friends of the institution.

The secretary (Major Brutton) read the annual report, which stated that the institution continues to carry into effect its purposes as usual, the only drawback being the need of increased income to provide for all the necessitous applicants who seek the benefits of the charity. This is especially to be regretted, because some are very aged before making their wants known. The committee's efforts have been much hampered by the diminution of subscriptions, consequent upon the death of so many regular subscribers, and this makes it an earnest and urgent matter to endeavour to obtain new subscribers and donors, in order to maintain the institution. This state of affairs cannot be too widely known to the patrons. A movement has been set on foot for the secretary to call and solicit subscriptions or donations from all members of the building and allied trades within the Metropolitan district, which, it is hoped, will be attended with good practical results. At the present time there are 46 pensioners on the funds, while others are waiting for election until the income is sufficient. Four female pensioners have died within the past year. One man and one woman have been elected. The committee strongly express their gratitude to the president (Mr. Basil P. Ellis) for the lively interest he takes in the transactions of the institution, and for his determination to get very liberal contributions to the charity. They also offer their thanks to the stewards of the annual dinner and to the honorary auditors for their services. The committee have further the pleasure to announce that Mr. John Mowlem Burt, J.P., D.L., has accepted the presidentship for the ensuing year, and will preside at the annual dinner on the 7th Nov. next, in the hall of the Worshipful Company of Carpenters, London Wall.

On the motion of Mr. Thomas Stirling, seconded by Mr. Goslett, the report and balance-sheet were unanimously adopted.

Mr. Plucknett proposed a cordial vote of thanks to the outgoing president for his exertions in aid of the institution during the past twelve months. Mr. Stirling seconded the motion, which was carried by acclamation.

The president returned thanks, and said that he was pleased that he had been able to do something for the charity. The success which had already attended the movement for increasing the number of subscribers was largely due to Major Brutton, who had been most assiduous in calling upon those who were likely to help. (Applause).

Votes of thanks were also passed to the vice-presidents and trustees, to the hon. treasurer (Mr. Plucknett, who was re-elected), and to the hon. auditors. The retiring members of the committee were also reappointed, with the addition of Mr. Ellis.

On the motion of the president, Mr. John Mowlem Burt, J.P., D.L., was elected president for the ensuing year, and a vote of thanks to the chairman for presiding closed the proceedings.

SEWER VENTILATION.

A PAPER on this subject was read by Mr. J. Parry Laws in the Public Medicine Section of the British Medical Association's Congress on Wednesday. The author said that the results of modern research have not only enlarged our knowledge of the causation and propagation of infectious diseases, but they have also shown that in many instances the exciting cause of the disease—namely, the specific micro-organisms—pass out of the body with the bowel discharges, and so gain access to our underground sewers. These facts have imparted to the subject of sewer ventilation a significance and importance unknown in earlier times. To find a thoroughly satisfactory solution to the question, Is sewer-air harmless or otherwise? and, if harmless, its mode of action, is of great moment to hygiene, for our attitude with regard to this all-important question must, of course, be profoundly influenced by the conclusions at which we ultimately arrive. Although the hypothesis which regarded sewer air as capable of disseminating the morbific germs of disease is, he thought, proved beyond reasonable doubt to be an erroneous one, we must not therefore forget the immense benefits and the saving of life that modern sanitation, mainly influenced by this hypothesis, has brought about. Whatever the ultimate verdict be, whether sewer air is harmless or otherwise, it will always be the imperative duty of those charged with the care of the public health to insure rapid and efficient removal of all sewage and refuse matter, and, above all, to guard against defective drainage and probable pollution of water supplies. The more light that is thrown upon the dissemination of those diseases which have been, he thought, erroneously associated with sewer-air, the more evident does it become that a polluted water supply, and, as an incidental result, a polluted milk supply, are among our most insidious foes.

NATIONAL ASSOCIATION OF MASTER BUILDERS OF GREAT BRITAIN.

THIS association held its thirty-fifth half-yearly meeting in the Arbitration Room, Royal Exchange, Leeds, a few days ago. Representatives were present from London, Liverpool, Manchester, Birmingham, Bradford, Huddersfield, Bolton, Derby, Preston, Leicester, Walsall, Hanley, Newcastle-on-Tyne, Bristol, Hull, Leeds, Southport, Nottingham, and Blackburn. The reports having been adopted, the President (County Alderman John Bowen, Birmingham) explained to the meeting the course which had been adopted in reference to the Plumbers' Registration Bill, and urged the desirability of opposing the Bill should it be again introduced. A letter was read from Mr. Stanley G. Bird, London, giving the result of negotiations with the Royal Institute of British Architects with reference to the proposed new form of contract, and expressing regret that, owing to the course adopted by the Institute of Architects in refusing to sanction the introduction of an arbitration clause in the form of contract, the whole matter had practically fallen through. Mr. John Dawson, Huddersfield, urged the members to insure themselves against the risk of accidents to their workmen. Mr. T. F. Rider, London, referred to the cause of the action instituted by the Master Plasterers' Association of London against the National Association of Operative Plasterers. It was decided that the association should render all the support it could, both financially and otherwise, to the Master Plasterers' Association of London. Reference was made to apprentices' indenture forms, some being drawn up in such a manner as to render the employer liable to maintain the apprentices when unable to work through illness. Mr. William Irwin, Leeds, was elected a member of the council to fill the vacancy occasioned by the resignation of Mr. Banks Mawson. It was resolved to hold the next half-yearly meeting in London. In the evening the members were entertained by the Leeds Master Builders' Association at dinner in the Queen's Hotel. Mr. Wm. Irwin cordially welcomed the National Association, and the President acknowledged the hospitality of the local organisation.

UNDERGROUND WORKSHOPS.

A JOINT paper on this subject, contributed by Dr. F. J. Waldo, Medical Officer of Health to St. George, Southwark, and by Dr. David Walsh, Western Skin Hospital, was read at the Congress of the British Medical Association on Wednesday. The tendency of civilised communities to flock towards particular centres of population has led to a vastly enhanced value for town lands. Hence the builder, wishing to make the most of his site, not only soars into the sky, but also burrows into the earth. By the London Building Act of 1894, Government laid down certain regulations as to the height of houses outside the City proper. The Legislature, however, has not dealt with underground rooms, except when they are used for dwelling purposes. The main object of the paper was to inquire whether underground rooms can be converted into wholesome workshops. The attention of the writers had been drawn to the subject by an investigation of underground bakeries. Most of these places are nothing more or less than cellars, and quite unfitted for workmen. In London, and no doubt in many of the large towns throughout the United Kingdom, many cellars and basement rooms are quite as improperly used as workshops. Until a rigid system of house-to-house visitation is the rule, it seems likely that 99 out of every 100 underground workshops will escape any control altogether. After careful consideration, the writers have come to the conclusion that an ordinary cellar can be converted into a wholesome workshop. It is true that such a task would involve a good deal of structural alteration and a considerable outlay of money. Among essential points of construction are a height of 8ft. and minimum of 500c.ft. for each workman, with a special allowance for gas-jets. Walls must be smooth, and kept dry by damp-proof courses and by freedom from contact with outside soil. The window-space must equal at least one-eighth of the floor area. Ventilation and light, as well as drainage and lavatory accommodation, must be such as to satisfy advanced modern requirements. The floor must have at least 9in. of concrete, and any drains passing beneath it must be laid at least a foot deep, and cased in a bed of concrete. Water should come from the rising main. In order to make a wholesome basement workshop, the writers regard a front outside area as absolutely essential. Further, they would make a second area compulsory, either at the back or the side of the building. The main practical difficulty in satisfying these requirements would, no doubt, be the making of an area in houses which rise flush from the pavement. In order to meet this objection, the writers have devised the scheme of the "borrowed area." The front of the shop is to be carried back some 5ft. or 6ft., and an area sunk in the space thus "borrowed," as it were, from the overhanging main building, which is supported by a cross-girder. The outside area is thus gained at the expense of a part of the shop and of the basement. The size of the shop is thereby lessened; but, by way of makeweight, the basement beneath is converted into a light and habitable room.

OBITUARY.

Mr. George Knowles, F.R.I.B.A., formerly in practice at Bradford as an architect and land agent, died on Friday last at Moorhead House, Shipley, Yorks, in his 81st year. He was for many years the head of the firm of Messrs. Knowles and Wilcock, in Leeds-road, Bradford, his works including the Town Hall at Guisely, the Institution for the Blind at Bradford, Westgate Ragged Schools, and Manningham National Schools. He had been a life member of the Royal Institute of British Architects since 1862.

CHIPS.

The cabinet works of Messrs. Walter and Jame Reilley, situate at Bardsley, near Ashton-under-Lyne, were destroyed by fire on Thursday night in last week, the damage being estimated at over £10,000. The works, which have not long been established, found employment for several hundred workpeople. The building was only partially insured. The origin of the fire is unknown.

At the Elton Fold Mills, Bury, Lancs, on Wednesday week, the mill chimney, which was 147ft. in height, was brought to the ground. Mr. William Fish, of Bury, was the contractor. The brickwork of half the base of the chimney was removed for a height of 2ft. 3in., and props were placed underneath and surrounded by a quantity of inflammable material. This was ignited, and after the fire had been burning for 34 minutes the props gave way and the chimney shaft fell, clear of all surrounding structures and people.

The new county hotel at Canterbury was formally inaugurated on Saturday night. It has been built from plans by Mr. William J. Jennings, M.S.A., of that city, Mr. J. J. Wise, of Deal, having been the contractor.

The Hampshire Field Club made an excursion to the Isle of Wight on Thursday in last week, when the parish churches of Calborne and Swainstone, near Freshwater, were visited.

A peal of eight bells are being hung this week in the belfry of St. Richard's Roman Catholic Church, at Holbeck, near Leeds. The bells have been cast by Mr. M. Byrne, of Dublin, and are said to be the first peal ever cast in Ireland for an English church.

The foundation-stones of a new Sunday-school, attached to the Primitive Methodist Chapel, Dudley-road, Wolverhampton, were laid on Saturday. The new building will be 58ft. in length and 30ft. in width, and will be provided with four classrooms. The total cost is estimated at £750.

A new infant school is being erected at Cadham, Hants, by Mr. C. Barter, of Shirley, from a design by Mr. S. Kelway Pope, of Southampton.

Mr. J. Hobson Matthews, the architect employed by the Cardiff Corporation, presented to the committee yesterday a further report on the records of the town. It stated that he had made copies of 19 charters and old records at the Custom House, dating back to 1683, and also of MSS. belonging to a gentleman at Carmarthen. He had, moreover, examined a large number of wills at Llandaff, dating from 1503 to 1750. The town clerk said he had requested Mr. Matthews to classify the information with a view to its being printed.

The new High Pavement higher grade board school at Stanley-road, Nottingham, was opened by the Mayor last week. The cost of the building, which is said by the local journals to be the most completely equipped for educational purposes of all the board schools in the country, was £10,528 0s. 6d., exclusive of fittings. It will accommodate 588 scholars.

On Thursday in last week foundation stones of a Wesleyan chapel at Strensall, near York, which is to replace a structure burnt down some months ago, were laid with due ceremony. The plans were prepared by Mr. Edward Taylor, York, architect. The accommodation in the chapel is about 120, and in the schoolrooms 70 sittings. The contractors are Mr. H. Creaser, of Strensall, and Mr. G. Mansfield, York.

CONTENTS.

Salisbury Spire ... 141
Railings, Fences, and Gates ... 141
Light in Town Buildings ... 142
Mr. Alma Tadema on Art Training ... 143
County Lunatic Asylums.—XXIII. ... 144
The Corrosion of Underground Pipes ... 146
Classic Details and their Application ... 146
The International Health Exhibition and Congress, Paris.—II. ... 147
The "Tantallon Castle" ... 148
Builders' Benevolent Institution ... 149
Sewer Ventilation ... 150
National Association of Master Builders of Great Britain ... 150
Underground Workshops ... 150
Obituary ... 150
The Building News Directory ... xi.
Our Illustrations ... 151
Competitions ... 151
Building Intelligence ... 170
Engineering Notes... ... 170
The Yarrow Home (Broadstairs) for Convalescent Children... ... 171
Architectural and Archæological Societies ... 172
Correspondence... ... 172
Intercommunication ... 173
Legal ... 173
Legal Intelligence ... 174
Water Supply and Sanitary Matters ... 175
Our Office Table ... 175
Trade News ... 177
Tenders ... 177

ILLUSTRATIONS.

THE CORN EXCHANGE, GLASGOW.—THE HALL OF THE GROCERS' COMPANY.—LLANDAFF CATHEDRAL.—RICHMOND SECONDARY SCHOOL AND TECHNICAL INSTITUTE.—NEW WESLEYAN SCHOOLS AND CHAPEL AT HULL.—TOMB OF BISHOP BRIDPORT, SALISBURY CATHEDRAL.

Our Illustrations.

CORN EXCHANGE, GLASGOW.

The site is at corner of Hope and Waterloo-streets (opposite Central Station). The original building was erected 60 years ago. The site now being valuable, the directors are reconstructing and adding to the Exhaust, so that it may be utilised to the greatest advantage. The street floor will be occupied by the Royal Bank of Scotland and others. On the first floor is the exchange, news, and secretary's rooms. The upper floors will be let for offices. The work is now in progress, and will be completed in May, 1896. The stone is from Locharbriggs Quarries, Dumfries. Mr. W. F. McGibbon is architect.

CITY GUILDS: NO. X.—THE HALL OF THE GROCERS' COMPANY—THE DRAWING-ROOMS.

We need not describe the work shown by the accompanying double-page plate at any length, seeing that already an account of the new hall buildings has appeared in our pages this year, on which occasion we illustrated the staircase (on Jan. 25th), and the fireplace in the staircase hall figured in the Building News for March 22nd, when a plan furnished by the architect, Mr. H. C. Boyes, was published in further illustration of the work. By a reference to this plan the position of the two handsome drawing-rooms, now represented, will at once be seen. The chimneypieces are executed in alabaster and marbles, very richly treated. The figure frieze by Mr. G. Seale (who did the beautiful carving on the staircase) makes a conspicuous feature in the rooms, and the wall-panelling is in oak. The furniture is uncommonly rich, in the finest silks and Genoa velvet. This was made by Messrs. Holland and Messrs. Gillow. Our illustration is produced from a photograph specially taken for this series by Mr. J. T. Sandell, using his patent plates and a lens by Ross.

LLANDAFF CATHEDRAL.—R.I.B.A. MEDAL DRAWINGS.

We complete to-day our series of reproductions of Mr. J. H. James's prize Medal of Merit set of measured drawings of this well-known church, which is the leading cathedral in Wales. Last week we printed a detail sheet illustrating the west front. The plan, with view and other geometrical drawings, will be found in the Building News for July 12th, when a description appeared, so that the accompanying south elevation and longitudinal section need no further reference in this place.

SECONDARY SCHOOLS AND TECHNICAL INSTITUTE, RICHMOND.

The Duke of Cambridge last week laid the foundation-stone of these schools, which are to occupy a prominent site on the corner of Kew-road and Selwyn-avenue, and are being built from the designs of Messrs. Fryer and Bath, architects. The plans were selected in public competition, and unanimously adopted by the Richmond Technical Instruction Committee and the Surrey County Council. The plans provide for a large hall at the corner of Selwyn-avenue, capable of accommodating 300 persons, behind which will be a classroom for dress-cutting and provision for cookery classes, with separate entrance to this department. A large corridor will separate the main building from the hall, so as to prevent any annoyance or disturbance of the classes. The opposite wing will contain a classroom, 60ft. by 25ft., and is divisible into three smaller rooms by means of removable partitions. In the main building, on the ground floor, there will be two large classrooms, several smaller rooms, and accommodation for the head master. Behind the large classroom will be a well-equipped chemical laboratory and balance-room. On the first floor is the art school, 40ft. by 25ft., with an art classroom adjoining, and an art-master's room attached. On the same floor are other classrooms and caretaker's apartments. In the basement will be rooms for engine, boiler, coals, stores, and lavatories, &c. The building will be heated by hot-water radiators, and the ventilation will be specially provided for. The front elevation is of brick, with stone dressings. The original estimate for the building was about £5,500; but various modifications and additions have been made in the plans, including mosaic pavements to the corridors, &c., which will bring the approximate cost of the building to about £6,000.

NEW WESLEYAN SCHOOLS AND CHURCH, ANLABY-ROAD, HULL.

The above illustration represents Wesleyan schools now in course of erection on the Anlaby-road, Hull, with proposed church to be built hereafter adjoining. The schools, which will be opened on the 17th inst., are built in red stock bricks with terracotta facings from Messrs. Edwards and Co., of Ruabon. The building is arranged to accommodate 900 scholars with central hall, and 19 classrooms, library, infants' school, &c. The total cost of the schools is about £3,000. They are from the design of Mr. W. Alfred Gelder, F.R.I.B.A., of Hull.

BISHOP BRIDPORT'S TOMB, SALISBURY CATHEDRAL.

There is nothing in Salisbury Cathedral more interesting than this beautiful tomb, which is built in the form of a shrine, and exhibits foliage of the most refined character. The south elevation is similar to the north, except of course the spandrel reliefs which are shown on the drawing and interpreted by Mr. C. A. Stothard. On the south side the first shows a female figure with an infant lying on a bed, which may indicate the Bishop's birth. The second shows a figure kneeling before another figure, representing his confirmation. The third shows a figure clerically habited sitting at a high desk, reading to four youthful figures. In the fourth stand two clerical figures, apparently joining hands; one has a cap, and is more dignified than the other: behind is a tree from which a shield is suspended bearing argent a cross between four pellets or bezants or. Probably this relief represents his first preferment; this seems to be corroborated by the first spandrel on the north side, which shows two figures, one in a gown sitting, and the other inclining towards him with both hands extended as if in the act of doing homage for his see. The second shows a procession, the hindermost figure with an uplifted cross, which probably alludes to the consecration of the church by Bishop Bridport; and his death is shown in the third spandrel, extended on a bier, pontifically habited, with angels at his head and feet. The fourth spandrel shows a dignified figure pontifically habited, but without a crozier, enthroned in a niche, sitting as in judgment, in front of which is a naked figure borne up by an angel with wings expanded, which evidently represents the ascent of the soul to heaven. On either side of the head of the recumbent effigy are two angelic figures offering incense. The hands are gloved, the right giving the benediction, and the left holding the crozier. The battlemented canopy over the head bears a strong resemblance to the lower part of the tower immediately over the roof, which probably indicates how far the work had advanced previous to its dedication in 1258.

D. F. Smith, A.R.I.B.A.

COMPETITIONS.

Durham.—The competition for the new County Council buildings at Durham has now been settled, and the design marked by the motto of "Demos" has been adopted for execution at a cost not exceeding £22,000, the architects being Messrs. Harry Barnes and Fredk. E. Coates, AA.R.I.B.A., of Sunderland. The referee, Mr. MacVicar Anderson, last May awarded these gentlemen the second premium, and the first premium was voted to the plan inscribed "Onward" by Messrs. Cooksey and Cox, of the Adelphi, W.C.; but the conditions of the competition required substantial and *bonâ fide* tenders within the amount stipulated, to be submitted for approval before the council would confirm the adjudicator's recommendation. The quarterly meeting of the County Council was held during the past week, when the second premiated plans were brought forward by the Finance Committee for final adoption, and agreed to. The tender for building this design by Messrs. Barnes and Coates was stated to be £18,051, which was accepted, leaving a margin, as above stated, of £4,000 for contingencies. The tender for Messrs. Cooksey and Cox's plan amounted to £21,977, with only £23 for contingencies. It was stated at the meeting that the site in Old Elvet cost £6,000, and that the fittings and furnishings would bring the total cost up to £40,000. The work will be proceeded with at once, and we have arranged to illustrate the selected design at an early date.

Farsley.—The Calverly and Farsley School Board, at their meeting on Monday night, decided to invite five architects to send in sketch plans and estimates of a new school, consisting of central hall and five classrooms, capable of accommodating 360 scholars.

Gateshead-on-Tyne.—For the new permanent church of St. George, in the populous and rapidly-growing parish of Christ Church, Gateshead, designs were recently invited from five architects practising in Newcastle. The assessor, Mr. J. W. Walton-Wilson, F.R.I.B.A., of Shotley Hall, selected that submitted by Mr. Stephen Piper, M.S.A., of County Chambers, Westgate-road, Newcastle, and he has since been appointed architect. The whole scheme is to be carried out at once, inclusive of tower. The design is Early English in style, consisting of nave and aisles lighted by triplet lancets, no clerestories being introduced; shallow transepts, each having double gabled fronts and chancel; tower, with belfry and saddleback roof, on south side of west front, at angle of two thoroughfares. Accommodation will be provided for 630 persons. The contract has been let to Mr. Alexander Pringle, of Gateshead, at £5,900, and Mr. John Richey is the clerk of works.

Watford, Herts.—At a meeting of the School Board held on the 22nd ult., the design submitted by Mr. C. P. Ayres, of Watford, architect, was selected for the new schools to be erected in Fearnley-street, on land recently purchased from the Earl of Essex. The schools are to accommodate 1,020 children, and, including central halls and boundary walls, the approximate estimate is £10 per head.

CHIPS.

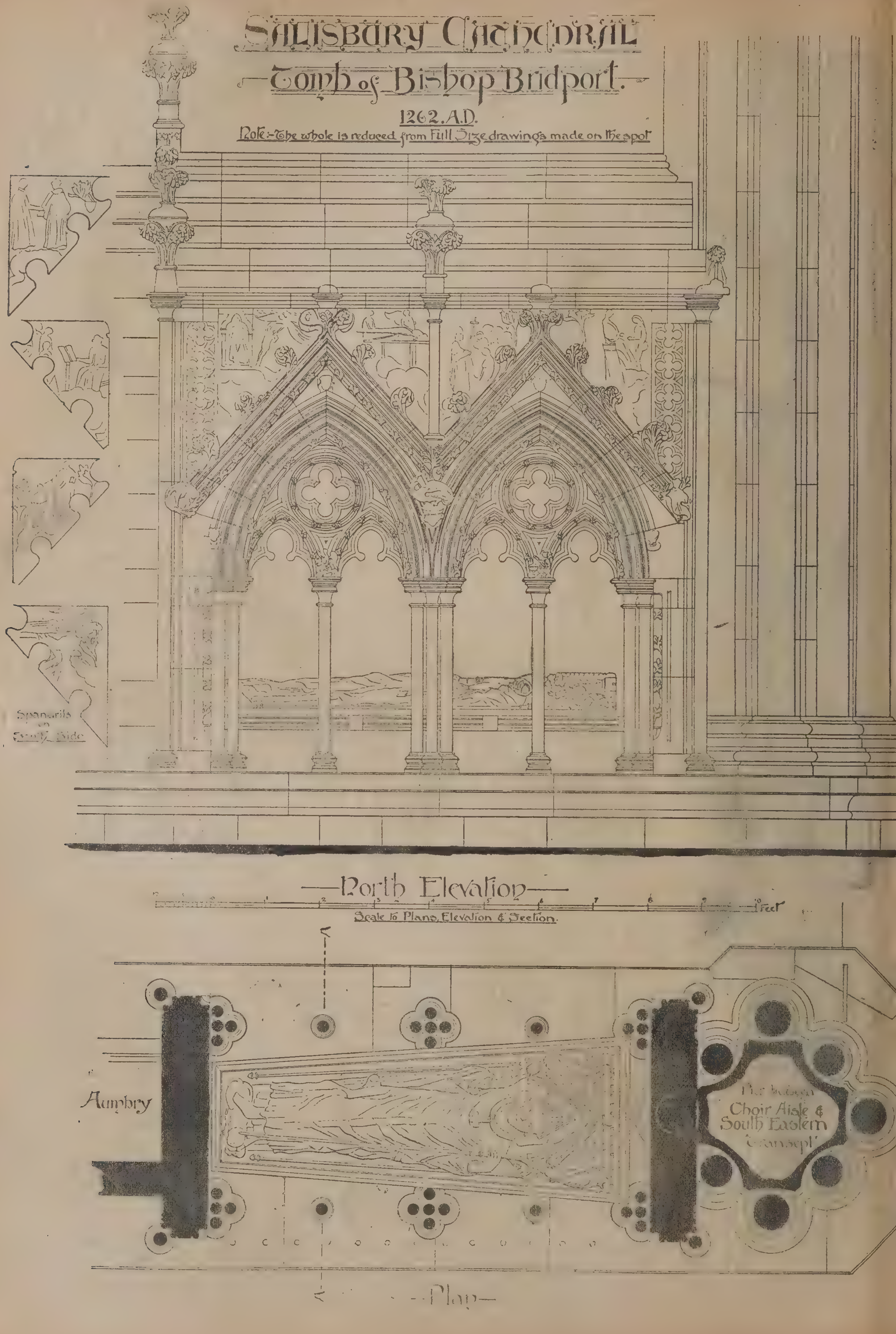
The Bishop of Wakefield dedicated, on July 24, a new vestry and chapel, which have been erected in connection with Sandal parish church, near Wakefield. Messrs. Denholme and Co., Wakefield, were the contractors.

New waterworks are being constructed at Heckington, for the Sleeford Rural Sanitary Authority. Mr. G. H. Williamson, of Sleaford, is the contractor.

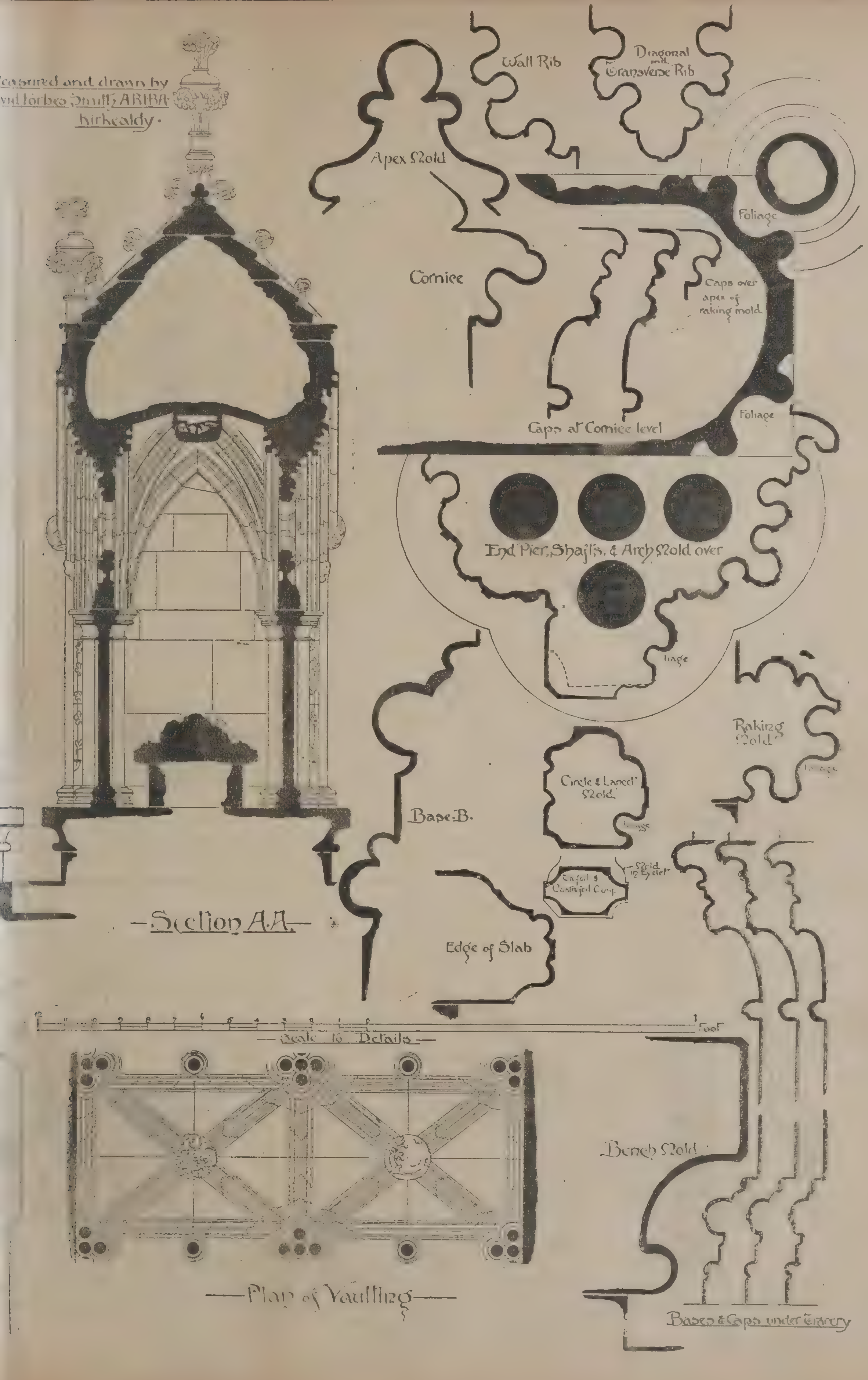
The will of Mr. William Stenning, of Redhill, Surrey, timber merchant, has been proved, the personalty amounting to £19,101.

During a thunderstorm on Tuesday week, the Belle Vue Church, West Hartlepool, was struck by lightning, and the tower fell with a crash. Some men standing near had narrow escapes from the falling débris.

The opening of the new Church Sunday-school at Lanivet took place on July 24th. The school stands nearly opposite the rectory, and is built of Reperry stone, with coigns of Cardinham granite. The architect is Mr. Grose, jun., of Bodmin, and the contractors are Messrs. Ham Bros., of Bodmin, for masonry, and Mr. Tinney, of Lanivet, for carpentry.


Salisbury Cathedral
Tomb of Bishop Bridport.
1262. A.D.
Note:- The whole is reduced from Full Size drawings made on the spot
Spandrils on South Side
North Elevation
Scale to Plans, Elevation & Section.
Feet
Aumbry
Pier between Choir Aisle & South Eastern Transept
Plan

easured and drawn by
vid Forbes Smith ARIBA
Kirkcaldy.


Apex Mold
Wall Rib
Diagonal and Transverse Rib
Foliage
Cornice
Caps over apex of raking mold.
Caps at Cornice level
Foliage
End Pier, Shafts, & Arch Mold over
liage
Raking Mold
Foliage
Base.B.
Circle & Lancet Mold.
Foliage
Trefoil & Cuatrefoil Cusp
Mold in Eyelet
Edge of Slab
12 11 10 9 8 7 6 5 4 3 2 1 0 1 Foot
—Scale to Details—
Bench Mold
Bases & Caps under Tracery

—Section A.A.—

—Plan of Vaulting—

Building Intelligence.

Berkhamsted.—The new chapel at Berkhamsted School, the foundation-stone of which was laid about a year ago, was dedicated on Saturday by the Bishop of Colchester. The building is constructed of red brick, with the windows and facings of white stone. The style is Late Perpendicular. The east end is designed after the church of Santa Maria dei Maracoli, at Venice. The Holy Table stands on three polished steps of Devonshire marble, and is approached by a broad staircase of dark blue Forest of Dean stone, with 15 steps. The chapel has been so constructed that its ornamentation may be gradually completed, the cost of the work having been already promised in several instances. The electric light is used, as throughout the school. The architect is Mr. Charles H. Rew, of Berkhamsted, and the builder Mr. Osborn, Berkhamsted.

Burnham, Somerset.—The contract has been let for the erection of a coffee tavern at Burnham, Somerset, for Mr. J. B. Braithwaite, jun., on the site of the Masons Arms Hotel. The premises will comprise a large coffee bar, bar parlour, manager's residence, accommodation for daily visitors, cyclists, football teams, &c.; also a suite of rooms for the Local Liberal Association. Messrs. Clark and Moscrop, of Darlington, are the architects, and Mr. James Keats, of Burnham, the contractor, who will carry out the work under the local superintendence of Mr. C. S. Leech, architect, of Burnham and Highbridge. The walling will be built of bricks made by the Apex Tile Company, with Corsham stone dressing, and the roof of Staffordshire Broseley tiles.

Coxlodge, Newcastle.—The foundation-stone of the extension of the Newcastle City Lunatic Asylum was laid on Wednesday afternoon, adjoining the present asylum at Coxlodge, near Gosforth, which was built in 1854, and enlarged in 1866. The architect is Mr. John W. Dyson, of Grainger-street, Newcastle, whose design was selected from 22 submitted in competition by local architects. The extension is being erected for male patients, and will accommodate 361, and when completed, the whole of the present asylum will be adapted for women patients, the total accommodation being then about 800. The new buildings are arranged in two-storied blocks, the various floors forming wards for the different classes of patients. The walls externally will be of stone, and the roofs covered with Bangor slates. The patients' blocks will have the floor between ground and first story of Mark Fawcett and Co.'s system of fireproof flooring, and the ceiling to the upper floors will be formed of concrete. The floors and woodwork generally will be pitchpine. The lavatories, bathrooms, &c., will be lined with glazed bricks. All the staircases will be of Yorkshire stone. The heating and ventilation will be on the "plenum" system, and all apparatus is to be in the subways below the buildings, so that no part can be interfered with by patients. There will be fire main services both inside and outside the buildings. In addition to the patients' blocks, there is a complete administrative department, comprising committee-rooms, offices, kitchens, stores, dining-hall, workshops, bakery, visitors' room, club-rooms for attendants, and apartments for the medical and other officers. There is also a new laundry, isolation hospital, recreation hall, chapel, superintendent's residence, head attendant's house, ten cottages for attendants, and entrance lodge. The buildings will be lighted by electric light, and the motive power required for driving machinery and ventilating fans will be electric. A complete electric plant is to be provided. The foundations and the erection of the main buildings to the ground-floor line have been carried out by Mr. John Ferguson, of Newcastle, and the contract for the superstructure and auxiliary buildings has been let to Mr. Walter Scott, of Newcastle, who is now proceeding with the work. The heating and ventilation will be carried out by Messrs. Ashwell and Nesbit, of Newcastle and London; the electric-light fittings, wires, and cables by the Corlett Electrical Engineering Co.; and the sanitary fittings throughout are to be of Doulton's manufacture.

Goathland.—On Wednesday week the new church of St. Mary at Goathland was consecrated by the Archbishop of York. The old church, which was built in 1821, had become so dilapidated that it was barely safe, and it was inadequate in size. The site of the new building, near to the old church, has been given by the Duchy of Lancaster. The church consists of nave, 52ft. by 22ft., chancel, 32ft. by 19ft., vestries, and south porch; it is built of local stone, which has been obtained free of cost from the quarries on the estate of Mr. McEacharn. The church will accommodate about 300 persons. It is designed in the Late Decorated style, treated in a simple and broad manner, characteristic of moorland buildings, with long lights. The tower has not yet been constructed. The architects are Messrs. Brierley and Demain, of York, and Mr. Barnes, of Malton, is the contractor. The special gifts include a lectern, the choir-stalls of oak, and an altar-piece. The cost of the buildings, which we illustrated in our issue of July 27, 1894, has been about £2,200.

Llanfairfechan.—A convalescent home is about to be built at Llanfairfechan, in connection with the North Staffordshire infirmary at Hartshill, by the sons of the late Mr. Robert Heath, of Biddulph Grange. The site of four acres has an unobstructed sea view, and is protected from the easterly winds by the Penmaenmawr mountain. Messrs. Bower and Hall, of Nantwich, are the architects, and the contract has been let to Mr. J. Gallimore, of Newcastle, who this week has made a start with the preliminary work. The building will be erected of blue Penmaenmawr stone, with freestone dressings. On one side the sloping ground gives the building a basement floor, including which there will be four stories. The building will be 130ft. long, with a depth of 45ft. The basement will contain dining-hall, coming out level with the garden, kitchen, bagatelle-room, scullery, and domestic offices. The ground-floor comprises sitting-rooms, library, surgery, and matron's room. The upper floors will be occupied as dormitories and servants' quarters. Laundry and stables will be attached.

Waskerley.—The foundation-stone of a little moorland mission church was laid on Saturday afternoon. The church, which will be at an elevation of a 1,100ft. above the sea level, provides sitting accommodation for 100 persons, and will be substantially built of stone and covered with stone flags, both quarried on the moor adjoining. Messrs. Kidd and Son, of Cowshill, and Mr. Philipson, of St. John's, Weardale, are the builders. Messrs. Clark and Moscrop, of Darlington, are the architects.

CHIPS.

The Grosvenor Restaurant in John-street, Sunderland, was opened on Tuesday. It has been built from designs by Mr. Hedley, of that town.

At Tuesday's meeting of the Staffordshire county council it was resolved to raise the salaries of Messrs. Watkins and Fennell, assistant surveyors, from £175 to £200 per annum.

The death is recorded of Alfred Clarence Alais, engraver, in his 60th year. He reproduced some well-known cattle and other plates, after Edwin Douglas, of "Jersey," "Alderney," "Sark," "Evangeline," "Hern," "Jersey Beauties," "Ferreting," and "Mine Host." He also engraved "Home, Sweet Home," and "Hunter and Cob," after Landseer; likewise the popular pictures, after Stanley Berkeley, "A Disgrace to his Family" and "A Credit to his Family."

A new reading-room which has been erected at Springfield, Wolverhampton, under the bequest of the late Mr. Edward Butler, will be opened to-day (Friday). The premises consist of a newspaper-room, 32ft. by 23ft., and a magazine-room, 39ft. by 23ft., while adjoining is a caretaker's house. The total area on which the building stands is 520 yards, and the cost will be £1,000. The style is Domestic. Red brick has been used in the exterior part of the building, and the upper portion is finished in rough-cast and tile hangings with gables, while the roof is covered with red tiles. Pitchpine blocks have been adopted for the floors, and the whole of the interior woodwork is stained and varnished. Accommodation is provided for about 150 persons. Messrs. Bradley and Lloyd have erected the building, from plans prepared by Mr. Lavender, of Lichfield-street, Wolverhapton.

We inadvertently stated in our last issue that the architect for the new workhouse hospitals, Burnley, was Mr. G. Keighley. This is a mistake; the architect being Mr. Samuel Keighley, of Burnley.

M. Henri Blondel, a well-known architect and contractor, who has designed and constructed many of the best-known buildings and thoroughfares in Paris, was fined, on Monday, 3,000 francs on a bankruptcy summons. His liabilities were stated to amount to over one million francs.

Engineering Notes.

Southampton.—The new graving dock to be opened to-morrow (Saturday) by the Prince of Wales, who will be accompanied by the Princess of Wales and the Duke of York, has been constructed during the past two and a half years by Messrs. Lucas and Aird, who are also the contractors for the quay extensions at the same port. The graving dock is the largest in the world, and occupies a portion of the mudlands on the south side of the Empress Dock. It is 750ft. long clear on the blocks, 87ft. 6in. wide at the bottom, and 91ft. at the top, the coping level, and the depth 42ft. from the surface to the floor of the dock, while the depth of water will be 29ft. at high-water neap tides, so that a vessel drawing 28ft. 6in. can enter. It is built of Portland cement concrete faced with bricks, and the brickwork itself is faced with blue bricks. The altars, coping, caisson stop, and sluice faces are all constructed of Cornish granite. There are three flights of steps from the surface to the floor of the dock. It will be emptied by two 48in. invincible direct-acting pumps, built by Messrs. J. and H. Gwynne, of Hammersmith; they are capable of emptying the dock in from one and a half to two hours, throwing 500 tons or 112,000 gallons of water per minute, the estimated amount of water that the new dock will contain being $16\frac{1}{4}$ million gallons. The pumping station is on the east side of the dock, the chimney shaft being 120ft. high. There are six Galloway boilers, each 30ft. long and 7ft. 6in. diameter, to supply motive power to the engines, and for the hydraulic cranes which will be provided alongside the quays. There will be three hydraulic capstans for bringing ships into the new dock. There is also a Titan travelling crane lifting 30 tons, and built by Messrs. Stothert and Pitt, of Bath, who constructed the electric cranes at the Town Quay. Alongside the pumping station is a large shed for baggage 300ft. long by 40ft. wide. To form an entrance from the Empress Dock, 4,000 tons of solid concrete had to be removed, necessitating the use of gelignite for blasting purposes. Instead of the usual dock-gates at the entrance to the new dock there is an iron ship caisson, 95ft. long, 25ft. broad, and 45ft. deep, built by Messrs. G. Rennie and Co., of Greenwich. There have been nearly half a million cubic yards of Micheldever chalk used in making the banks in connection with the reclamation of the mudlands. About 100,000yds. of concrete, 44,000ft. of granite, and 6,000yds. of brickwork have been laid in the new graving dock. Over 20,000 loads of balk timber have been used in the general construction. Thirty-six thousand tons of Portland cement have been ordered, and 24,000 tons have been used up to date. The amount of excavations came to 214,000yds., 93,000yds. of that having to be done in timbered trenches, some of which went down between 60ft. and 70ft. below the surface of the foundation of the walls. The majority of the bricks came from Bishop's Waltham. In addition to the new graving dock, about 600ft. of the east or Itchen quay has been completed, the new work covering an area of about 10 acres. Alongside this quay is a depth of 28ft. at low water of spring tides. The quay is to be continued, to make altogether a length of 1,600ft. It will then return for 420ft., and join the south-west or Test quay, which will be 1,500ft. long. The mudlands have been inclosed with a chalk bank preparatory to building the wall. The whole area eventually will be filled up between these walls to the same level as the rest of the dock work, and will be available for railway-sidings, sheds, &c. Six dredgers have been used in deepening the channel of the harbour to a depth of from 28ft. to 30ft. at low-water spring tides. The work has been carried out under the superintendence of Mr. Wm. Colson, A.M.I.C.E., agent for Messrs. Lucas and Aird, and Mr. M. F. Wilson, A.M.I.C.E. watched the work on behalf of Messrs. Galbraith and Church, engineers for the London and South-Western Railway Company.

The Duchess of Teck unveiled, on Tuesday, a bust of Sir T. Whittaker Ellis, which has been placed in the Richmond Town-hall. On the pedestal it is stated that Sir Whittaker Ellis was Lord Mayor of London in 1881-82, M.P. for the Kingston division of Surrey from 1884 to 1892, donor of the site of the Richmond Town-hall and grounds in 1890, and first Mayor of Richmond 1890-91. The bust is the work of Mr. F. J. Williamson, of Esher.

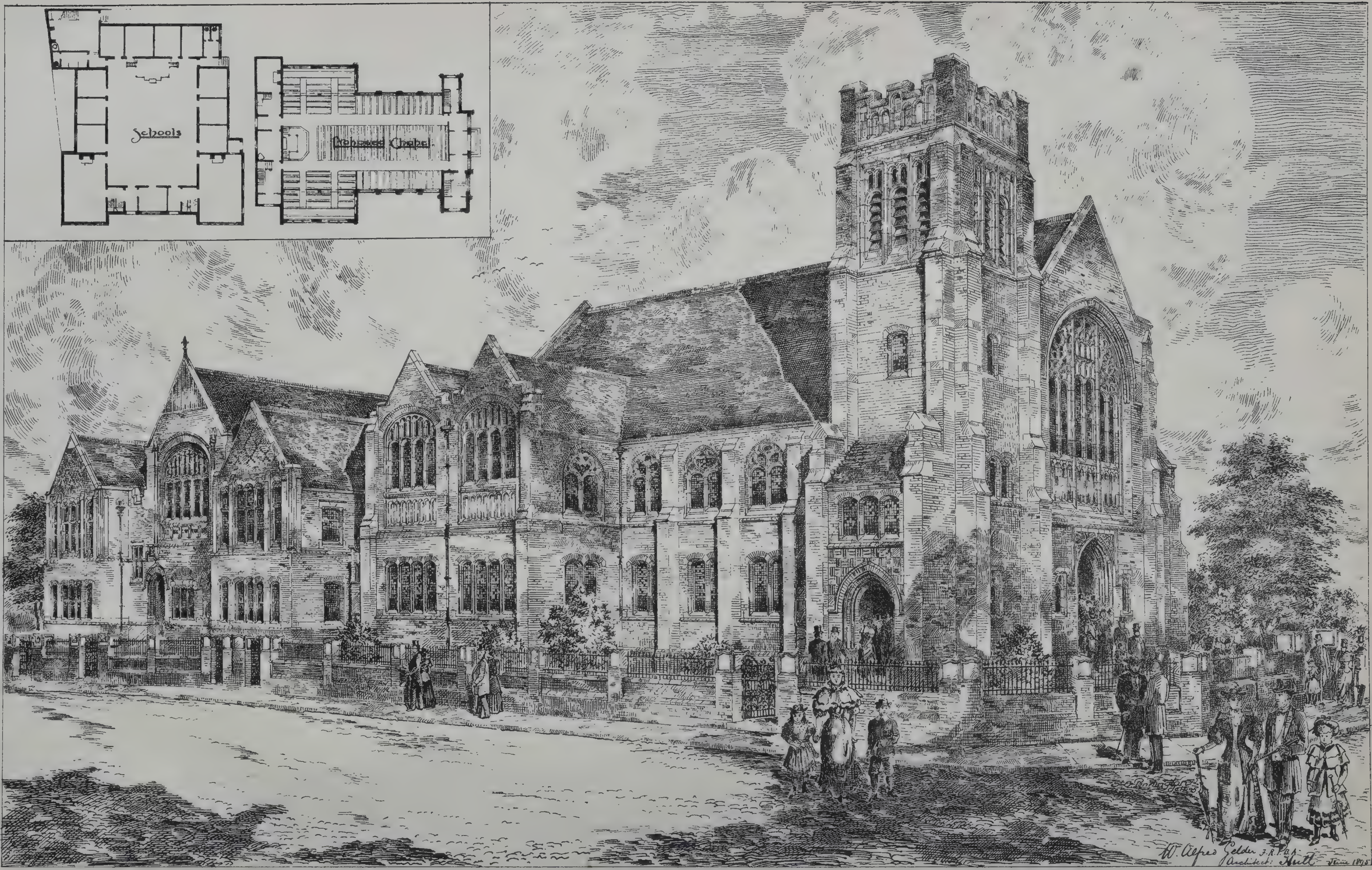


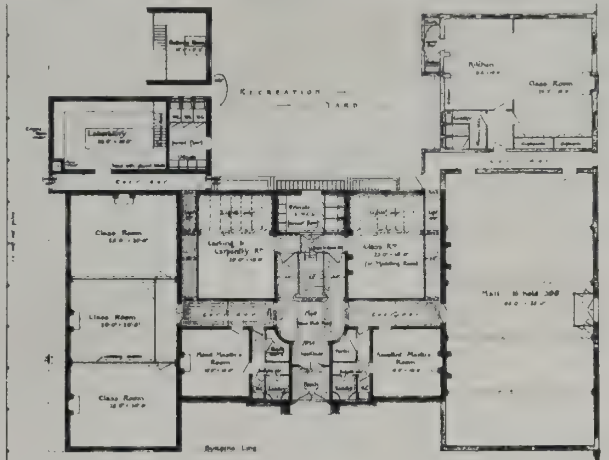
Photo Lithographed & Printed by James Akerman, 6 Queen Square, W.C.

NEW· WESLEYAN· SCHOOLS· &· PROPOSED· CHAPEL· AT· HULL· W·A·GELDER· F.R.I.B.A· ARCHT.

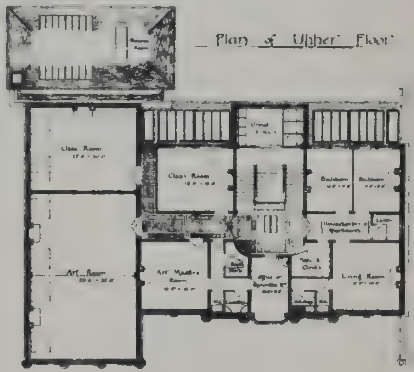
SECONDARY·SCHOOL·& TECHNICAL·INSTITUTE·

RICHMOND·SURREY·

SELECTED·DESIGN·BY·F·W·FRYER·ARCH^T



Plan of Ground Floor



Plan of Upper Floor

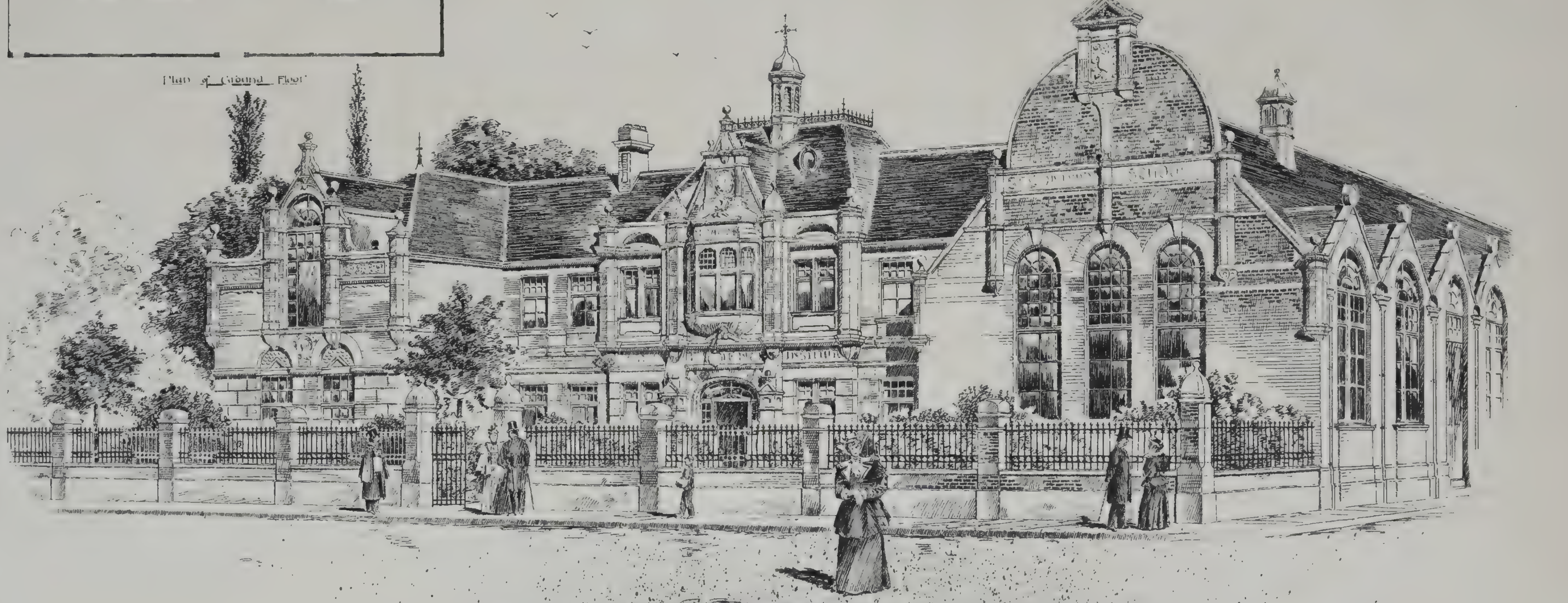
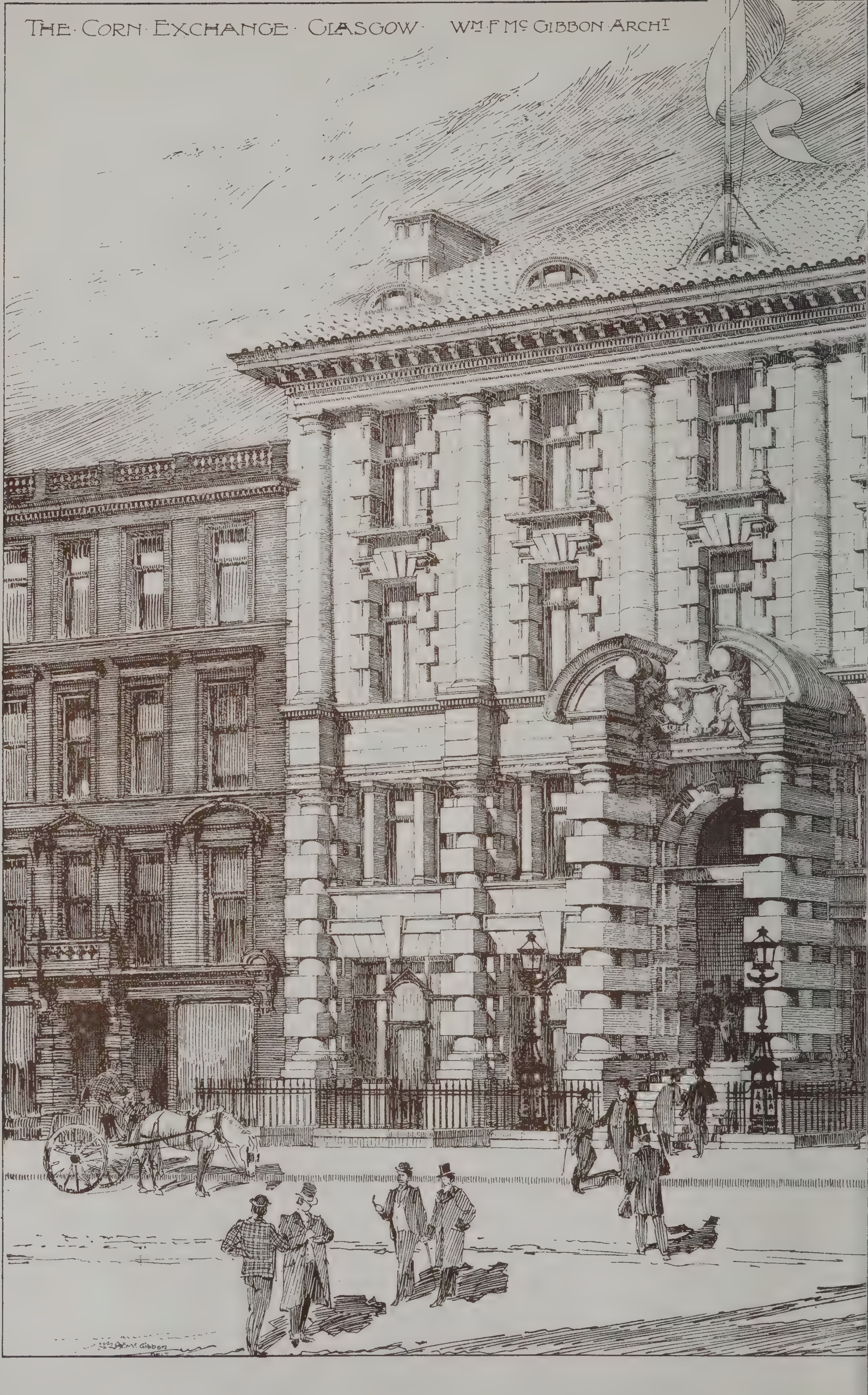


Photo Lithographed & Printed by James Akerman, 6 Queen Square, W.C.



THE·CORN·EXCHANGE·GLASGOW· WM F MC GIBBON ARCHT

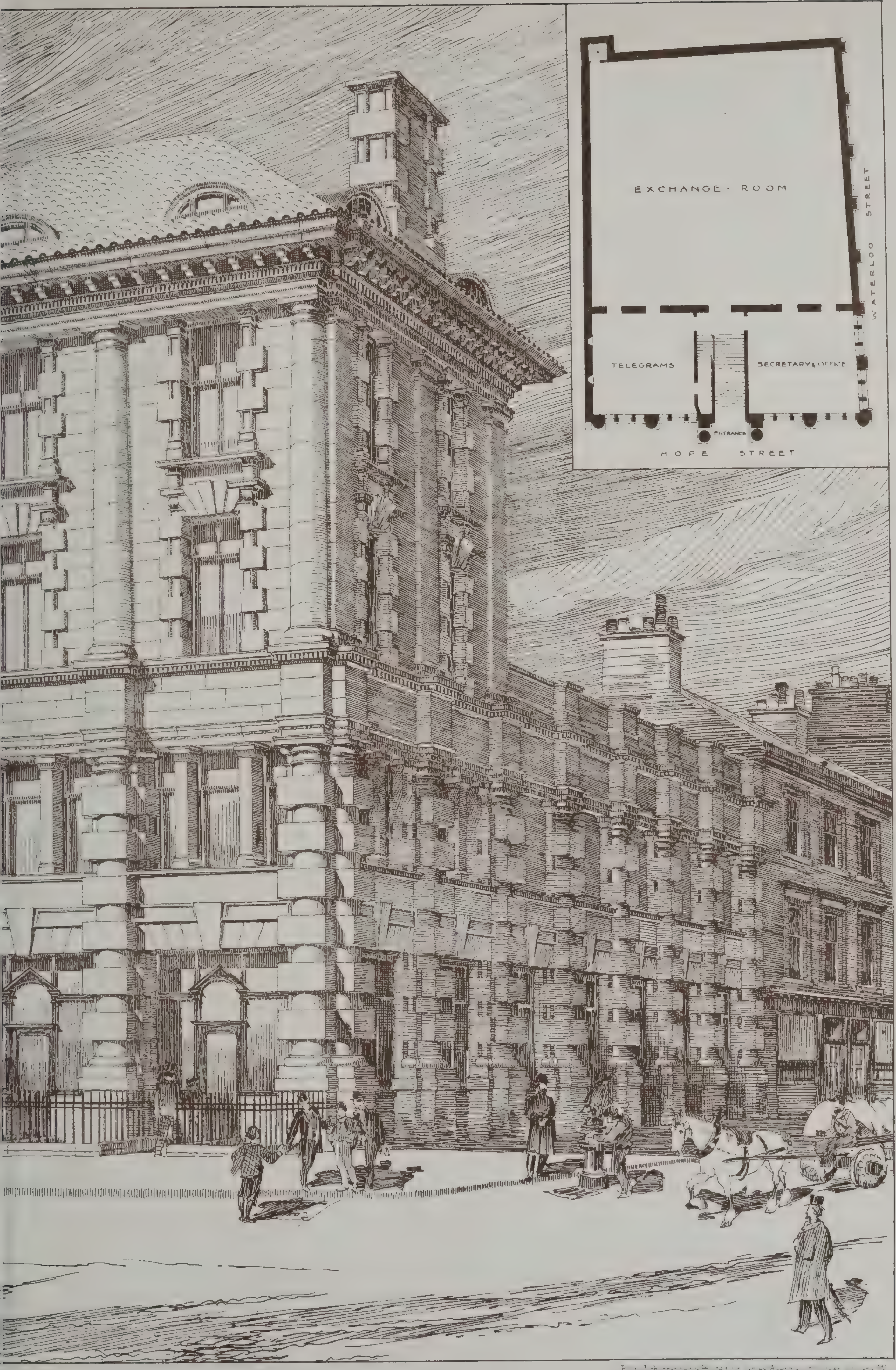
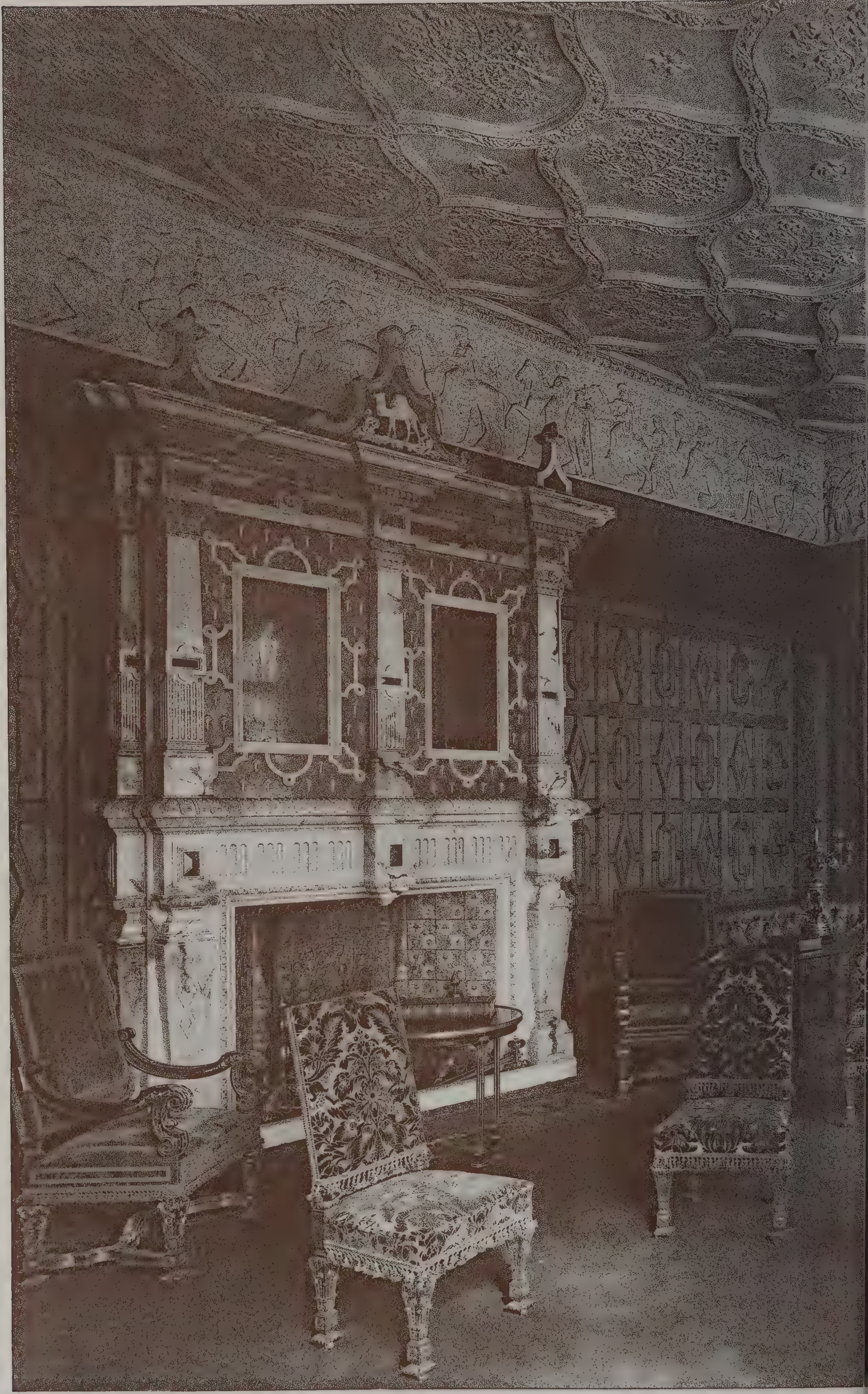


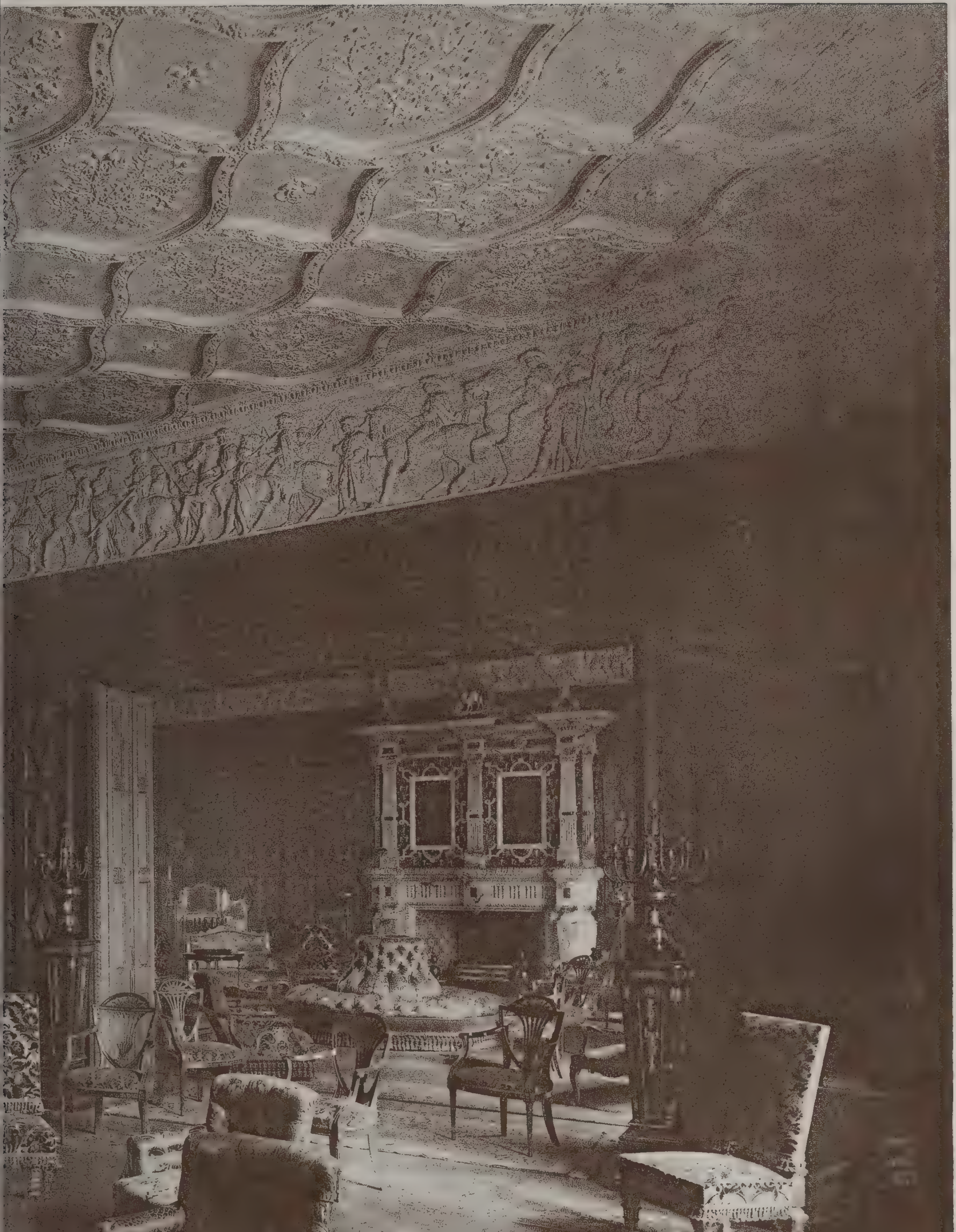
Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.



·PHOTOGRAPHED·WITH·A·SANDELL·PLATE·

THE·CITY·GUILDS·Nº 1

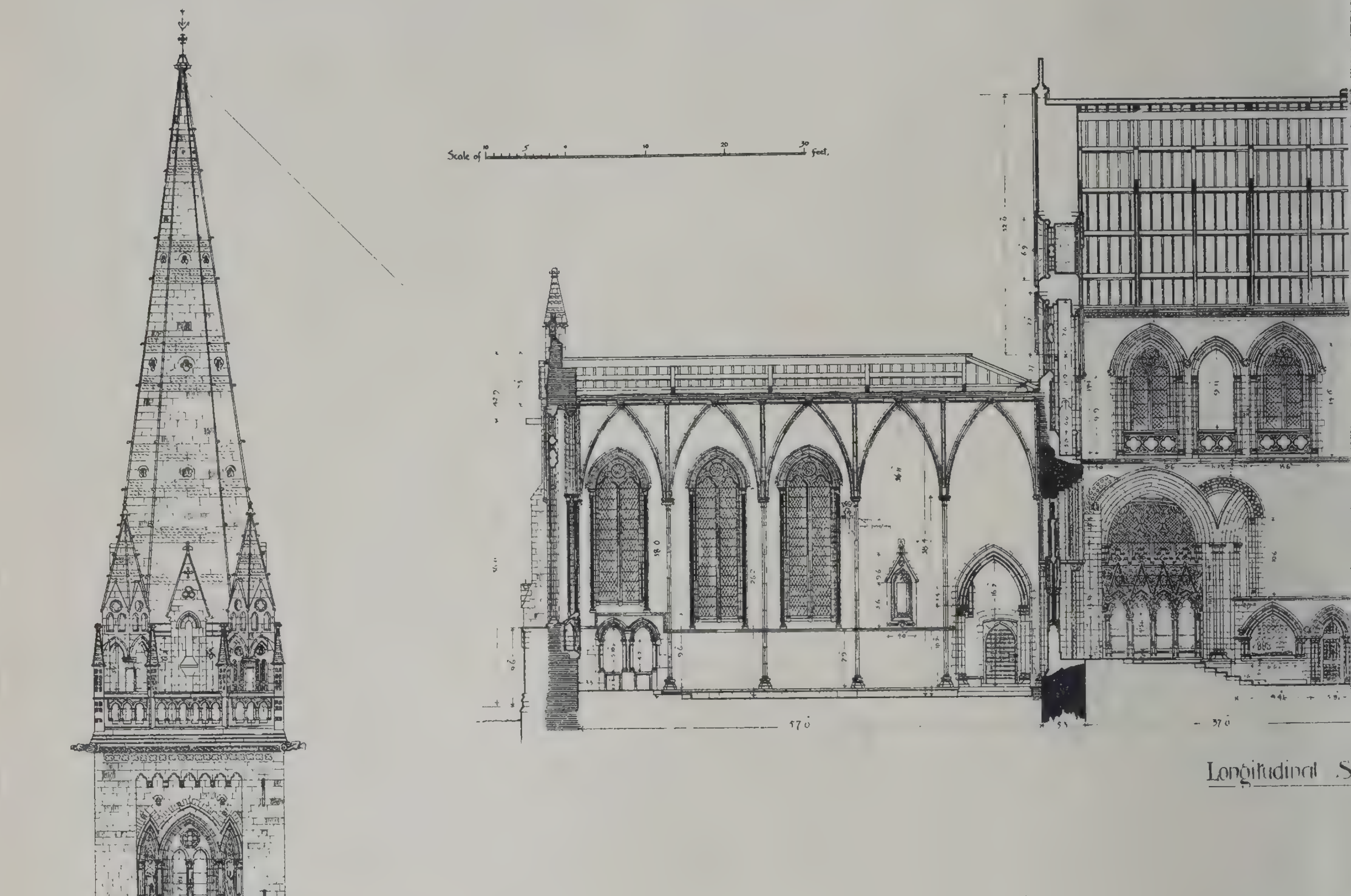
THE·DR



"Photo-Tint", by James Akerman 6 Queen Square, London W

HE·HALL·OF·THE·GROCERS' COMPANY·
NG·ROOMS·

LLANDAFF·CATHEDRAL - R·I·B·A· S

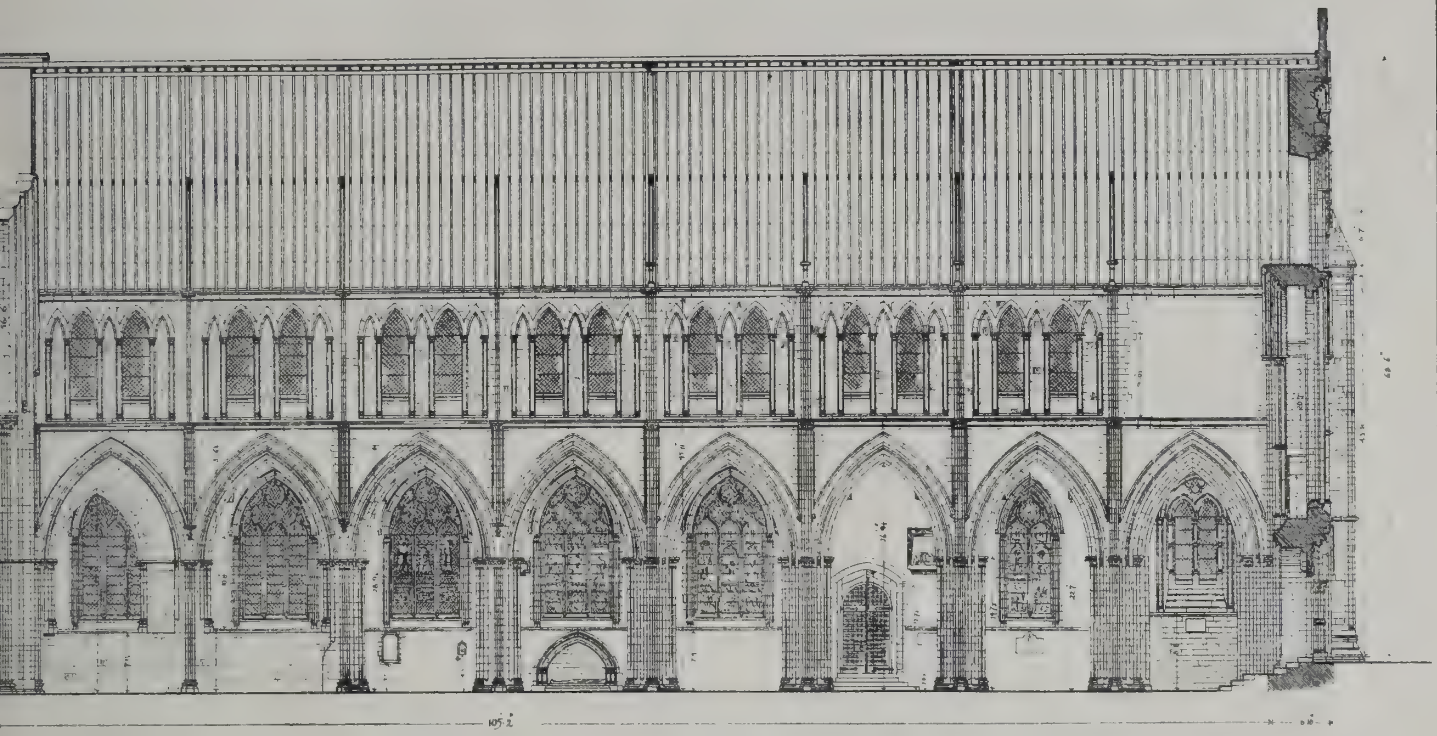


Longitudinal S

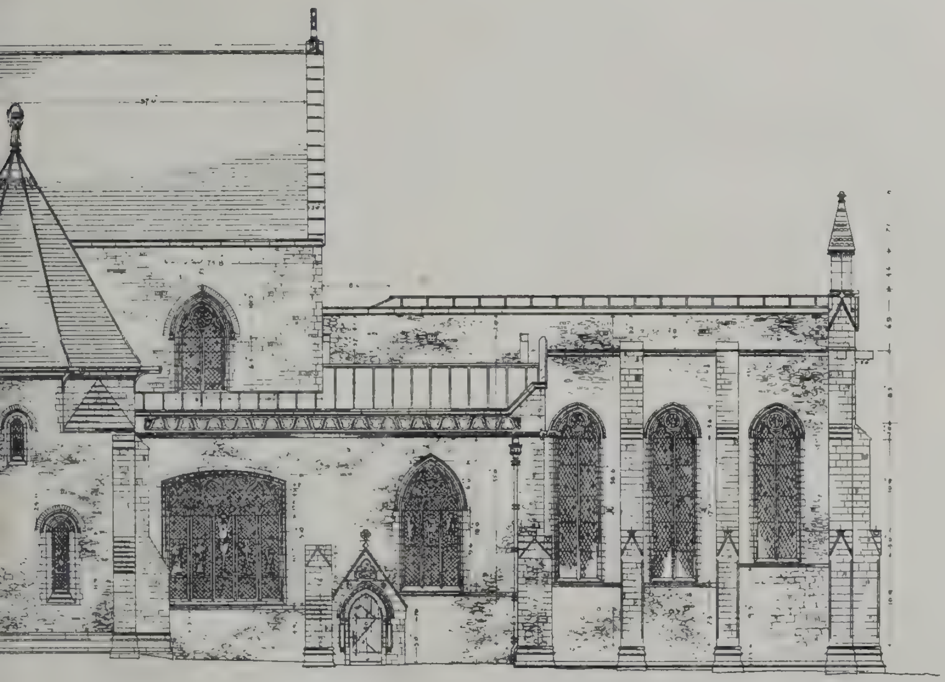
South Elevation.

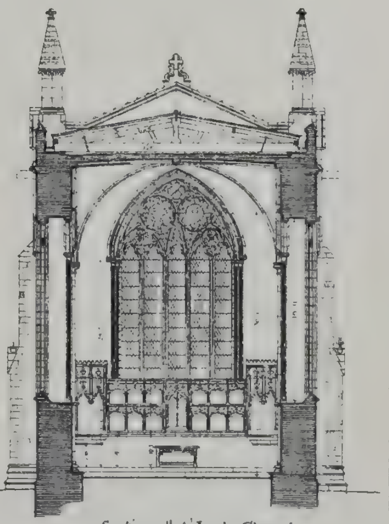
ER·MEDAL·FOR·MEASURED·DRAWINGS·

MEDAL·OF·MERIT AWARDED·TO·J·H·JAMES·



on

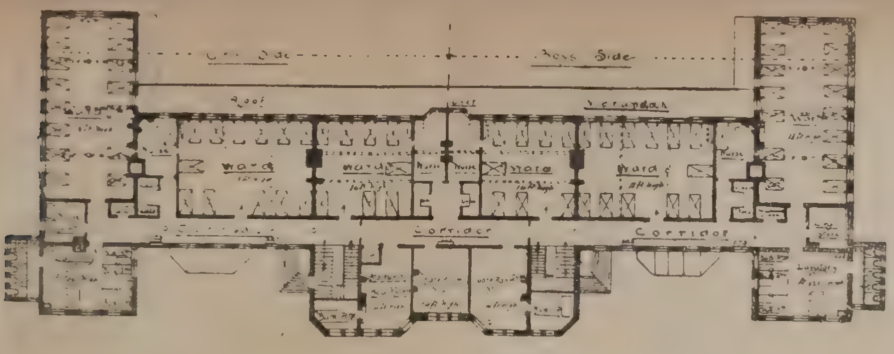




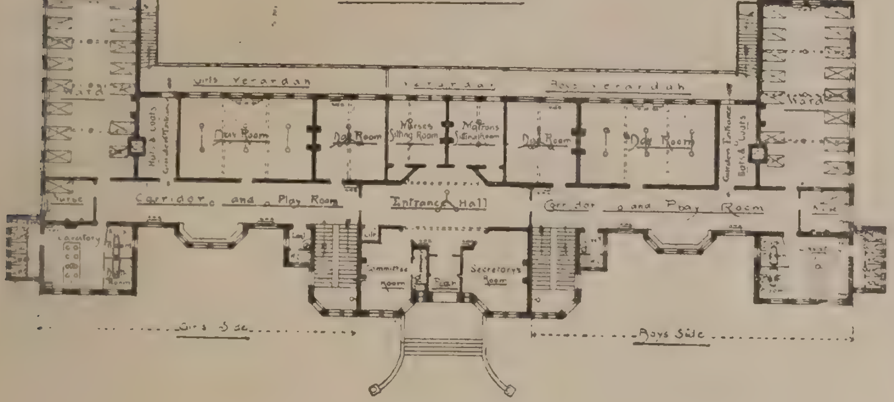
Section thru' Lady Chapel.

(Measured & drawn on the spot.)

Photo Lithographed & Printed by James Akerman, 6, Queen Square W.



First Floor Plan



Ground Plan

THE YARROW HOME (BROADSTAIRS) FOR CONVALESCENT CHILDREN.

THIS building was opened last Wednesday, the 31st ult. It has been erected from the designs of Messrs. Davis and Emanuel, the architects, whose plans of the principal floors we herewith illustrate. In considering the best direction in which to devote a large sum in the most useful manner for the benefit of children, it was felt that there are many people of very limited means and, at the same time, highly respectable, who, in times of adversity, suffer much privation. Assistance given to them, in the form of a seaside home for their children in weak health or recovering from illness, was deemed, after much thought, to be one of the best directions in which a large benefaction could be applied. Hence the erection of this new seaside home for the reception of children (50 boys and 50 girls) of deserving parents who are not in a position to supply to their convalescent children, entirely at their own cost, the advantages of a temporary residence at the seaside. As examples of the class from which it is expected the children will be derived, may be mentioned the minister of limited means, the unsuccessful professional man, the clerk with a small income but with the obligation of maintaining a respectable appearance, the struggling tradesman, and the skilled artisan or foreman, all of whom, from exceptional causes, may be in straitened circumstances. Children are eligible irrespective of nationality or creed, and they must be between four and twelve years of age. The institution is not to be used as a holiday resort; nor is it intended for children suffering from incurable complaints, nor for such as require active medical or surgical treatment, nor for those coming from a home where there has been any infectious or contagious disease; but only for such children as may be expected to derive permanent benefit from a stay at the seaside, where slight nursing supervision will be available. The building is surrounded by a large sheltered garden and faces the sea. It is believed to be one of the most complete in design and equipment yet erected. The situation and arrangement of the home will allow of its being kept open throughout the year.

It is proposed that a nominal weekly payment (5s.) shall be made by the friends of the children, the object of which is to make the home partly self-supporting, which, it is thought, will render the institution more acceptable to the class for whose benefit it is intended. It is estimated that the average duration of stay of each child in the home will be about three weeks, although the time may be extended. By special arrangement with the London, Chatham, and Dover Railway Company, tickets will be issued between London and Broadstairs at 1s. 9d. each way.

The trustees' London office is 73a, Queen-Victoria-street, E.C.

The land upon which the building stands is situated at the south side of Broadstairs, with a considerable frontage facing the sea, and has an area of 10½ acres, with ornamental grounds, kitchen garden and orchard, with direct access to the cliff. The site slopes considerably downward towards the sea. The building is designed to accommodate 100 children, viz.:—50 girls and 50 boys, with the working staff in addition. It fronts the Ramsgate-road, from which it is set back about 100ft., and at the entrance-gates is placed the porter's lodge. It occupies a frontage of 218ft., the depth at the wings being 76ft., and through the centre block 62ft. The general scheme of the design of the home is a central administrative block, with wings for the girls and boys respectively. The main entrance from the Ramsgate-road is on the centre line of the building. Access from it is given to a spacious octagonal hall. The matron's room, the nurses' sitting-room, the committee-room (with small dispensary attached to it), and the secretary's room are all entered from this hall, and occupy the central block on this floor. The wings on either side of the central block are separated therefrom by glazed screens, and each wing contains, on the upper ground-floor, a large day-room, 33ft. by 20ft.; a small day-room, 20ft. by 17ft.; a dormitory 45ft. by 22ft., for 15 children, with nurse's room adjoining; and a play corridor, 66ft. by 10ft., with a large bay window in addition. This 10ft. wide corridor is a special feature. An ordinary 5ft. wide corridor would serve all purposes of intercommunication; but, by widening it to 10ft. and laying its floors with noiseless wood blocks, the corridor becomes a valuable room in such a building. All rooms are 14ft. high in the clear. The children's day-rooms, the matron's room, and the nurses' sitting-room are on the sea-front and open on to a verandah 152ft. long and 6ft. 6in. wide, extending nearly the whole length of the building, from which ever-changing sea views are obtained. At each end of the verandah is a hat and coat-room, with bins for boots and shoes, and through this room the boys or girls, by means of a concrete staircase inclosed from the weather, obtain access to their respective covered playgrounds, and thence to the general garden.

The first floor contains in each wing, and entered from a wide corridor on the road front, a dormitory 45ft. by 22ft. by 18ft. high, with dormer windows, and with beds for 15 children; a dormitory 32ft. 6in. by 24ft. by 18ft. high, with dormer windows, and with beds for 12 children; a dormitory 24ft. by 23ft. by 14ft. high in the clear, and with beds for eight children: thus making (with the 15-bed dormitory on the upper ground-floor) the total accommodation for 50 children in each wing, viz., 100 children in all. The average cubical capacity in these dormitories gives each child something over 1,000 cubic feet. Each dormitory has a nurse's room adjoining, with inspection-window for supervision. There is a liberal provision of linen-closets and stores. The matron's and two spare bedrooms and bathrooms in the central block complete the accommodation on the first floor. The lower ground-floor contains the dining-hall, 64ft. by 27ft., situated under the central block, and is on the same level with, and opens on to, the garden on the sea-front. Separate access to this hall is given to the girls and boys by means of the two staircases. Adjoining the dining-hall is the serving-room, kitchen, and scullery, with the necessary store-rooms, linen-mending room, servants' hall, larders, cellars, knife and boot-room, &c. The rest of the lower ground floor is used for the boilers, heating apparatus, coals, engineer's shop, laundry, drying-closet, and general stores. At each end of either wing there is a covered playground supplied with swings and appliances for children's games.

The builders were Messrs. Colls and Sons. The materials for the walls are red brick, and the roofs are covered with Broseley tiles. The woodwork is painted white. No subscriptions are asked for, and the only help which will be acceptable is that the public will assist the trustees in securing cases worthy of the advantages of this capital home.

CHIPS.

Mr. Beall, sculptor, of Newcastle-on-Tyne, has just completed the erection, in Felling Church, of an alabaster tablet, with black marble inscription panel, to the memory of the late William Watson Pattinson, J.P., of Felling House. The design is by Messrs. Hicks and Charlewood, Newcastle, architects. The ceremony of unveiling the memorial will take place on Thursday in next week, the 8th inst.

The peal of bells at Uppingham parish church is being rehung and recast by Messrs. John Taylor and Co., of Loughborough.

Mr. H. Clarke, who has been engaged by the Morley Corporation as clerk of works for the new Town-hall and Municipal Buildings for the past three years, has been appointed to a similar position by the Harrogate School Board, for new schools.

The foundation-stone of the addition to the Town-hall at Lynn, now being erected by Messrs. Young and Co., of Norwich, according to plans prepared by Messrs. Tree and Price, of London and St. Leonard's, was laid by the Mayor on Saturday.

The bells of the Cathedral Church of Manchester, which had been silenced for over a year, were re-rung on Thursday in last week, having been hung afresh and refitted by Mr. Blackburn, of Salisbury.

The final section of the North Cornwall Railway, that from Wadebridge to Padstow, will be commenced immediately after harvest. The contractors for this section, which is seven miles in length, as for the previous portions, are Messrs. Curry, Reeve, and Co.; but the long iron bridge over Dennis Cove, near Padstow, has been taken by Messrs. Lucas and Aird, of London.

Mr. R. Deane Sweeting, an inspector from the Local Government Board, has held an inquiry at Kettering into an application from the rural district council for sanction to borrow £2,500 for a new fever hospital.

The foundation-stone of the additions to St. Edmund's Roman Catholic College, near Standon, was laid by Cardinal Archbishop Vaughan on July 23. The new buildings will, when complete, include an exhibition hall, which will be used as a study place, ten classrooms, lavatories, swimming-bath, covered playground, two dormitories, a library for the boys, and a billiard-room for the professors. The architect is Mr. A. E. Purdie. The part to be immediately proceeded with will comprise a swimming-bath, lavatories, and dormitory to hold 40 boys, and, if funds permit, additional classrooms and a boys' library. The estimated cost of the undertaking is £4,500.

Messrs. King and Leach, builders and contractors, of Rochester, have this week commenced the building of a new Coastguard Station at Calshot Castle, Hants.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Glasgow Architectural Association.—The following are the office bearers for the eighteenth session of this association:—Hon. president, Mr. Malcolm Stark, I.A.; president, Mr. Alex. N. Paterson, M.A., A.R.I.B.A.; vice-president, Mr. Wm. Tait Conner, A.R.I.B.A.; hon. secretaries, Messrs. Walter R. Watson and Hugh Dale; hon. treasurer, Mr. George Hill, A.R.I.B.A.; hon. librarian, Mr. Alexander M'Gibbon, A.R.I.B.A.; general committee, Messrs. Wm. J. Anderson, A.R.I.B.A., George Copland, William Fraser, A.R.I.B.A., and Robert J. Gildard. The syllabus for the new session is as follows:—

August		Visit: Hawkhead Asylum, Crookston. Mr. Malcolm Stark, I.A., architect.
Sept.	3	President's Opening Address—"History, Archæology, and Art."
,,		Visit: Theatre Royal, Glasgow. Mr. C. J. Phipps, F.S.A., architect.
,,	17	Lecture, by Rev. David Watson, Woodside Church.
Oct.	1	Member's Paper—"Materials." Mr. Alex. M'Gibbon, A.R.I.B.A.
,,		Visit: Glasgow Art Galleries, Kelvingrove. Messrs. Simpson and Allan, architects.
,,	15	Lecture. Mr. Malcom Stark, I.A., Hon. President.
Nov.	5	Member's Paper—"Organ Building." Mr. Hugh Dale.
,,	19	Lecture. Mr. Percy Fitzgerald, M.A., F.S.A., London.
Dec.	3	Member's Paper—"Acoustics." Mr. Alex. M'Kee.
,,	17	Lecture. Mr. James A. Morris, F.R.I.B.A., Ayr.
1896.		
Jan.	7	Member's Paper—"An Architectural Aim." Mr. George Hill, A.R.I.B.A.
,,	21	Lecture, by Mr. P. M'Gregor Chalmers, F.S.A., Scot.
Feb.	4	Association Travelling Studentship. Essay, by Mr. George Gunn, A.R.I.B.A.
,,	18	Lecture, by Mr. John W. Simpson, A.R.I.B.A., London.
March	4	Annual Business Meeting.
,,		Smoking Concert.
,,		Visit: Somerville Free Church, Keppochhill. Mr. W. G. Rowan, architect.
April	1	Presidential Address. Opening of New Session.
,,		Visit: Ruchill Hospital, and Ruchill Disinfecting Station.
May	5	Prize Essay—"The Distinctive Qualities of Scottish Architecture."
,,		Day Excursion: St. Margaret's Church, Dunfermline. Dr. R. Rowand Anderson, Edinburgh, architect.
June	3	Member's Paper—"The Designing of Wall Papers," by Mr. Alexander Orr.
,,		Visit. Kilbirnie Church.

Sheffield Society of Architects and Surveyors.—The following is the programme for the ensuing session. The meetings, with one exception, that of March 11th, are held on Tuesdays:—Oct. 8th, opening meeting (conversazione), address by the president, Charles Hadfield, F.R.I.B.A.; Nov. 12th, "The Brotherhood of Architects," by Paul Waterhouse, M.A., F.R.I.B.A., London; Dec. 10th, "Norman Architecture," with limelight illustrations, by H. C. Sorby, LL.D., F.R.S., Sheffield; Jan. 14th, 1896, "The Adam Architecture," with eighty limelight illustrations, by Percy Fitzgerald, M.A., F.S.A., London; Feb. 11th, "Local Half-Timbered Buildings," by Thomas Winder, Assoc.M.Inst.C.E., Sheffield; March 11th (Wednesday), "Axiality," by Hugh Stannus, F.R.I.B.A., London; April 8th, annual general meeting.

* * *

Messrs. E. H. Shorland and Brother, of Manchester, have just supplied some more of their patent Manchester grates and stoves to the Normanton School Board for their schools at Normanton-common, those previously supplied having proved very satisfactory.

The Exeter Architectural and Archæological Society held a district meeting at Kingsbridge and neighbourhood on Wednesday week. Kingsbridge Church, with its fine spire, the abbot's grange at Churchstow, the great church at Dodbrooke, an unrestored church at Sherford, and the collegiate buildings and church at Slapton formed the chief features of an interesting day's excursion.

The Ecclesiastical Commissioners have offered to sell Churchyard Bottom Wood, Highgate, containing an area of 65 acres, to the district council for £25,000, and waive their right to cut two roads through it. By this the rural character of the Wood will be preserved, and the Charity Commissioners, who are giong to complete their scheme by selling the front for building purposes, will gain another 50ft. frontage, and enable two more houses to be erected upon the land, and thus £20 a year will be added to the prospective income of the charities. This scheme is understood to have the approval of the Charity Commissioners.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to The Strand Newspaper Company, Limited.

TERMS OF SUBSCRIPTION.

One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India, £1 6s. 0d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front-page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No Front-page or Paragraph Advertisement inserted for less than 5s.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page Advertisements and alterations in serial advertisements must reach the office by Tuesday morning to secure insertion.

Situations.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., LI., LIII., LIV., LVIII., LIX., LX., LXI., LXII., LXIII., LXIV., and LXV. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Received.—Jas. Wilton.—Competitor.—E. D. S. and Co.—B. J. (Crewe).—Reg. Plumb.—E. T.

Assistant. (Please send; working drawings are always acceptable. There is no need at all for architects of ordinary buildings to go to the trouble and expense of making perspectives; we have dozens and dozens on hand. But sheets of working drawings of almost any work are always welcome.)

Correspondence.

CRAFTSMAN R.I.B.A.

To the Editor of the Building News.

Sir,—Now that candidates for Fellowship have the chance of being rejected because they are outside the art clique on the Council, or, if accepted, of being afterwards black-balled by the junior members, it cannot be wondered at that the supply of Fellows with their £4 4s. subscription is running short, and a new departure to obtain money seeems necessary.

We are to have, it seems, some intelligent workmen in the ranks who will be considered by the outside public to be much the same as other members.

What will the capitalist say if his practical manager is admitted to the style, rights, and dignity of Craftsman R.I.B.A., and himself left in the cold? Surely trouble in the family must follow.

The Hon. Associates are quite enough. I have known the opinion of one quoted against that of an ordinary member, and I hope that somebody among the young and energetic spirits of the profession will take steps to prevent this newest fad from becoming an accomplished fact, as another retrograde movement of the antiquated circle in Conduit-street. Let architects be architects, and let workmen, however artistic, be kept out of the fold.—I am, &c., Observer.

A BUILDING-LINE CASE.

Sir,—On page 139 of your last issue Mr. Wetherfield ably summarises the City-road case; but in the concluding paragraph he appears to think that the prevention of the building on the forecourt is a hardship to the owner.

The upper part of the City-road on both sides is a wide thoroughfare; the houses are set well back, with a long garden in front, and it must be obvious that a wall 11ft. high would quite spoil the appearance of the road, and be a great hardship to the adjoining owners.

This is a very important decision, as I felt it would be when I reported it to the superintending architect.—I am, &c.,

314, Old-street, E.C. Henry Lovegrove.

THE ARCHITECTURAL PROFESSION IN THE NORTH OF ENGLAND.

Sir,—It is not in the North of England alone, but all over the kingdom, and even in London, that architectural quacks abound.

I noticed in your columns the other day the name of an unsuccessful speculative builder, and the name of a builder's clerk in a well-known firm, both figuring as architects of important jobs; and I saw the other day some plans bearing the name of a man who eight years since was a bricklayer.

Some system of registration is necessary.

I have also seen quantities prepared by architects with items as vague as those described by "An Old Subscriber."—I am, &c.,

Surveyor.

CHIPS.

The failure of sales of large estates and residential properties of magnitude has been a consistent feature of the season at the Auction Mart, and last week proved no exception to the rule. The general tone of business, however, was very firm, as far as sound investments are concerned, the aggregate realisation amounting to £204,901.

A music hall at Broadmead, Bristol, was reopened on Monday night after reconstruction and redecoration from plans by Mr. Hancock, architect, of Bristol.

A destructive fire occurred on Friday morning at 5, Coleman-street, E.C., upon the premises of Messrs. Colls and Sons, builders. The building consisted of four floors, 50ft. long and 30ft. wide, which were used as workshops. The flames suddenly burst forth in the upper floors of the structure, and rapidly spread to a second building of three floors, 90ft. long and 30ft. wide, used as showrooms, offices, and workshops. The workshops were eventually gutted, but fortunately the office portion was saved.

At Friday's sitting of the Chester Consistory Court, Chancellor Espin granted faculties as follow:—For a new roof and other alterations to Bruera Church, at a cost of £2,500; for the erection of a tower at St. Chad's Church, Tushingham, at a cost of £1,000; and for several alterations at St. Bridget's with St. Martin's, Chester, at a cost of £500.

A racy letter by Mr. Harry Hems, of Exeter, descriptive of his voyage to the Canaries *en route* for the Cape, appears in the *Exeter Evening Post* of Tuesday.

In the applications for discharge from bankruptcy made in the case of Owen Jones, of Liverpool, builder, the discharge has been suspended for two years, ending June 21, 1897.

The Johannesberg Consolidated Investment Company have purchased the freehold property, Nos. 10, 11, and 6½, Austinfriars, E.C., which covers an area of 5,000ft. super., and have instructed Mr. T. H. Smith, of 17 and 18, Basinghall-street, to prepare plans for the rebuilding of same for their occupation.

Mr. Andrew Carnegie has offered to bear the cost, estimated at £2,500, of building a library at Wick, N.B., provided £1,200 can be raised otherwise as an endowment.

Another step in the direction of establishing a suitable central fire-station in Liverpool was taken on Tuesday, when a Local Government Board inspector received evidence regarding an application to borrow £35,000 for the purpose.

A stained-glass Tullis memorial window presented to Greenhead Parish Church, Glasgow, has just been completed by Mr. Stephen Adam, St. Vincent-street, Glasgow. The lower portion of the window, which is a three-light one, represents the Adoration and the gifts of the Kings, and the lower part represents Christ in Glory surrounded by worshipping figures.

The new Anglican Church at Grindelwald was opened on July 25th. The building has been erected on the site of the first church (destroyed by the great fire of 1892), which was built by the late Canon Butler. His friends have presented the new church with a pulpit and reredos in his memory.

Intercommunication.

QUESTIONS.

[11385.]—**Board School.**—Will some reader kindly give the name of the best book on School Architecture, especially as regards central halls, cookery, and manual training centres? Must be up-to-date.—Provinces.

[11386.]—**Cost of Floors per Square.**—Will a practical reader of the Building News inform me what would be about the cost per square of a floor over shop constructed with rolled joints, with concrete or fireclay between, having 1½in. deal floor and lath and plastered ceilings? Also price of same with ordinary joints.—In Doubt.

[11387.]—**Fresh Air Required Per Hour.**—What is a fair allowance of pure air per hour in a room to maintain a standard of purity? Is there any difference between the quantity to be supplied for a large room and a small one per head?—T. R.

[11388.]—**Interior Woodwork.**—Is planed deal, unstained and unvarnished, as durable as if stained and varnished for roofs?—Young Builder.

[11389.]—**Schools.**—Would anyone kindly give the names of towns in England and Scotland, in which the best, most modern, and improved examples of schools could be seen, as also the best systems of heating and ventilation?—Quartz.

[11390.]—**Sketching Tour.**—Will some reader kindly give a list of places of architectural interest between Dartford, Rochester, and Maidstone, Kent, with notes as to buildings worthy of study, which could be seen in about a fortnight? Gothic work would be preferred.—Pedestrian.

REPLIES.

[11365.]—**Law of Light.**—Roscoe, in his "Digest of the Law of Light," says:—"The grant of a servient tenement over which light comes to a building, both being the property of one owner before such grant, gives the grantee of the servient tenement the right to prevent the right to light from accruing to such building, whether it remains in the possession of the grantor, or is subsequently transferred to another person, unless the right is reserved by the deed of grant, and until an enjoyment of the light has continued for 20 years." I believe this quotation will be an answer to "Lex." The grantee of the servient tenement has therefore the right to prevent the light coming to a building originally lighted under these circumstances, unless the right has been reserved by deed. Wheeldon v. Burrows is cited as an example.—G. H. G.

[11367.]—**Width of Ward Floor.**—A width of 24ft. is a good breadth for a ward. In the design for new sick hospital at Hendon the wards are of this width, and are intended for 28 beds. (See plan given in "B. N.," June 21.) The warming may be Galton's open-air stoves with the flues arranged in the side walls. These may be supplemented by radiators placed under windows, the fresh air being made to pass through these into wards.—G. W. G.

[11368.]—**Papering Front Hall.**—The most artistic pattern for a hall is one in which a more or less conventional arrangement of foliage is followed. There are many suitable patterns of paper sold by Jeffrey and Co., Essex-road, Islington, or Woollams and Co., Manchester-square.—G. H. G.

[11371.]—**Water-Colour.**—Several useful treatises and manuals are published. Those published by Messrs. Rowney and Co., Winsor and Newton, Reeves and Son, are useful guides. I have found those in Winsor and Newton's series serviceable, and the lists of colours and tints are of value, always remembering that where a natural aptitude to perceive colours—or instinct, if we like to call it—is absent, books or lists of this sort are of little value. Some very useful advice is given in Prout's "Hints on Light, Shadow, &c.," Pyne's "Rules," Penley's "Manual," in one of the above series. With a natural perception for colour and the use of a colour-box, anyone may soon be able to acquire the necessary knowledge of mixing colour. The preparation of the paper or surface, method of laying on the local tint or the washes are easily learned from one of the above books, or from a few lessons at any school of art in the locality.—G. H. G.

[11375.]—**Northamptonshire Churches.**—Northamptonshire is, *par excellence*, a county of churches. "Bicyclist" can do a great deal on his machine by taking cross and by-roads to some of the finest churches. Of a few of the more ancient examples, I may mention the Saxon tower at Earl's Barton, one of the typical specimens of the style. It has been crowned by a 14th-century embattled parapet. The tower, in four stages, has a decided batter, and the walls are divided into panels by pilaster strips and the long-and-short work at the corners. All Saints, Brixworth, with western tower and octagon spire, is an interesting church, having traces of Roman, with Roman bricks. In Northampton, the Church of the Holy Sepulchre is a good example of a circular church, crowned by an octagonal clerestory and roof, with a massive square tower (14th century) with angular buttresses and an octagon spire. The round nave (Norman) has chancel aisles of the same style, and partly decorated. The central part has a cupola carried on eight round pillars, disposed in a circle. From them spring pointed arches. The octagonal clerestory is supported on these. St. Peter's, Northampton, is a good example of Norman. The tower has enriched Norman arcading in the middle stage in two tiers, and the later upper story has an embattled parapet of 14th-century character. It is a very beautiful specimen of the style. A characteristic feature of the churches of this county is to be found in their towers and spires. These are generally at the west end, plain and massively treated, usually broached. Of Early English spires, that of Ringstead Church is a good example of a broached spire. This church has also a square-headed narrow lancet with a cusped tympanum. I may also mention the fine tower and spire of Warmington Church, with a broach spire and three tiers of dormers. Kettering, a noble example; Strixton, Finedon, Geddington, Clapthorn, Moreton Pinckney, Polebrook, Raunds, Oundle, &c., have interesting features. The Northamptonshire churches are famous for their Decorated roofs, as that at the fine church at Raunds. A full account of the churches visited in this district by the A.A. has been given in the Building News.—G. H. G.

[11384.]—**Damp Floor to Cellar.**—From a description of the cellar given by J. Feacey, there must be something wrong either with the drainage or the cement concrete floor. The surface drainage cannot be deep enough, or the drains sufficient. Of course the blue clay, being impermeable, prevents the surface water from escaping below its level. If there had been an outlet through the clay, the water could have got away. Method 1: I should recommend "J. F." to break up the floor, and put in a deeper drain; also to fill the hollow wall with the "Hygeian rock composition," or, preferably, build another 4½in. wall all round, with an inch cavity between it and the present outer walls, and fill it with this composition. The present floor should also be covered with the "composition," connected with the wall linings through the course at the floor level, and then be relaid with tiles in cement. Method 2: If less radical measures are desired, line the walls with the "Hygeian composition" to the level of the ground outside, and put down on the present floor a hollow tile floor filled in with cement concrete, and cemented to a fine face. I have known this done with good results. "J. F." says: "In dry weather the floor becomes covered with moisture and dampness." This is probably due to condensation of the moist air, and can be obviated by ventilating the cellar, for which purpose an inlet tube should be provided from the external air, and a flue carried up opening into one of the chimney flues. Method 3: If there is any opportunity, the evils complained of may be removed by forming a dry area outside, on one or more sides of the cellar, with perforated bricks between the area and the cellar. This would be the best kind of ventilation. Tile drains laid along the bottom of this, and below the floor level, would remedy the evils.—G. H. G.

CHIPS.

At Treharris, Merthyr Tydvill, on Monday, Mrs. Frederick Harris, the wife of the chairman of the directors of the Harris Deep Navigation Coal Company, laid the foundation-stone of a new church dedicated to St. Matthias. The architect is Mr. J. E. Pearson, R.A., and Messrs. Cowlin and Son, of Bristol, are the contractors. The new edifice will cost £3,500, and seat 350 people.

Viscount Cross has been elected the Master of the Clothworkers' Company, and Dr. John Samuel Phené, F.S.A., F.R.I.B.A., has accepted office as one of the wardens.

Chancellor Oliphant held a special sitting of the Constitutional Court of St. David's Diocese at Carmarthen, on Wednesday, to hear an application for a faculty to pull down Swansea parish church and erect a larger one in its place. It was explained that the accommodation of the present church was inadequate, and it was intended to erect, from the designs of Sir Arthur Blomfield, a church with 1,200 sittings, at a cost of £20,000, of which £15,000 is subscribed. The faculty was granted.

A special service was held at Lichfield Cathedral on Wednesday, when the Bishop of the diocese reopened the Lady-chapel and dedicated numerous offerings for its use and adornment. The gifts represent an outlay of £4,000, and are quite independent of the fabric fund.

The foundation-stone was laid on Wednesday of a new church at Great Saughall, near Hawarden. It is being built from the designs of Mr. Medland Taylor, of Manchester, and will be mainly of brick, with tiled roof.

On Wednesday week a small party of members of the Birmingham and Midland Institute Archæological Section visited Bolsover Castle, and a fine Elizabethan house at Barlborough.

Lord Wodehouse was convicted at Smallburgh, Norfolk, on Tuesday, of having assaulted Mr. John Gaymer, a well-known builder, at North Walsham, during an open-air election meeting on the 17th inst., and fined £5, including the costs.

An interesting event occurred on Friday last on Easby Hill, Great Ayton (one of the highest points of the Cleveland Range), when Mr. J. Havelock Wilson, M.P. for Middlesbrough, declared the completion of the restoration of Captain Cook's monument, erected in 1827. It is the only monument erected in this country to the memory of "England's greatest sailor," and had become very dilapidated, the inscription having grown almost illegible. The monument has been pointed with Portland cement, the door blocked up, a lightning conductor fixed, a grey granite slab containing the inscription inserted in place of the metal plates, and a palisading put round the base. Mr. G. Grierson was the contractor.

The monument erected in York Minster to the memory of the late Archbishop Thomson will be unveiled on Friday in next week, the 9th inst. The ceremony of unveiling will be performed by the Earl of Crewe, late Lord Lieutenant of Ireland. The monument consists of a recessed altar tomb, designed by Mr. G. F. Bodley, A.R.A., with a life-sized recumbent effigy by Mr. Hamo Thornycroft, R.A. The site of the monument is in the south transept, just outside the entrance to the south choir aisle.

Legal.

HOUSE WARRANTY.

Upon the letting of an unfurnished house there is in law no implied warranty whatever that it is fit for the purposes of its occupation. This point has been decided over and over again, and it is only where an express warranty, either written or verbal, has been given as to drainage or the like that damages can be recovered; but in the case of a furnished house a different rule of law applies, and it is certainly an implied term upon the letting of premises ready furnished that they are fit for residence and occupation. If it should turn out that they were not fit for the purposes for which they were let, then the tenant can rescind his agreement and even recover compensation. This rule has been laid down by several judgments, one of which was the great bug case, where a furnished house was found to be so infested with bugs as to be quite uninhabitable, and where the tenant succeeded. The same principle will apply equally to furnished lodgings; but the recent case of "Sarson v. Roberts" (*Times*, 9th July) shows that the Courts are not disposed to carry this view further than is necessary in their opinion.

This was an action brought to recover damages under the following circumstances:—The plaintiff had taken furnished lodgings of the defendant for himself, his wife, and family for three or four weeks. A few days after they went into occupation a grandchild of the defendant's living in the house was found to be ill with scarlet fever. The plaintiff was not told of this, and he stayed in the house; but, after their return home, his wife and one child were found to be ill with the same complaint. At the trial the jury found upon the evidence that the lodgings were healthy at the time of letting, but did not remain so during the term of occupancy; that the defendant did not inform the plaintiff of the scarlet fever, and that the plaintiff's wife and child contracted the fever whilst in those lodgings. Upon their findings the judge gave judgment for the plaintiff, and from this the defendant now came to the Court of Appeal. The Master of the Rolls, while admitting the rule of law that in an agreement to let a furnished house or lodging there is an implied condition that the house or lodging shall be fit for occupation at the time the tenancy begins, said it cannot be held that this rule extends to the whole term of the occupancy. In other words, there is no implied agreement that a furnished house or lodging shall remain healthy and fit for occupation during the period of the tenancy. On this ground, therefore, the appeal was allowed, and the plaintiff has no remedy for his undoubted grievance. **Fred. Wetherfield, Solicitor.**

1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

In a Fix.—Contract.—Dispute.—This is a very defective and informal contract. But I think you can claim the full 75 per cent. on the work done, as agreed; and if he prevents your completing within a reasonable time, you seem to have an action for damages, which would probably be the only way of deciding the question.

J. W. J.—Fixture.—Greenhouse.—Removal.—As this is built upon a brickwork base, I consider it is clearly a fixture, and so it cannot legally be removed by you at the end of your tenancy without rendering you liable to an action for damages by the landlord, unless, of course, he gives his consent to such removal.

New board schools are about to be erected at Llangoed, Anglesey, at an estimated cost of £2,000. Mr. Glynne Davies, of Bangor, is the architect.

The waterworks for the supply of Srinagar, the capital of Cashmere, are being vigorously pushed on by Mr. M. Nethersole, the executive engineer. Water-pipes are being laid in the streets all over the city, 5ft. deep in the ground.

The Mercers' Company, who, with the City Corporation, have the management of the Royal Exchange, have resolved to contribute a panel to the general scheme of decoration of the interior of the building. Eight or nine other panels have been promised by prominent City men, whose names have not transpired. In all cases the designs will be first submitted to Sir. F. Leighton, P.R.A., Mr. P. H. Calderon, R.A., and Mr. E. J. Poynter, R.A., and the City Corporation have voted £500 from the balances of the rents of the Royal Exchange in filling a panel with a fresco representing William the Conqueror presenting the Charter to London.

LEGAL INTELLIGENCE.

Right to Mine under Springs.—The Corporation of Bradford, finding that Mr. Pickles, the owner of a farm near that town, was tunnelling under his land in order to make available some slate formations, sought to restrain him from proceeding, on the ground that his drift would divert the water of certain springs at Wilsden, known as the Many Wells, to which the community was entitled under local Acts of 1842 and 1864. Mr. Justice North granted an injunction, which was reversed by the Court of Appeal. The Corporation carried the case to the House of Lords, which decided, on Monday, against them, declaring that Mr. Pickles had the right, as a landowner, to do what he had done, the case of "Chasemore v. Richards" being taken as a precedent. The Corporation's action was therefore dismissed, with costs.

The Powers of the Superintending Architect, L.C.C., Upheld.—Allen v. the London County Council.—In the Court of Appeal, on July 22, Lords Justices Lindley, Lopes, and Rigby delivered judgment in this case. This was an appeal by the plaintiffs against a decision of a Divisional Court (consisting of Mr. Justice Wills and Mr. Justice Wright) upon a special case. A question of general importance was raised upon the construction of section 75 of the Metropolis Management Act, 1862, 25 and 26 Vict. cap. 102 —viz., whether the decision of the superintending architect of the Metropolitan Board of Works (now of the London County Council) is binding, not only as to the general building line in a street, but also upon the question in which street or road a particular house, situate at the corner of two streets or roads, is situate for the purpose of the determination of the building line by which it is to be regulated. The special case was stated by a metropolitan magistrate, who had made an order for the demolition of a certain building in the metropolis as being beyond the building line. A complaint had been made to the magistrate by the London County Council that the plaintiffs began to erect a building beyond the general line of buildings on the north-western side of Birchington-road, Kilburn, without the consent of the County Council, contrary to section 75 of the Metropolis Management Act, 25 and 26 Vic. c. 102 The facts were these: The plaintiffs, on November 13, 1894, began to build four shops and houses upon the land at the corner of Birchington-road, Kilburn High-road, having a frontage of 22ft. to Kilburn High-road and 58ft. to Birchington-road. This front in Birchington-road extended 16ft. beyond the general line of buildings, as determined by the certificate of the superintending architect of the London County Council, who stated in it that the main fronts of the buildings in a certain row of houses formed the general line of buildings on the north-western side of Birchington-road, "in which road the building in question is situate, and the building in question would project beyond the prolongation of the said general line." It was contended on behalf of the plaintiffs that the architect had not by his certificate found that the building was situate in the "street, place, or row of houses" described as the north-western side of Birchington-road, and if he had so found, he had placed the building in a "street, place, or row of houses" in which the same was not situate. The County Council contended before the magistrate that the certificate had determined that the building was situate in Birchington-road, and that that determination was binding on the magistrate. The magistrate adopted this view, on the authority of "London County Council *v.* Cross," and directed the demolition of so much of the building as was beyond the line. The questions for the Court were (1) whether the certificate showed that the house in question was situate in the street, place, or row of houses on and for which the general line of buildings was determined? (2) Whether it was the duty of the architect to decide and find the situation of the plaintiffs' building, and, if so, whether his decision was binding on the magistrate? The Divisional Court answered both questions in the affirmative. The plaintiffs appealed. The Court delivered judgment on Monday, dismissing the appeal. Lord Justice Lindley was of opinion upon the construction of the certificate that it did decide that the plaintiffs' house was situate in Birchington-road. The question was whether, under section 75, this point was to be decided by the superintending architect or by the magistrate. His Lordship continued:—The following circumstances must co-exist in order to justify an order for demolition under section 75, viz.:—(1) There must be a building, structure, or erection of some sort. (2) That building, structure, or erection must be erected with the written consent of the Metropolitan Board of Works (or now of the County Council). (3) That building, structure, or erection must be in some street, place, or row of houses. (4) That street, place, or row of houses must have a general line of building. (5) This line of building —*i.e.*, the line of building of the street, place, or row of houses in which the building complained of is situate must be decided by the superintending architect appointed by the Metropolitan Board of Works (or now by the County Council). (6) Lastly, the building, structure, or erection must be erected beyond the line so decided. What is left to the decision of the architect is the existence and exact position of the general line of building of the street, place, or row of houses (if any) in which the building, &c., complained of has been erected. In case of dispute the magistrate must decide all the other matters referred to — *e.g.*, whether the building, &c., complained of is one to which section 75 applies, especially having regard to section 74; whether the necessary consent has been given; whether the building, &c., is in a street, place, or row of houses, "street" being interpreted as directed in section 112; whether the building, &c., has been erected beyond the general line of building for that street, &c., as decided by the superintending architect. Such is, in my opinion, the true construction of the section, and of the decision in "Spackman v. Plumstead Board of Works" (10 A. C. 229), which set at rest the doubt whether the magistrate could review the architect's decision as to the general line of building. So far the interpretation of the statute is reasonably plain. But then it is said that the question still remains, Who is to determine whether the building complained of is in the particular street, place, or row of houses to which the architect's certificate is applicable? This is the point on which Lords Watson and Bramwell differed in "Barlow v. Vestry of St. Mary Abbotts" (11 A. C. 257). A careful perusal of Lord Herschell's judgment has led me to the conclusion that he agreed with Lord Watson, and that Lord Fitzgerald took the same view. There is much to be said for this interpretation of the Act; for, the object of the Act being to regulate lines of building, the architect, rather than the magistrate, seems naturally to be the person to say to what line of building a particular house should conform. The general line of building which the architect is to decide is "such general line," and by "such" is meant the general line for the street, &c., in which the house in question is. The architect might no doubt assume, without deciding, that the building complained of was in a particular street, place, or row of houses, and simply certify the general line of buildings of that street, &c., leaving the magistrate to determine whether, after all, the building was in the street, &c., to which the certificate applied. But this would be to deprive the architect's certificate of half its value, and the interpretation which leaves him to decide what building line is to be conformed to seems to be preferable to an interpretation which leaves that question to the magistrate. For these reasons, and thinking, as I do, that this view of the section is more in conformity with the decision of the House of Lords in "Barlow's Case" than the interpretation contended for by the appellants, I have come to the conclusion that this appeal ought to be dismissed. The architect's certificate here, taken with the plan, supplies the omission which led to the decision in "Barlow's Case," and does certify, with sufficient clearness, that the appellants' house is not only in Birchington-road, but is in the row of houses the building line of which is defined. Lord Justice Lopes and Lord Justice Rigby delivered judgment to the same effect.

No Compensation for Setting Back.—The Mayfair Property Company v. the London County Council.—In this case the plaintiff company claimed to recover compensation from the County Council for having compelled them to set back certain house property in St. John's Wood under the Metropolitan Improvement Act. The case was tried before Mr. Justice Wills without a jury, and he found that the plaintiffs were not entitled to compensation. The plaintiffs appealed, and judgment was given by Lord Esher and Lords Justices Kay and Smith in the Court of Appeal on July 24th. The Master of the Rolls, in giving judgment, said the whole question was whether the County Council had required the company to set back their house property under the 74th section of the Metropolitan Act. The County Council had not done so. The plaintiff company asked the County Council would they require the property to be set back under section 74, and the Council replied emphatically that they made no such request; instead of which they proceeded under section 75 of the Act. They said that they intended to put section 75 in force, and, having done so, the plaintiff company had no claim for compensation for setting back. That was the view of the case taken by the learned Judge who heard the evidence; it was the right view, and the appeal must be dismissed, with costs. The other Judges concurred.

Plasterers' Trade Union Libel Action.—In the Queen's Bench Division of the High Court of Justice in London, on July 25th, Baron Pollock, sitting with a special jury, heard the case of "Wright and Co. v. Hennessey." This was an action for libel, and also for an injunction to restrain the defendant from continuing to publish the matter complained of or similar libels. The defendant, amongst other pleas, said he wrote the words complained of in the performance of his duty, and they were privileged. The plaintiffs, Messrs. Samuel Wright and Co., were fibrous plaster manufacturers, carrying on business at Hackney, and defendant, Daniel Hennessey, was the organising secretary of the National Association of Operative Plasterers. It was said on behalf of the plaintiffs that they brought the action in self-defence, as unless the defendant desisted from his course of action it would be impossible for the plaintiffs to carry on their business. Plaintiffs made casts of fibrous plaster in various ornamental designs at their works, and then employed unskilled workers to place them in position. They were also instrumental in forming a combination of master plasterers in London, and in 1893, when Messrs. Peak, master plasterers, had some difficulty with their men, the plaintiffs finished their contract for them. According to the plaintiffs' case, the result was that their names were inserted in a "black list" by the defendant's society, and the defendant wrote to various firms who employed them the letters which constituted the libels complained of, the contention of the society being that members of the union should be employed to place the casts in position instead of unskilled workmen. Amongst other firms the defendant, it was said, wrote to Messrs. Patman and Fotheringham, who had employed the defendants, stating that he was instructed by the London district of the society to inform them that S. Wright had been declared by the committee to be an unfair employer. Messrs. Patman and Fotheringham refused to give way and to dismiss the plaintiffs; but endeavoured to bring about a reconciliation. Subsequently, when plaintiffs were engaged on some works at South Kensington, and on some School Board work at Gravel-lane, similar letters were written, in which it was said that if the plaintiffs were allowed to do certain work, nothing but scamped work and inferior workmanship would be the result. Plaintiffs alleged that by these means firms had been induced to break contracts with them, and instanced the case of Messrs. Colls, who had a contract with regard to the Pavilion Theatre at Whitechapel, who employed the plaintiffs. That firm received a letter from the defendant, stating that plaintiffs' action had caused a revulsion of feeling in London. The result of the letter, it was said, was a strike, and plaintiffs had to be sacrificed in order that the work might go on. The defence substantially was that there was no malice against the plaintiffs in the course adopted, and that what was done was done in the interests of the trade union. The statements made to different masters were only to the effect that if the plaintiffs' men were kept working at particular buildings all union men would withdraw. Further, it was contended that what was thus done in the interest of the union was not illegal. The jury found that the conduct of the defendant was improper, and awarded the plaintiffs £300 for the loss of trade and £500 for the libels. His Lordship entered judgment for the plaintiffs, and granted the injunction asked for. Notice of appeal was given.

CHIPS.

Forty-eight members of the Royal Scotch Arboricultural Society have arrived at Bremen, whence they will start on a tour to study the principal forestry establishments of Northern Germany.

The death is announced of Mr. Harold William Abernethy, M.Inst.C.E. He was superintending engineer of the Runcorn division of the Ship Canal during its construction. After the completion of the work he, in accordance with medical orders, proceeded to the Cape. He died on the return voyage, and was buried at sea. He was in his 37th year, and was the son of Mr. James Abernethy, M.Inst.C.E., Broadstairs and London.

The Memorial Church to Lord Nelson at Burnham Thorpe, his native village, was opened by the Bishop of Norwich yesterday (Thursday). The cost of the rebuilding of the parish church has been £5,000.

The contractor, Mr. Relf, has finished his part of the work in doubling the Cornwall line of the Great Western Railway between St. Germans and the Menheniot viaducts, and the new line now only awaits the rails and sleepers of the company to be brought into use.

The rural district council of Doddington, Cambs, have adopted plans for sewering the parish of Doddington, prepared by Mr. John Cooke, of Stewton, Louth. The estimated cost of the scheme is £1,100.

Charles Dickens's desk has been given by Mr. Bancroft to the South Kensington Museum, where it is placed in the Forster Library. The desk bears the following inscription:—"This desk belonged for many years to Charles Dickens, and was last used by him a few hours before he died, on June 9, 1870. His executrix afterwards gave it to Edmund Yates: at whose death it was sold by public auction on January 21, 1895, and bought by S. B. Bancroft: who presented it to the South Kensington Museum."

WATER SUPPLY AND SANITARY MATTERS.

Aldershot Camp Sewage Farm.—Mr. E. Bailey Denton, M.Inst.C.E., has severely reported on the condition of the camp sewage farm at Aldershot, declaring that the systematic neglect of years is apparent at every turn. The homestead is next door to a ruin; and there is not a gate on the whole farm. The condition of the roads and fences likewise is very bad. The tanks at the outlets of the four outfall sewers, which were never of good design, and are most unsuitable for the deposition of sludge, have fallen into decay, and present a disgraceful appearance, the large quantities of sludge collected in them giving off nauseating odours. Much of the land is out of cultivation, and the sewage collects in the low places, forming stagnant and offensive pools. The main furrows by which the sewage ought to be rapidly conveyed from the various tanks for distribution over the land have, from want of attention, become simply large and ill-shoped ditches, which serve to collect the sewage and check its rapid conveyance to the various points of out. The smaller branch furrows have been equally neglected. Mr. Denton adds that the present disgraceful state of things is entirely traceable to long and continued neglect. With proper management there would not, however, be a better or more successful sewage farm in England. —At the meeting of the Surrey County Council, on Monday, the sanitary committee reported that they had received a communication from the Thames conservators, stating that they had written to the War Office respecting the serious character of the pollution from the sewage farm at North Camp, Aldershot, and that they were now serving a notice upon the department requiring discontinuance of the nuisance. The county medical officer reported that at a recent visit to the camp he learned that the land adjoining the river Blackwater was no longer used for the treatment of sewage, and consequently the further pollution of the river was not to be immediately feared. Mr. Welch (chairman of the committee) said the matter appeared about to be closed so far as that council was concerned. He drew the attention of the council to Mr. Bailey Denton's report, which backed up the county council in every way. The sewage was now being treated on another part of the farm, and, as a county, they had no further cause of complaint at present. It was, however, a national matter, concerning the health of the troops, and he thought the council had done well in drawing the attention of the War Office to it.

The Dearth of Water at the East End.—At Tuesday's meeting of the London County Council, reports were read from the Parliamentary agent and the engineer to the Council in reference to the statements of the East London Water Company that their lack to furnish a sufficient supply was really due to the action of the Council in opposing their Bill of 1893. Mr. Cripps, the Parliamentary agent, said the allegation was absurd. The Council did not oppose the construction of additional works by the company, but only certain proposals for the creation of a large amount of additional capital in debenture stock and for the imposition of onerous and arbitrary conditions on consumers. The report by Mr. Alexander R. Binnie, the engineer, expressed the opinion that the cause of the scarcity of water was not shortness of supply, but the fact that the company's pipes had been so shattered during the frost of last February as to have become leaky, so that the water was wasted. It was resolved to send copies of the report to the East London Waterworks Company. At the same meeting, the Council authorised the expenditure of £2,500 between the present time and March next for making further surveys and obtaining the necessary information with regard to a supplementary source of water supply for London, with the following rider, moved by the Earl of Onslow: "It being understood that, in authorising the expenditure, the Council in no way pledges itself to proceed further in the matter or further to consider the whole subject."

The Purification of the Clyde.—The sewage committee of Glasgow Town Council have decided to proceed with the scheme for dealing with the sewage on the north bank of the Clyde with a view to the purification of the river, and to recommend the council to promote a Bill authorising the necessary capital—about £600,000. Negotiations are to be opened with the various local authorities—Clydebank, Partick, &c.—with the view of treating all the sewage which, if not intercepted, would enter the river between the city boundary and the corporation lands at Dalmuir, where the new sewage works are proposed to be erected. Consideration of a similar scheme for dealing with the sewage from the south side of the river has been deferred until powers for the north bank scheme have been obtained.

* * *

Archbishop Stonor opened, on Monday, the new chapel attached to the Convent of the Sisters of Mercy in Blandford-square, N.W.

Our Office Table.

* * *

At a general meeting of the Royal Academy, held on Thursday night in last week, Mr. E. Onslow Ford, sculptor, and Mr. W. B. Richmond, painter, were elected Royal Academicians. Mr. E. Onslow Ford, who has been an Associate of the Academy since 1888, was born in London on July 27, 1852. In 1870 he went to Antwerp, where he studied painting under M. Buffeau, proceeding in the following year to Munich, where he joined the Academy. Having given up painting in favour of sculpture, he returned to England in 1874. From 1882 until the present time he has been a prominent exhibitor of statues and busts at the Royal Academy. Mr. W. B. Richmond, who shares with Mr. Onslow Ford the distinction of promotion to the full rank of Academician, was born in London on Nov. 29, 1843, the son of Mr. George Richmond, R.A. Entering the Royal Academy as a student, he obtained two silver medals in 1857. In 1859 and 1860 he travelled in Italy for artistic purposes, and in 1865 paid a second visit to that country for the purpose of studying in Rome, where he worked at sculpture, architecture, fresco, and tempera painting. In 1870 he returned to England, and soon became a prominent exhibitor of subject paintings and portraits both at the Academy and elsewhere. In 1878 Mr. Richmond succeeded Mr. Ruskin as Slade Professor at Oxford, but gave place to Mr. Ruskin in 1883. He became an Associate of the Royal Academy in 1888, and has of late given his exclusive attention to the mosaic decoration of St. Paul's Cathedral. Portraits and biographies of both the new Academicians appeared in the Building News for May 9, 1890.

In view of the difficulties and misunderstandings which continue to arise in the matter of architectural competitions, the Council of the Royal Institute of British Architects have appointed a special committee, consisting of the Past-Presidents, Messrs. Charles Barry, F.S.A., Alfred Waterhouse, R.A., and J. MacVicar Anderson; of the Past Vice-Presidents, Mr. Henry Currey and Sir Arthur Blomfield, A.R.A.; of the Presidents for the time being of the Architectural Association (London), the Birmingham Association, the Liverpool Society, and the Manchester Society; with Messrs. James Brooks, Cole A. Adams, Edward W. Mountford, and Rowland Plumbe, Fellows; and Mr. G. Richards Julian, Associate. All these have consented to act, and the committee will be called together at an early opportunity.

The Council of the Royal Institute of British Architects also announce that the Practice Standing Committee of the Institute propose to undertake the reconsideration of the schedule of professional practice and charges of architects, with a view to its revision if thought advisable; and that the committee are prepared to receive from members of the Institute generally any suggestions for alterations or modifications of the several clauses, to which they will give careful attention. Such suggestions should be addressed to the Hon. Secretaries of the Practice Standing Committee at the Office of the Institute.

The Duke of Devonshire will open on Wednesday in next week the new home at the Colony for Epileptics, Chalfont St. Peter, Bucks, which has been established, at the cost of Mr. J. Passmore Edwards, in connection with the National Society for the Employment of Epileptics. The colony at Chalfont St. Peter consists of 135 acres of land, and, when fully developed, it will form an industrial village where, under proper care and supervision, epileptics of all ages and both sexes, living in separate homes, will follow the avocations of ordinary life; children will be educated and suitably trained, and adults will be occupied in useful work of various kinds. The colony was inaugurated last August, and already the progress made by the colonists in health and happiness is pronounced by the honorary medical staff to surpass the anticipations of the most sanguine. There is at present accommodation only for men; but the success of the experiment has led to offers of funds for the erection of three new homes—one for women and one for children of each sex. But these developments will necessarily involve much expenditure beyond the cost of building, for there will be, for instance, the cost of furnishing, and it will be necessary to erect workrooms and a laundry for the women, and school accommodation for the children. An appeal is, therefore, being made for additional funds for the National Society for the Employment of Epileptics, so that the work may not only be carried on, but extended.

At Wednesday's sitting of the Congress of the Institution of Mechanical Engineers, now being held in Glasgow, Mr. James Deas, engineer of the Clyde Navigation Trust, read a paper on "Recent Engineering Improvements of the Clyde Navigation." The paper dealt with a period of seven years from July 1, 1887. During that period no fewer than 11,401,978 cubic yards of material had been dredged from the river at the cost of £303,881 1s. 3d. The material so dredged had been deposited on land in Loch Long, off Garelochhead, and in other parts of the river and Firth. The quayage of the harbour, including Kingston Dock, Queen's Dock, and Cessnock Dock, so far as in use, was now seven miles in length, all of which was tidal, with a water area of 185 acres. It was also stated that the water area of the Cessnock Dock, when completed, would be 34⅔ acres, the area of quayage 36⅔ acres, and the length of the quays 3,760 yards. In replying to a vote of thanks, Mr. Deas said he did not think the maintenance of the quay walls had cost the Clyde trustees £100. Not even a brick had been required to be replaced since erection.

During the congress of the British Medical Association, which is being held in London this week, the president and council of the Sanitary Institute have thrown open their museum and rooms in Margaret-street, W., to members of the profession, and have convened a series of three afternoon meetings for short discussions on hygienic questions. The first of these was held on Tuesday evening, when the selected topic was "The position of medical officers of health in regard to the administration and working of the Infectious Disease Notification Act." Sir Thomas Crawford presided, and in introducing the subject remarked that the position of medical officers of health who were general practitioners was not satisfactory, because they were not sufficiently independent. He thought, therefore, that medical officers of health should have a district large enough for their remuneration to enable them to do without practice. A large proportion of cases could be dealt with in any ordinarily well-regulated house, with proper precautions, without removal to a hospital; and, instead of the list of diseases in the Act being extended, he thought it might be reduced. Dr. Alfred Hill, of Birmingham, agreed with the chairman that a medical officer of health should not be a general practitioner. Sir Douglas Galton said the number of persons who desired to use the hospitals of the Metropolitan Asylums Board increased so largely that the managers were continually obliged to build new ones. Dr. Sykes, of St. Pancras, said the difficulty in London was not to get people to go to the hospitals, but to keep them out. On Wednesday evening, Professor Wynter Blyth gave a peripatetic lecturette descriptive of the chief exhibits of the Parkes Museum; and last (Thursday) evening a discussion took place on stream pollution, opened by Dr. Percy Frankland.

The City Commission of Sewers are now in possession of a well-equipped laboratory for the carrying out of the provisions of the Electric Lighting Acts, the rules and requirements of the Board of Trade in regard to meter-testing, and the supervision of lines and mains vested in the local authority. The Commission of Sewers are large consumers of electrical energy as the lighting authority of the City, and meter-testing will be the principal work of the laboratory, which is situated in Basinghall-street, and for this purpose complete arrangements have been made. The electrical current is taken from the street mains of the City of London Company, and as under the present system the current is taken off at a pressure of between 100 and 200 volts, which is much greater that required for the purpose, a special transformer has been provided.

The Governors of the Borough-road Polytechnic have agreed to undertake the responsibility of conducting the Norwood Institute, Knight's Hill-road, S.E., on lines somewhat similar to the parent institution. For this purpose the Technical Education Board of the L.C.C. have consented to provide the sum necessary for immediate outlay, and to make a special yearly grant to the funds of the Polytechnic. Mr. Leslie Waterhouse, M.A., A.R.I.B.A., has been intrusted by the local board of governors with the task of adapting the premises to their requirements. It is hoped that the building may be opened in September.

The Birmingham Municipal School of Art, as last year, comes easily to the head of the art schools of the United Kingdom in the awards gained at the National Competition held by the Science and Art Department. The Birmingham school has gained a gold medal (one of the five awarded, and won by Winifred Smith with designs for book illustrations), eight silver medals, twenty-two bronze medals, and a large number of book prizes, the successes being more numerous than in 1894. This should be gratifying to Mr. Edward R. Taylor, the head-master. The Glasgow School of Art has also done well, having gained forty-three awards against thirty-nine last year. These include the highest for architecture in the kingdom, the chief being the gold medal won by Albert H. Hodge for an architectural design, and four silver medals—gained by Andrew Allan, John Moffat, George A. Paterson, and George Smith—are for modelling design, modelling antique, architectural design, and studies from the life.

The Tramways Company of Bristol have just carried out by workmen in their own direct employ the reconstruction of the old line between West-street and St. George's, so as to fit it for use by electric cars. The work, which included the removal of the old rails and chairs and the substitution of heavier metals over a length of three miles of single line, has only occupied six weeks, and has been carried out under the supervision of Mr. C. Challenger, on a report by Mr. J. Clifton Robinson, C.E. The directors have voted £100 for distribution among the foremen of the gangs and others engaged on the work as an acknowledgment of the way in which they had stuck to their posts night and day. A further extension from the old terminus at St. George's to Kingswood and a section of reconstruction in Old Market-street are being carried out by a contractor, and have also a linear run of about three miles. The tramways company had already contracted for the extension and for the doubling on the Horfield and Stapleton-road lines, and for the Bedminster extension, or they would have kept together their construction staff.

Mr. Andrew George Ashcroft, who has just been appointed principal of the Woolwich Polytechnic, has been for many years first assistant to the Professor of Engineering at University College. When Prof. A. B. W. Kennedy left the college, Mr. Ashcroft accompanied him, and was responsible for the equipment of Prof. Kennedy's laboratory at Westminster. He also assisted Prof. Kennedy in the design of the iron and steel work for several important buildings, and made all the arrangements for Prof. Kennedy's trials of marine engines conducted under the auspices of the Research Committee of the Institution of Mechanical Engineers. After working with Prof. Kennedy privately for about a year, Mr. Ashcroft returned to University College as assistant to Prof. Hudson Beare, and in that capacity took a leading part in the design and equipment of the new engineering laboratory. He is also the inventor of some ingenious appliances for measuring small strains.

The Improvement Committee of the Birmingham City Council have reported to that body that the Act of Parliament confirming the Provisional Order of the Local Government Board, with reference to the Milk-street improvement scheme, has received the Royal assent. The property scheduled for the scheme comprises an area of 4,030 square yards, and there are 66 dwellings and a few workshops standing thereon. The gross rental of the whole is £145 per annum, and the sum of £6,000 will be required for the purchase of the site and all interests. The claims have all been satisfactorily settled except three, which will go to arbitration. The Local Government Board have inserted clauses in the scheme providing for the utilisation of the land for working-class houses, and forbidding its appropriation to other purposes without permission of the Board. The Improvement Committee recommend that, upon obtaining possession of the land, they be authorised to clear the site, and afterwards endeavour to dispose of the same for the erection of suitable dwellings for the working classes. In the event of their being unable to so dispose of the land, the committee propose to report again to the council, with their recommendations for the erection of houses by the council, submitting the necessary plans and estimates. The report was adopted by the Council on Tuesday.

The annual report to the Toxteth Park urban district council by their surveyor, Mr. John Price, M.S.A., shows that the district is making steady progress, the year's expenditure on highway repairs having been £2,543, against £1,870 and £1,845 in 1893 and 1892 respectively. A large item was the reconstruction of Smithdown-road, leading to Sefton-park Station, carried out under contract by Mr. W. F. Chadwick for £1,081. The outlay on street works has exceeded the average, having been £1,760. The sewer in Greenbank-road has been reconstructed by Mr. W. Musker, at a cost of £2,068, and will shortly be extended at an estimated further cost of £1,800. A refuse destructor has been built. The contract for the erection of the buildings has been carried out by Mr. John Webster, of Wavertree, for £1,100; that for the erection of the chimney, 186ft. high, by Messrs. Holden and Myles, of Stalybridge; and that for the construction of six destructor cells on the Boulnois and Brodie patent system, with Henderson's mechanical firebar and Jones's cremator, was let to Messrs. Manlove, Alliott, and Co. for £4,150. The works are in a forward condition. The contract for the engine for lighting the works by electricity was let to Messrs. Ransome, Sims, and Jefferies, of Ipswich, and for the dynamo to the Electric Construction Company, of Wolverhampton. The installation will shortly be completed. A town's depot and stabling are being constructed at Richmond Lodge. The contract for the erection of the various buildings was let to Mr. Thomas Spencer, of Bull Bridge, Aintree, for £2,200, and the works are now very nearly completed. A fire-brigade station has been built for the council in Lark-lane by Mr. T. F. Hill, of Woolton, who has also carried out the contract for enlarging the public offices. The number of new buildings approved, 199, shows a decrease on former returns, but the number of occupied houses, 4,577, is more than at any previous period, and over 100 other houses are in course of erection.

The completion of the Boulevard Haussmann has, says the correspondent of the *Standard*, once more become one of the great questions of the day for Parisians. All that remains to be constructed is a length of 270 mètres, but the ground between the Rue Taitbout and the corner of Rue Drouot, where the Boulevard Haussman will, when prolonged, join in a straight line the Boulevard Montmartre, is, perhaps, the most valuable of all Paris. The approach of the Universal Exhibition of 1900 is, however, not only stimulating private enterprise, but also the Municipal Council, which has now adopted the favourable report presented to it by M. Thuillier, in the name of the Commission to which the Boulevard Haussmann question had been referred. M. Thuillier recognises that the improvement will be a costly operation, but he, nevertheless, advises that it should be carried out without delay, lest at a later date it should prove yet more costly. In 1886, two contractors, MM. Lardonnois and Papon, offered to complete the boulevard for fifty-three million seven hundred and seventy-two thousand one hundred francs (about £214,000 sterling), and to hand over to the Paris Town Council the ground necessary for the construction of the roadway with its sewers. That price was considered too high, and the offer was rejected. Two new proposals have recently been received for the completion of the boulevard. The Société Immobilière du Boulevard Haussmann asks an annuity of five hundred and forty-nine thousand six hundred and forty francs (nearly £2,000 sterling) for sixty years, for which it would guarantee the completion of the boulevard within a comparatively short time. It is believed that the Boulevard Haussmann will be completed before the opening of the Exhibition in 1900.

A report has been submitted by Lewis M. Haupt on the route of the proposed ship canal from Philadelphia to the Atlantic Ocean, across the State of New Jersey, in which he gives interesting information with regard to the sizes of locks required in the States for different classes of traffic. For canal boats and barges the length desired is 205ft., width 24ft., and draught 10ft.; for coastwise vessels 340ft. by 44ft., with draught of 20ft.; and for battleships and cruisers 500 by 65ft., with 28ft. draught. Six locks would be required for the whole route, of which only 31 miles would be cut through the solid land, the remaining portions including part of the Delaware River and Raritan Bay. He estimates the cost of a canal 20ft. deep at £3,000,000 sterling, and of a 28ft. canal at £4,800,000.

CHIPS.

Messrs. Ogilvie, Gillanders, and Co., of London, have taken the contract for constructing the Delhi-Bhatinda-Samasata Railway. The capital required will be at least 1½ million sterling, and the line is estimated to cost 259 lakhs.

The Local Government Board have authorised the purchase of the Tooting College estate by the Wandsworth and Clapham Board of Guardians for the sum of £40,000 as a home for the aged and infirm poor.

The board of guardians of Burton-on-Trent have under consideration a report by Mr. Stevenson, architect, on proposed alterations to the house, including separate wards, accommodation for nurses, children's wards at the hospital, and enlargement of the laundry and washhouse. The estimated outlay is put down at £4,820.

The Margate Town Council have decided to offer £2,500 to Messrs. Lewis for a slip of land 100ft. deep, forming part of the Cliftonville estate, so as to widen the popular promenade to the east of the town, leading from the fort to Hodge's flagftaff.

The Lady Chapel at the Church of St. Matthias, Earl's-court, which has been restored and decorated at a cost of £500 in memory of Miss Davidson, daughter of the vicar, was reopened on Saturday.

During the works going on in the central quarter at Florence considerable Roman remains have been found of very large buildings, and also of an urban Roman road in the Via della Nave, and of a burial place near the Palazzo Medici.

The purchase of Carlyle's house in Cheyne-row, Chelsea, has been completed at a cost of £1,730, and a great many articles of furniture, books, and other personal memorials of Mr. and Mrs. Carlyle have been collected there. The house is open to public inspection, a fee of a shilling being charged for admission, to provide for maintenance.

In connection with the completion of the Baptist chapel in Brynland Avenue, Horfield, near Bristol, the workmen, to the number of 80, in the employ of the contractors, Messrs. R. Wilkins and Sons, were entertained at tea by the members of the building committee on Thursday in last week. Mr. Herbert Jones, of Bristol, is the architect.

On Saturday afternoon the memorial stone was laid of the public library which is being built at Thornliebank, N.B., to commemorate the late Mr. Alexander Crum, of Thornliebank, and for some time M.P. for Renfrewshire. The building is in the Classic style of architecture characteristic to Scottish buildings in the 17th century, and the architect is Dr. Rowand Anderson, Edinburgh. The cost will be about £2,000.

At the Blackburn County Court, on Monday, the Accrington and Church Outfall Sewerage Board were sued by the Ribble Committee for disobeying an order to carry out a sewerage scheme within 18 months. Judge Coventry said there had been unjustifiable delay by the defendants in spending seven months in experiments instead of adopting a scheme. He imposed a penalty of £250, which is at the rate of £10 daily, with costs on the higher scale.

A meeting of the Governors of the Birmingham and Midland Counties Sanatorium was held at Birmingham, on Monday, under the presidency of the Mayor, to consider the offer of Colonel J. H. Wilkinson to present the Royal Hotel, Sutton Coldfield, as a sanatorium. The hotel, which is valued at £20,000, occupies a commanding position overlooking Sutton Park. It stands in its own grounds of five acres, laid out in picturesque style. A resolution was adopted gratefully accepting Colonel Wilkinson's generous offer.

Probate of the will, dated January 11th, 1894, with a codicil made the 3rd May, 1895, of Mr. James Piers St. Aubyn, architect, of Chy-an-Eglos, Marazion, who died on the 7th May last, aged 80 years, leaving personalty valued at £43,776, has been granted. The testator bequeaths to his clerks Henry Wadling, Henry Luff, and John Davis £200 each, and to his clerk Horace Bradfield £100. Mr. St. Aubyn also bequeaths £1,000 in trust for the augmentation of the living of Marazion.

The corner-stone of a girls' department in connection with the parish church schools, Church Hill, Wednesbury, was laid by the mayor on Monday. The new building will adjoin the old schools, and with certain alterations of the existing buildings will afford additional accommodation for 300 children, whilst improved outbuildings will be provided. The work is being carried out by Messrs. Morriss and Atkinson, Lansdown-street, Birmingham, from designs by Mr. J. H. Gibberns, City-road, Birmingham.

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXIX.—No. 2118.

FRIDAY, AUGUST 9, 1895.

ANOTHER COMPETITIONS COMMITTEE.

"IN view of the difficulties and misunderstandings which continue to arise in the matter of architectural competitions, the Council [of the Institute] have appointed a Special Committee." As far as we have observed, the chief problem, for the last five or six years, has been the difficulty in each case of getting—we will not say the best—but even a decently creditable design selected by the assessor. The failures which have followed each other in rapid succession were hardly to be matched in the bygone times when there was no assessor at all. Disgraceful as to architecture, and in flat opposition to the "Instructions," very often as to size and accommodation, many of the schemes which have been picked out for adoption ought to have ended at once the career as adjudicator of the man who recommended them. In the opinion of the Council of the Institute, they do not seem to have affected it—a fact which does not inspire us with much confidence in the Council's committee.

For all the good it does at present, the assessorship system has practically broken down; and, as everybody knows, it has broken down for this reason: that assessors have got appointed, not for their competence, but for their position. They have been appointed simply as presidents, or past-presidents, or vice-presidents, or professors. The outside world inquires no further. A man who presides over other architects must, it takes for granted, know more than they do, and, knowing more, he must be a better judge. Once in the history of the Institute such a thing *has* actually happened. There has been one President—and though some others have been eminent, only one—who might claim to have made all architectural knowledge his province. Among Mr. Waterhouse's many accomplishments, perhaps the rarest has been that of grasping the essential needs of the most varied sorts of building. His selections were as wise as they were artistic, and he has earned the respect of the profession almost as much for what he has enabled other architects to do as for what he has done himself. But since he has practically ceased to act, the weak point in the assessorship system has become more and more glaringly conspicuous. "The architectural assessor is to select a design for execution." All very fine; but who is to select the assessor?

Office and ability, as we have just seen, do sometimes go together; but it is the exception, rather than the rule, and it is of the last importance not to encourage the public in their delusion that a holder of the one is sure to be gifted with the other. The new Competitions Committee includes able men, Mr. Waterhouse amongst the rest; but of its 14 members, nine are past-presidents or vice-presidents of the Institute or presidents of cognate societies. Obviously enough, it has been made up on the principle—the false and mischievous principle—that to be placed at the head of some architectural body qualifies a man, or proves him to be qualified, for deciding on the issue of an important competition. It teaches him all mysteries; it gives him taste and skill and insight, when by nature he had none; it makes him an authority on planning of everything, from cathedrals to baths and wash-houses, and it ought to induce his fellow architects to accept, with unquestioning faith, whatever awards he may think well to make amongst them. Of course, we all know that it does nothing of the sort. What it really does is once in a while to make some weak man fancy that it has effected this for him, so that he is quite prepared to sit in judgment on other people's churches, town-halls, board schools, or anything else – though he never built a church, a town-hall, or a board school that anybody would care to look at twice.

We must hope for the best. We can only trust that the ability on the Committee may overpower the officialism, and that the majority of its members will take the opportunity of passing a self-denying ordinance, and will bind themselves not to adjudicate on what they do not understand. But to do much good, they must go far beyond this. Let us imagine ourselves for a moment stripped of all professional knowledge, and turned into members of some council or committee with a new building to arrange for. Half of us do not know what an architect is. Some of us think he is a combination of builder and estate agent. Others take him to be an engineer who has come down in the world, and who devotes himself to small matters because there are no more railways to be made. Fortunately, the chairman is having a house built, and he volunteers to ask his contractor. That gentleman, remembering the arbitration clause in some bygone agreement, is able to state with certainty that there is an Institute of Architects, and that this institute has a president. When designs are advertised for, and the board or committee learn for the first time that competing architects want a professional assessor, what is more natural than to ask the president to be that assessor? If the president declines, perhaps he may still furnish them with the names of previous presidents or vice-presidents, and then they may hand over the settlement of what their future building is to be like, to the best or the worst of these, just as it happens.

We architects have a pretty clear idea of who is fit and who is not fit to adjudicate on each particular class of building. We know what two or three hundred, at least, of our more prominent fellow-workers have done; and, consciously or unconsciously, we have formed an estimate of what is to be expected from each of them. But the general public can make no such estimation. It hardly ever occurs to them, for instance, that one man is good at churches, another at houses, and a third at public halls. They suppose that any architect can design anything, and that one architect is likely to do it about as well as another. It seems of little consequence to them, therefore, who is appointed to decide, or they want to appoint some local man—some "respected fellow-townsman"!! If they cannot agree on him as architect, without a competition, and if he sees no chance of his own success in a competition, then, failing presidents and ex-presidents, they will put him in as assessor. This is how it comes to pass that when competitors are not sat upon by the official man, they are so often disposed of by the local man. Possibly he understands the rule of "ca' me, ca' thee"! and, for good reasons, assigns the work to another local man. But, however this may be, probabilities are strongly against his having any sufficient acquaintance with the class of work he is deciding on. The official assessor we know, and the local assessor we know, but the fair and competent assessor is in danger, before long, of becoming no more than a memory.

When a gentleman who had been unhappy in his first marriage took to himself another wife, Dr. Johnson described it as "the triumph of hope over experience." Much more might it be so described when a competitor who has observed failure after failure in getting the best design selected, sends for "instructions" and resolves to compete again. A reasonable man can acquiesce in an award which shows that he is fairly beaten. He measures himself against the successful competitor, sees in what he is inferior to him, and sets about removing the inferiority. In that case there is hope for him in work. But there is no hope, except from the chapter of accidents, when some good-for-nothing design gets the first place, as so many good-for-nothing designs have done in the last few years. What is the advantage in skill, or study, or invention, when the decision rests with a wooden adjudicator who cares for none of these things? What is the use of sending in designs under such circumstances? It would be infinitely less troublesome, both for the committee and the competitors, if the latter simply drew lots for the commission, and submitted no drawings at all. A wooden official, even in high place, may be borne with as an official. If he is capable of being nothing better, he may still serve as an ornamental figure-head, and the ship will sail on, whether he has brains or no brains. But it is a very different matter if, after he has served his time and been unscrewed, people set him up as an oracle, and ask him to decide this or that for them. The good figure-head never refuses. He nods this way or that way, as the wind happens to blow him, and his votaries act accordingly. But their actions are mere results of chance, and the chances are that they will end in calamity.

So much for the present state of things. How can it be remedied? We must get rid, once and for ever, of the idea that to have been some sort of a president or some sort of a professor qualifies a man to settle the result of a competition. Presidents and professors are not made so for their skill in selecting the best schemes out of a multitude, especially when those schemes relate to classes of work which they have no personal knowledge of. To be a president or a professor, at least in artistic matters, implies, not so much ability as respectability. Once in a while intellectual power may go along with it, but normally it is disregarded, and sometimes it is even objected to. Yet intellectual power, along with artistic judgment, is the very thing that is wanted as the basis of an assessor's character. Fairminded of course he must be, and his fairness should be guarded by shutting him out from all inducements to be unfair. The local man may, for instance, often make, in his own line, a very good assessor, but not for a building in his special locality. If an assessorship is an honour, then the architect, like the prophet, should be without honour, at least of that sort, in his own country. Elsewhere he may be called in with advantage. There the forces which tend to attract him from the straight path are too strong, and he should not be exposed to them. But intellectual power, artistic judgment, and fairness are not enough. An assessor may have all these and fail miserably. Something else is wanted, which can only be gained by long study and experience, and that something is a knowledge of the requirements and possibilities of the particular sort of building to be adjudicated on.

The sorts of building which have to be adjudicated on are almost innumerable. No one man understands more than a fraction of them, and yet no man can make a satisfactory award about what he does not understand. The promoters themselves—the boards and councils, and committees, which send out "Instructions"—do not really know what they want, except, perhaps, as to size and cost. The first thing, therefore, is to turn these "Instructions" into "Suggestions," and leave competitors free to follow them where they are wise, and to reject them where they are foolish. But this is the last thing which the wooden assessor would approve of. His idea, the one idea which makes it possible for him to act at all, is just to take the "Instructions," wise or foolish, and to kick out everybody who has not followed everything in them to the letter. Any clerk could do as much. There is no need to pay 50 or 100 guineas for it, and if the wooden assessor can do no more, that, by itself, is reason enough for mending or ending him. He selects the design which follows the instructions most closely, and if it does not please the committee when it is built, why then, he thinks, they have nobody but themselves to blame. The competent assessor looks at the matter very differently. "The committee," he says, "have called me in, not to do what any clerk could do, but to give them the wisdom and experience in these matters which they have not got, and could not reasonably be expected to have. They want me so to advise them that they may obtain the best and most suitable building which their means will allow, and their 'Instructions' must be read with the clear recollection that this is what they were aiming at from the first." The result is, that he picks out the best design, and not the most slavishly subservient one; and when it is carried into execution, it commonly proves that he has acted wisely and well.

The practical lesson from all this is that we want a published list of public assessors, classified according to the sorts of work which they specially understand, and that this list should be made as accessible as may be to the public when they think of initiating a competition. Certain architects, for example, whose works had qualified them, would appear in it—perhaps to the number of two or three dozen—as assessors on church building; certain others on municipal buildings; others on public halls and concert-rooms; others on Nonconformist chapels and schools; others on board schools, on workmen's dwellings, on laying out estates, on factories, on sanitary works, and on a great many other things which at one time or another are arranged for by means of a competition. This list might be appended to, or referred to in the Institute's suggestions about the conduct of competitions, and when once the public become aware of its existence, there is no reason to doubt that they would appreciate its value as a guide. The wooden assessor would disappear; the figure-head would cease to be an oracle; and in place we should have men who would act with judgment, taste, and skill.

THE INSTITUTE SCHEDULE OF CONDITIONS.

A FEW weeks ago we referred to certain clauses of the revised schedule of conditions which were discussed at the Institute of Architects bearing upon variations and extras. We have now a copy of the complete schedule and form of agreement which has been issued under their sanction, and which is, so far as it is possible to do so, intended to supersede the "Heads of Conditions of Builders' Contracts," which has been often used by the profession. As we said in our former remarks, the Council of the Institute had been unable to arrive at an agreement with the council of the Institute of Builders on several points, especially the arbitration clause, and the Builders' Institute have framed a clause of their own on this head. No doubt it would be difficult to get builders to think the same as architects on all questions of contract; if they did agree, it would probably be at the expense of the other contracting party; yet it will be confessed that in questions of arbitration there ought to be a common ground of mutual understanding. Comparing the new schedule with the old "Heads of Conditions," agreed to in 1880, we find that the clauses are not only more numerous in the new schedule, but have been considerably recast. The "Heads" did very well for architects as hints, and as an aid to the memory to prevent any omission; but they were not well put together, and under the same head two different requirements were found—in fact there was an apparent want of sequence and connection. In the present schedule the various items are more consecutive, and the wording more explicit.

We will now examine a few of the more important clauses. The old "Heads of Conditions" contained 21 headings, while the new schedule has 32 clauses. Why so many clauses, so large an increase in the number of sections? may be asked. For many reasons it would have been better to curtail than to increase the number of conditions; yet in a model set of conditions it is no doubt wise to err on the side of amplification, so that an architect may select those clauses he thinks desirable for his particular case. A few new clauses have been added, as No. 18, on "works to be opened up at request of architect"; clause 20, on "sub-contractors," both important additions; others have been made by splitting up the old heads into two or more parts. The arrangement has therefore been completely altered. Thus the old clause No. 1, requiring the contractor to provide everything necessary for the due and proper execution of the several works, is embodied in the new schedule under clause 4. These clauses are practically the same, though the revised form is in more concise terms. Clause 2 in the old "Heads" refers to the contractor conforming to the regulations of the authorities and to giving notices. The new form, clause 5, is certainly more explicit, and the contractor is required, before "making any variation from the drawings or specifications that may be necessitated by so conforming, to give the architect written notice, specifying the variation, and applying for instructions thereon"—a very important condition, as it will prevent the contractor doing any work or making any variation unknown to the architect. Under the old clause the builder might conform to the provision of any by-law without consulting the architect, whose drawings and specification might be completely ignored without his knowledge, and an extra or variation be entailed without sanction. The old "head" 3 as to contractor setting out work is now embodied in two clauses, 6 and 7, the first making the contractor responsible for his own setting out, and the latter binding him to conform to the specification as to materials and workmanship, and to produce vouchers if architect so desires.

An important modification is made in respect of the clause requiring architect to furnish copies of drawings and specification (4 in old form). The old clause was that "complete copies of these documents signed by the architect are to be furnished by him or by measuring surveyor to the contractors for their own use." The new schedule, clause 2, says: "One complete copy of all drawings and of the specification shall be furnished by the architect free of cost to the contractor for his own use," and he is also to furnish to the contractor within so many days after request any details which the architect may think necessary, and such copies and details are to be kept on the works till their completion, and are to be returned to the architect on the completion of contract. The insertion of details in this clause is important. Many contractors are not anxious to have detail drawings; others ask in vain for them till the work is done without them, and the building suffers. Appended to the old clause (4) is the sentence: "The contractors are not to sublet the works without consent in writing of the architect," a curious instance of the mixing-up of different conditions. This is now inserted in clause 19. A similar division is made of the old clause 5. The first part said the architect is to have at all times access to the works, which in the new schedule comes in clause 10, and gives him or his representative also access to the workshops of the contractor; and the latter part stated, the architect may require the contractor to dismiss any person in his employ who may be incompetent or misconduct himself—a condition now found in clause 9.

We now come to one of the most important clauses in the new schedule under the heading of "Variations and Extras," about which we have said something. It will be remembered the old clause (6) only stated that the contractor was not to vary or deviate from drawings or specification, or execute any extra work, unless the same was to comply with any Act of Parliament or by-law, or unless on the authority of the architect, to be shown by an order in writing, or any plan signed or initialled by him as an extra or variation, or by any subsequent signed approval; but it did not give the contractor any opportunity of questioning whether the detail or drawing is fairly within the contract or not, which was left to the *fiat* of the architect. It was assumed, indeed, that the architect knew what he wanted, and would not require the contractor to do more than he agreed to do under the contract. But the framers of the new schedule have given the contractor the opportunity of discussing this point with the architect before doing the work, and of referring the question as to whether there is an excess to the arbitrator. The clause runs thus: "If the work shown on any of the details or the further drawings or details referred to in Clause I., or necessary to comply with any instructions, directions, or explanations which may be given from time to time by the architect, be, in the opinion of the contractor, in excess of that comprised in the contract, he shall, before proceeding with the work, give notice in writing to this effect to the architect. In the event of the architect and contractor failing to agree as to whether or not there is any excess, and of the architect's deciding that the contractor is to carry out the said work, the contractor shall accordingly do so, and the question whether or not there is any excess, and if so the amount thereof, shall, failing agreement, be settled by the arbitrator, as provided in Clause 32, and the contractor shall be paid accordingly." As Mr. Cates has pointed out, this clause throws on the contractor the obligation to give notice before proceeding with any work he may deem to be an excess; and it is objectionable, also, because it takes away the architect's power of deciding whether a certain detail is an extra, and vests it in the contractor, who is to decide whether a thing is in excess or not, before proceeding with the work. This is certainly a concession to the contractor. No extra is to be allowed unless executed under clause 5 or by the architect's authority. The old clause provided that in cases of daywork all vouchers are to be delivered to the architect or clerk of works during the week following the work; the new schedule deals with extras in clause 13, in which it is stated that all "authorised extras" for which a price may not have been agreed, and any omission with the architect's knowledge or subsequently with his written sanction, is to be measured and valued (by the architect, or a surveyor appointed by him, and approved by the contractor), and a copy of such valuation to be given to the contractor. The fees for so measuring and valuing to be added to the contract sum. But if in the architect's opinion the work cannot be properly measured and valued, day prices are to be allowed, and vouchers specifying the time and materials are to be delivered to the architect or his nominee at or before the expiration of the week following the execution of the work; the valuation to be made at the rates in the contractor's original estimate, or at "rates proportionate to those prices." The old clause was to the effect that the variations were to be based on a schedule of prices, or, where same did not apply, at "fair measure and value."

Clause 15 of the amended schedule is practically the same as the old rule No. 8, and is to the effect that unfixed materials, when taken into account in any certificate of the architect for which the contractor has received payment, are to become the property of the employer, and shall not be taken away; and the contractor is to be liable for any loss or damage to materials. The next, clause 16, gives power to the architect to order the removal of improper materials and workmanship at the contractor's cost, and is a recasting of the old clauses 9 and 10. In default, the employer has power to pay other persons to carry out the same, the contractor to bear expense. A very important clause is the next (17), referring to defects after completion, and is an amplified form of the old clause 11. It provides that if any "defects, shrinkage, and other faults" are found within —— months after completion, arising, in the opinion of the architect, from non-compliance with the drawings and specifications or his instructions, or any damage to pointing by frost, they shall, upon his directions, and within a specified reasonable time, be made good by the contractor at his own cost; in case of default, the employer may make good such defects, and all the expenses be borne by the contractor, and shall be recoverable from him, or may be deducted from any moneys due. Defective work done by any sub-contractor who has been nominated or approved by the architect is to be made good by the contractor. Clause 18 provides that at the architect's request, the contractor shall "open for inspection any work covered up," and if the latter refuses or neglects to to do so, the architect may employ other workmen to open up. The contractor is to bear the expense of any work covered up in contravention of the architect's instructions, or which is discovered, on being opened out, not to be in accordance with the drawings and specifications; if it has not been covered up in contravention of his orders, and is found in compliance with the drawings, then the expense to be borne by the employer. The new schedule is more explicit as to sub-letting or sub-contractors. The old rule that the contractors are not to sub-let the works, or any part thereof, without the consent of the architect in writing, is still enforced in clause 19; and the next clause states that no sub-contractor nominated by the architect shall be employed upon the works "against whom the contractor shall make what the architect considers reasonable objection, or who will not enter into a contract with the contractor guaranteeing the due performance of his work," and indemnifying him against any claims arising out of misuse or neglect, and which may be brought against the contractor in consequence of any such default. This condition seems to be a reasonable one, and will protect the contractor against any act or omission of the sub-contractor; it will also remove the only serious objection which the contractor has to sub-letting. The contractor is to be held responsible for all structural and decorative damage, and for injury to persons, animals, or things, also for all injuries to the buildings by frost or bad weather. In respect of insurance (clause 22) one or two alterations are made. The old condition required the contractor to insure the building against fire in the joint names of employer and contractor for half the value of the works executed until it is covered in, and thenceforth till completion in three-fourths of the amount of such value, and is, upon request, to produce to the architect the policies and receipts of premiums. The present schedule requires the contractor (*a*) to insure, and keep the works insured until they are delivered up, in an office approved for the full value of the works executed, and to deposit with the architect the policies and receipts for premiums, or in default, the employer may insure, and deduct the premium paid from any moneys due; or (*b*) the whole building is to be at the sole risk of the employer as regards any loss or damage by fire, and in case the original building, in addition to the new work, is affected, the contractor is to be entitled to receive the full value of all work executed, calculated as provided by Clause 13. This last alternative applies to a building in course of alteration. The clauses referring to non-completion and extension of time have been revised. The architect is to have power to make a fair and reasonable extension of time in certain cases —as on account of inclement weather, by reason of proceedings taken or threatened, by disputes with adjoining owners, by extras, by local combinations of workmen or strikes. A very long and verbose condition is No. 26, which provides against any suspension of works by contractor without sufficient cause in the opinion of the architect, except on certain grounds which are specified. In such a case, or if the contractor neglect, or fail to proceed, or shall more than once make default in the respects mentioned in clause 15, the architect is empowered to give notice to the contractor to proceed with the works. This notice is to specify the act or default on the contractor's part upon which it is based. After this notice, the contractor is not to be at liberty to remove from the site or works any plant or materials which have been placed thereon for the purpose of the works, and the employer is to have a lien upon all such plant and materials to subsist from the date of such notice being given until the notice shall have been complied with. The employer may enter and take possession of the works and site, if the contractor fails to proceed with work, also the plant and material, and he may engage other persons to complete the works, and exclude the contractor or his agents from entry; other directions follow as to the course to be pursued in completing the works, adjusting the expenses, &c.

The new arbitration clause (32) which forms the last in the schedule, is much modified in the wording. Under the old form, any question, dispute, or difference, except certain matters left to the decision of the architect under certain clauses, is to be referred from time to time to the arbitration and final decision of ——, architect, or in the event of his death or unwillingness to act, then of ——, or of an architect, being a Fellow of the R.I.B.A., to be appointed on the request of either party by the President, &c. The new clause is practically the same, and leaves the matter in dispute to be decided by someone, as before; but the word "architect" is omitted in the first instance. Such reference, except on the question of certificate, shall not be opened until the completion of the works, unless with the consent of the architect and contractor. The arbitrator is given power to open up, review, and revise any certificate, opinion, decision, requisition, or notice, except in matters under clauses 4, 9, 19, and 18, and to determine all matters in dispute, and he is to determine the costs of the reference and award, and direct by whom and to whom, and in what manner, the amount shall be borne and paid.

The Institute of Builders have framed an arbitration clause of greater length, in which they categorise in more detail the various questions of differences likely to arise. The words "or after an entry under clause 23" are inserted after the words "either during the progress of the works." Under sub-clause (*a*) the questions in disputes are to include "the right exercise, and the exercise of the architect or the employer of any power conferred upon them (except those under the sole direction of architect under clauses 3, 8, and 17), and the right to have work opened up under clause 16"; (*b*) the withholding by the architect of any certificate or decision, &c.; (*c*) the nature, terms, and reasonableness, or otherwise, of any certificate, decision, requisition, or opinion of the architect, and the time of the giving thereof as to which the contractor shall be dissatisfied; (*d*) as to what additions (if any) ought, in fairness, to be made to the amount of the contract by reason of interference, delays, &c., through no fault of the contractors, or by reason of any decision, direction, or requisition of architect, or failure on his part to give any decision involving increased cost to contractor; (*e*) any claim by the contractors for work done, or goods supplied, though outside the contract, &c. It seems to us a pity these forms of arbitration clause could not have been reconciled in the interests of both architect and builder.

The more elaborate form of contract thus substituted for the "Heads of Conditions" has its advantages as well as disadvantages; it can be used in its entirety if so desired; on the other hand it will scarcely be so useful for reference to architects who make their own conditions. Some of the clauses of the old form were out of date, and the Bankruptcy clause was said to be illegal as framed. These were reasons for a revision. On the other hand, as Professor Roger Smith said in the discussion, the old conditions had been approved by the Institute of Builders, who were willing to adopt them, and it was a great advantage to be able to produce a document which had the sanction of the Institute, and also the advantage of being officially accepted by the builders. Some definitions and conditions were absent. The term "prime cost" has been defined as being "the sum paid to the merchant after deducting all trade discount for such goods in the ordinary course of delivery, but not deducting discount for cash, and such sum shall be exclusive of special carriage, the cost of fixing, and contractor's profit." Provision also has been made for "provisional sums" for work to be done by special artists and tradesmen, and fittings, these being left to the architect's discretion. Again, a clause is introduced relating to the use of plant and scaffolding by the sub-contractor. These are necessary additions to a building contract.

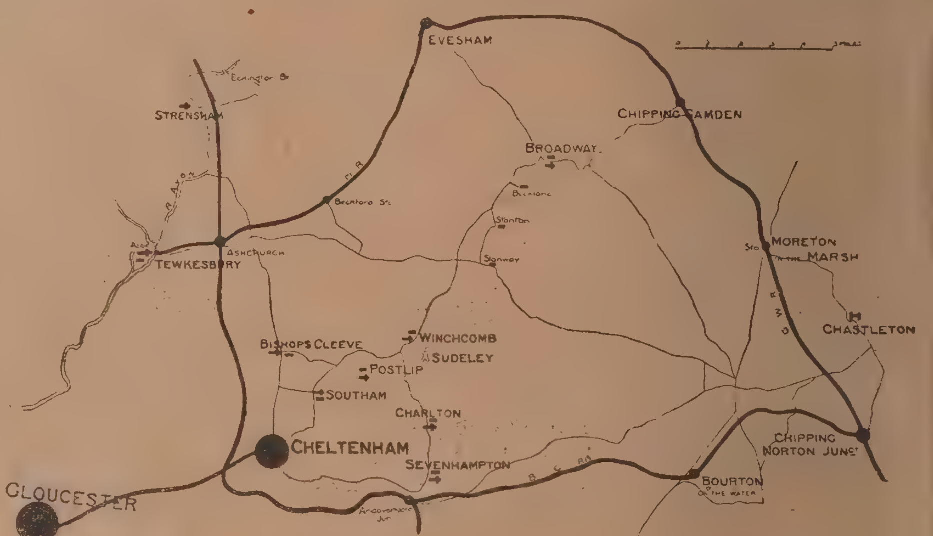
GENERAL BUILDING LINES.

THE important decision which has been given in the Court of Appeal by Lords Justices Lindley, Lopes, and Rigby on the powers of the superintending architect, in the case of "Allen *v.* London County Council," will set at rest those disputative persons who are always trying to find a loophole for escape from the provisions of the Metropolis Management Act, 1862, section 75. The general question, as shown in the full reports we gave, pp. 33, 174, was whether the decision of the superintending architect is binding as to the general building line in a street, but also as to the question in which street or road a particular house located at the corner of two streets is situate, for the purpose of determining the building line. The magistrate before whom the case was first brought ordered the demolition of a certain building as beyond the building line, but who stated a special case. The plaintiffs had begun to erect a building beyond the general line of buildings on the north-western side of Birchington-road, Kilburn, without the consent of the L.C.C., contrary to section 75. The buildings in question were shops and houses at the corner of the said road and Kilburn High-road; there was a frontage of 58ft. to Birchington-road, and of 22ft. to Kilburn High-road. The former frontage extended 16ft. beyond the line of buildings as determined by the certificate of the superintending architect, who stated that the main fronts of buildings in a certain row of houses formed the general line of buildings on the north-western side of Birchington-road, "in which road the building in question is situated." The plaintiff denied this: he contended that the architect, by his certificate, had not found that the building was situate in the "street, place, or row of houses" described, and that he had placed the building in a "street, place, or row of houses" in which the same was not situate.

The questions before the Court were:—(1) Whether the certificate showed that the houses in question were situate in the street, place, or row, and for which the general line was determined? (2) Whether it was the duty of the architect to decide and find the situation of the plaintiff's building, and if so, whether his decision was binding on the magistrate? The Divisional Court decided in the affirmative, and the plaintiffs appealed. The Court dismissed the appeal, and Lord J. Lindley was of opinion that the certificate did decide the plaintiff's house was in Birchington-road. As to whether it was under section 75, to be decided by the superintending architect or the magistrate, his Lordship laid down in categorical order what were the circumstances necessary to justify an order for demolition under this section. The following seem the most important: the building, structure, or erection must be in some street, place, or row of houses; these must have a general line of building; this line of building of the street, place, or row of houses in which the building complained of is situated must be decided by the superintending architect; lastly, the building, structure, or erection must be erected beyond the line so decided. The judge continued: "What is left to the decision of the architect is the existence and exact position of the general line of buiding of the street, place, or row of houses (if any) in which the building, &c., complained of has been erected. In case of dispute, the magistrate must decide all the other matters referred to—e.g., whether the building complained of is one to which the section 75 applies, especially having regard to section 74; whether the necessary consent has been given; whether the building, &c., is in a street, place, or row; whether it has been erected beyond the general line of buildings of that street, &c., as decided by the architect. Such, in my opinion, is the true interpretation of the section and of the decision in 'Spackman v. Plumstead Board of Works,' which set at rest the doubt whether the magistrate could review the architect's decision as to the general line." As to the question who is to determine whether the building complained of is in the particular street, place, or row to which the architect's certificate is applicable—on this point his Lordship agreed with the decision of Lord Herschell's judgment, and with the opinions of Lord Watson and Lord Fitzgerald (in Barlow's case), and he thought the architect, rather than the magistrate, was the proper person to say to what line of building a particular house should conform. The following remarks are to the point, and deserve emphasis:—"The architect might, no doubt, assume, without deciding, that the building complained of was in a particular street, place, or row of houses, and simply certify the general line of buildings of that street, &c., leaving the magistrate to determine whether, after all, the building was in the street, &c., to which the certificate applied. But this would be to deprive the architect's certificate of half its value, and the interpretation which leaves him to decide what building line is to be conformed to seems to be preferable to an interpretation which leaves that question to the magistrate." On these grounds the appeal was dismissed. This decision will settle the question of jurisdiction, and will dispose of those vexatious quibblings and technical points which are often raised by building owners. In the case of "Barlow v. Vestry of St. Mary Abbotts, Kensington," Lords Watson and Fitzgerald decided that the architect was the person to determine, though Lord Bramwell held it was the magistrate. In the future the proposed tribunal of appeal will determine cases of this sort when the architect's decision is disputed. There has always been hitherto a divided jurisdiction, which litigants in these matters take advantage of. The magistrate is appealed to against the decision of the L.C.C. or their officials, or if his decision is unfavourable, an appeal is made to a higher Court, and these appeals are often successful in reversing the decision of the magistrate, and in weakening the authority of the statute. Section 22 of the new Act, which re-enacts section 75 of 25 and 26 Vict., referring to the general line of buildings, states: "Such general line of buildings shall, if required, be defined by the superintending architect by a certificate, such certificate to be issued within one month from the date of the application therefor." Nothing seems plainer than this.

THE ARCHITECTURAL ASSOCIATION EXCURSION, 1895.—I.

[WITH PHOTO-LITHOGRAPHIC AND OTHER ILLUSTRATIONS.]



THE accompanying plan, kindly furnished by the senior hon. sec. of the Excursion party, Mr. H. D. Searles-Wood, gives a very good idea of the extent of the district, mainly situated in Gloucestershire, which will be visited next week, with Cheltenham as a head centre, at "the Queen's," and the following is a copy of the official programme:—

Monday, August 12.—Southam House, pigeon house, farm, Norman chapel, manor house farm, barns, &c; Bishop's Cleeve, church, old houses, &c.; Postlip, manor house, chapel, barns, &c.

Tuesday, August 13.—Tewkesbury, abbey and old houses.

Wednesday, August 14.—Chastleton manor house, and new house, Batsford.

Thursday, August 15.—Broadway, church and old houses; Buckland, church and old houses; Stanton, church and old houses; Stanway Hall, church and old houses.

Friday, August 16.—Sevenhampton, house and church; Charlton Abbots, house and church; Winchcomb, church, Jacobite House, old houses; Sudeley Castle.

Saturday, August 17.—Gloucester, cathedral, old houses.

We give to-day the first of our series of sketches in illustration of the more characteristic buildings to be seen during the week, among our contributors being Messrs. C. E. Bateman, A. J. Dunn, the Pugin Travelling Student of the year, J. A. Gotch, F.S A, the author of "The Architecture of the Renaissance in England," and C. E. Mallows.

The first item on the programme is the "pretty mannour place bilded at Southam by Sir John Huddleston" in the days of Henry VII., close to the main highway going north to Pershore, some two and a half miles from Cheltenham, on the rising ground towards Cleeve Hill, from whence an exceptional view is obtained, embracing the vale of the Severn, bounded by the Malverns, Welsh Mountains, and Forest of Dean. Here at Southam and Bishop's Cleeve some considerable time is to be devoted to sketching. Southam House, built of timber and stone, has an uncommon Tudor bay window, two stories high, with traceried heads to the lights, characteristic of the Perpendicular period, and inside the same parlour is a good Jacobean oak chimneypiece, with oak wainscoting round the room. There are several smaller oriels of old date, but the tower is modern. The building is a venerable structure dating from 1501, and retains more of its original form than, perhaps, any contemporary house of its class. It is constructed of two stories only, without a parapet. The three principal apartments appear to have been finished, as they remained till within a few years ago, and the various alterations effected are all of recent date. One of the halls was paved with glazed or encaustic tiles brought from Hayles Abbey. Nash made an excellent drawing of one of the rooms, and it will be found lithographed in his "Mansions of the Olden Time." In the windows are the arms and cognisance of Henry VII., for whom Sir John Huddleston made his survey. The property passed by marriage to the now extinct family of De la Bere, who fought at Hastings and Cressy.

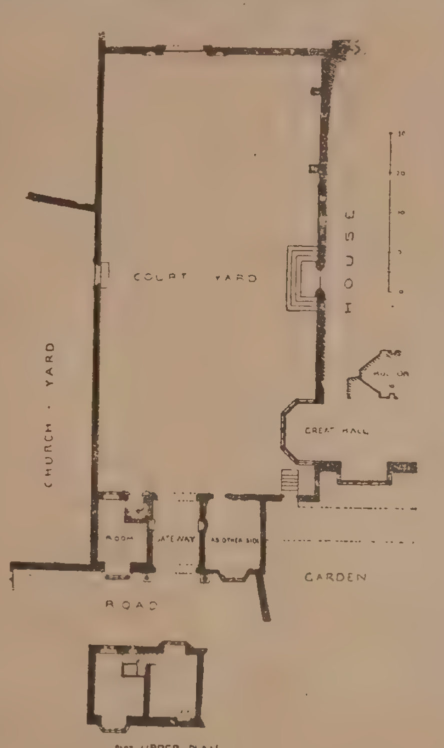
On the return journey from Bishop's Cleeve, Postlip, an ancient mansion erected in the 16th century will well engage the attention of the party. It was erected by a member of the Broadway family, whose arms are carved in oak and stone about the building. The house contains a large oaken wainscoted room divided out into bays, with richly-treated pilasters surmounted by a carved frieze, and resting on a panelled dado plinth of good proportions. The ceiling is in character; but the chief feature of interest in the gallery is the florid Jacobean chimneypiece which has statues of females at either end in niches, and having recumbent figures of children at their feet, almost serving as corbels to support them, making a curious arrangement. Joseph Nash made a careful study of this room, which appears in his great book before mentioned.

On Tuesday, Tewkesbury will occupy the greater part of the day, the afternoon being spent by a steam-launch trip up the Avon, passing Strensham Church, where there are some fine old oak seatings and a rood-screen fixed at the west end, with curious figure paintings and some well-preserved marble monuments to the Russells. We shall publish next week some views from the Abbey and old timber houses to be seen in the ancient streets of the town. When the Associationists visited Tewkesbury in the Worcester excursion in 1881 we published a view and plan of the Abbey besides some sketches of domestic work near to hand by Mr. Sydney Vacher, and on October 26 last a good view of the famous mediæval bridge at Tewkesbury appeared in our pages, with a photo-print of a most picturesque coved penticed old shop at Berkeley, a town too far south for the present outing, and described by Leland as "no great thinge, but standythe well and in a very good soyle." Its castle, however, is of more than ordinary consequence.

On Wednesday, a rather long railway journey to Moreton-in-the-Marsh starts the proceedings, after which half-an-hour's stay will be made at "Batsford," a fine new house erected for Mr.

A. B. Freeman-Mitford, C.B., by Messrs. Ernest George and Peto. We illustrated the Hall in the Building News for Jan. 4, 1889. Externally the house is executed in stone, and well harmonises with the historic architecture of Gloucestershire. The greater part of the day, however, is to be devoted to Chastleton House, which stands on the western borders of Oxfordshire, where it adjoins Gloucestershire, and not far south from Moreton-in-the-Marsh. We now give two views of this lichen- and moss-covered stone building, of which a larger and more detailed sketch appeared in our pages for May 12, 1893, from the pencil of Mr. E. Guy Dawber. Other views with plans figure in Gotch's "Architecture of the Renaissance in England." To the front of the house there is an entrance-court approach through a plain gateway. Formal gardens extend on either side, enlivened by trees and shrubs sufficiently encroaching upon the rigid lines of the garden scheme to afford room for one's fancy, without impairing the intentional limitations of the designer, whose aim, rightly enough, sought to assimilate the immediate preludes of the mansion with its architectural treatment. On the remaining side are the stables and kitchen-court, while the plain old church hard by adds to the air of unchanged antiquity distinguishing the place, which is so charmingly devoid of any idea of looking smart and up-to-date in character. Some historic and other particulars, with a view, accompanied by plans contributed by Mr. Jethro A. Cossins, were published during 1888-89 in the *Transactions* of the Archæological Section of the Birmingham and Midland Institute, and are reproduced here, by permission, for reference. Inside the house the same character is maintained, though not a few of the rooms certainly have been denuded of their ancient ceilings and woodwork. There have been but few if any structural alterations, and the plan of the building remains very nearly what it must have been when the house was erected originally. The oak screen and daïs stand in the hall, and the little parlour has its old arched Jacobean panelled walls and a good plaster frieze. Upstairs the "Great Parlour" retains its antique chimneypiece, and richly-panelled walls, and ornate ceiling. Among the bedrooms some very good ceilings and chimneypieces are to be seen, besides panelled or tapestried walls; and as for specimens of old furniture, it may be said that the house is a veritable museum, not to mention the bed hangings and counterpanes which are said to be as old as the house, and can be identified by the "Inventory" of the goods and chattels in the house in the year 1633. Some of the ancient jewelry depicted in the family portraits still is treasured by the present owner of Chastleton, Miss Whitmore Jones, who is descended from the builder of the mansion. He was one Walter Jones, who bought the estate in 1602 from the Catesby of Gunpowder Plot celebrity. The building works were commenced without delay, and finished in 1620. The site is described as having been once occupied by an earlier house of the Catesbys, while some of the foundations of the older house are thought still to stand. It is not an uncommon mistake, however, says Mr. Gotch, to date pillars and vaulting of the beginning of the 17th-century a hundred years or so too early, and there is little doubt that the cellars of Chastleton are coeval with the work above them. The kitchens in the basement retain much of the old furniture and cooking implements, including a large service of old pewter. The house is built round a small court, which affords a certain amount of light and air; but these small courts, surrounded by lofty walls, are difficult to make cheerful, and nothing that is desirable will grow in them. It is only the outer walls of the house that are of stone, all the partitions are of oak framing covered with lath and plaster; but they serve their purpose quite well. There are two staircases—one old and one new; but the old one is built round a solid core, or, at any rate, the walls of it are solid, and it only breaks out into newels and balusters on the top floor. It is on this floor, along the north-west front, that the long gallery extends from end to end at the rear of the house. It has a fine ceiling and panelled walls, but is rather low, and is not now in use. The drawing-room—the original Great Chamber—is a handsome panelled apartment, with a rich plaster ceiling and a good stone and marble chimneypiece. The great hall is an interesting room, as it retains its original screen and daïs, but the screen itself is not particularly good in design. The general aspect of all the rooms is no doubt unusually attractive. The builder, Walter Jones, a Royalist, died in the year 1632, and an inventory of the whole of the house and the effects in the house at that time, as already mentioned, is preserved there, giving the names then in use for the several apartments, such as "Mr. Fettyplace his chamber," wherein is the bed with a taffeta quilt upon which Queen Elizabeth slept at Woodstock, so that the rooms can always be readily identified. The arrangement of the front entrance is very like that at Burton Agness in Yorkshire, and other houses in the West of England, but the doorway in such a position is unusual.

Broadway, in Worcestershire, is to be the northernmost point in the programme on Thursday, and next week we shall give some sketches of some of its typical old stone houses, which line the wide, straggling village street in which the Lygon Arms, with its rather good Elizabethan-like doorway, dated 1620, forms a conspicuous and hospitable feature. Luncheon is to be served for the visitors in this historic hostelry. The wide highway gives the name of Broadway to the place, which now has more the character of "a deserted village," though at one time it was a town of some consequence. Charles I., for instance, is said to have rested at the Lygon Arms on several occasions during the Civil Wars. The old houses are for the greater part very plainly treated; but obtain a degree of character from their mullioned windows and quaint gables, and the Manor House of the Abbey of Pershore, the most elaborate of them all, has only the addition of cusped openings to the fenestration. The old church, a mile south of the village, is now used as a cemetery chapel, and is of various periods of work, with a Late square, central tower, and turret rising from the east wall of the north transept. The absence of buttresses has been pointed out as a notable feature, giving breadth to the wall surfaces of the little building. Buckland, next to be seen, has some similar old houses, among which most worth naming is the 14th-century rectory, partly dating about 1520, with a hammer-beamed roof-truss over the old hall, and a gallery-front in half-timber. Near by is another house of Edwardian character, built by the abbots of Gloucester, with a big fireplace in its hall, over which is an original roof. The church is not a large one, and is chiefly attributed to the 13th century, with a plain, embattled tower marked by demoniacal gargoyles at the angles. There is some ancient glass in the east window in representation of the sacraments of Baptism, Matrimony, and Extreme Unction. The tie-beam roof is decorated with the white rose of Edward IVth. A curious canopied pew has to be noted as long time a feature in the interior, and a 15th-century cope for many years served as a frontal to the altar. Stanton village, of which we give an accompanying sketch among our photo-lithographic plates, has an old cross and some nice roadside houses, while the church, being unrestored, becomes consequently an object of uncommon interest.



STANWAY

PLAN OF COURTYARD

The last place to be visited on Thursday is Stanway Hall, which is situated in Gloucestershire. Of this house, belonging to Lord Elcho, we give the annexed plan, at once serving to explain the disposition of the various features in this old mansion, which is one of the most striking examples left of a really fine architectural treatment of a forecourt. We are indebted to Mr. Gotch for permission to give the accompanying details, drawn by him and his coadjutor, Mr. Talbot Brown, for their famous book on the "Architecture of the Renaissance in England," which Mr. Batsford published with so marked a success a few years since. The view of the courtyard which we have herewith drawn forms one of the plates in the same volume, from the pages of which the following descriptive account of the building has, with consent, been utilised. The entrance to the courtyard is beneath an imposing gatehouse, upon passing which the long front of the house is seen on the right; an inclosing wall extends on the left, and is broken by a charming doorway, opening on to the churchyard immediately opposite to the front door of the house. We give a detailed drawing to scale of this feature, and Mr. Bateman's sketch on another plate herewith shows the doorway exactly as it comes in the wall, with the parish church beyond. The fourth side of the courtyard is inclosed by a wall, in which there is another imposing archway leading to the stables, which are discernible in the distance. There is no particular effort apparent, unless it may be in the gatehouse; but the whole effect is striking and stately—the result, be it noted, of simple but skilful planning. It is said to have been designed by Inigo Jones, and the character of the work bears out the supposition, in the opinion of Mr. Gotch, for, as he says, very rightly, although thoroughly Jacobean in its general appearance, much of the detail looks somewhat later, particularly the elliptical windows on the inner front of the gatehouse. The house itself has been considerably modernised and enlarged, and what detail is left is of a plain character. The great bay window, shown by the accompanying view, is the most noticeable feature, and of this it must be confessed that its size forms its chief claim to attention, the detail being meagre, and the whole effect rather fragile. These defects, however, only appear on a close scrutiny; the first impression conveyed by this great bay in connection with the gatehouse and inclosed court is one of much stateliness. The history of Stanway, so far as it concerns an architectural descriptive account such as we need only concern ourselves with, is soon told. The estate belonged to the Abbey of Tewkesbury till the Dissolution, when it was given to one William Tracey. He settled it on his second son, Richard, who married Barbara, a daughter of Thomas Lucy, of Charlecote, near Stratford-on-Avon—the Lucy whose deer Shakespeare is said to have killed, and who will for ever give delight to the world as Justice Shallow. Richard Tracey was succeeded by his son Paul, who was made a baronet in 1611, and it was Sir Paul who built the house. Possibly he may have had his mother's home in view when he built his own, for at Charlecote, too, is a gatehouse, but not so fine a one as here. Sir Paul died in 1626. The Traceys were important people, and, no doubt, worthy of their fine home. The title became extinct on the decease of the fifth baronet in 1677. In old days there used to be grand formal gardens here "and a cascade of water seen from the vale below at a distance of several miles." Atkyns, in his "History" of the county, gives a good view of the old arrangements, which have since been quite altered. The gardens, however, are still very attractive. There is a tithe-barn in the grounds formerly attached to the Abbey of Tewkesbury and now used as a tennis-court. The property descended to the Earl of Wemyss on the marriage of his grandfather, Lord Elcho, with the eldest co-heiress of Anthony Tracey, and the mansion is now occupied by the present Lord Elcho, the late member for Ipswich. There is an uncommonly large cedar in the gardens, and an extensive panorama is obtained over the vale of the Severn. The Tudor church has a quaint square tower rather more rich in style than many others of greater size in this district. The nave and chancel are of some little interest, and the group of buildings add much to the beauty of the sylvan scene.

Next week we shall continue our illustrations, and conclude the descriptive particulars of places yet to be noted on the programme, including Gloucester, which is to be seen on the last day of the excursion under the guidance of Mr. F. W. Waller, F.R.I.B.A. The sketch given to-day gives a capital idea of the cathedral. It is drawn from a new point of view by Mr. Alfred J. Dunn. The original from which our plate is taken formed part of the series of studies for which he was awarded the Pugin Travelling Studentship last winter. We gave his National Gold Medal drawings of the cloisters at Gloucester in the Building News for Nov. 9, 1894.

THE INTERNATIONAL HEALTH EXHIBITION AND CONGRESS, PARIS.—III.

On the following morning, July 9th, the Congress entered into a lengthy discussion on the construction and drainage of houses, this being followed up by a paper on the arrangement of the dwelling and its internal accommodation, read by M. A. de Baudot, Government architect, and lecturer at the Trocadero. M. de Baudot is an earnest advocate and practical originator of the rational methods of design and construction, his opinions being that architects have not progressed with the age, their buildings of the present day being nearly similar to those built a century or more ago, instead of being, as they should be, striking examples of an evolution naturally brought about by the rational use of the many new materials of the age, and fitness to the present style and necessities of everyday life. This architect has followed up his theories with practical work, his own private house in the Rue de Longchamp being built and arranged according to his ideas, the main features of the construction of this original and comfortable dwelling being the free use of iron, cement, terracotta and ceramic ware, hollow walls constructed after a special system of iron and cement, providing all conveniences for heating and ventilation. The following is a free *résumé* of M. de Baudot's paper before the Congress, giving the chief points of his recriminations against architects and builders of to-day. In our days, he says, the sanitary conditions of the dwelling have been much improved, thanks to a more reasonable planning and the utilization of apparatus due to sanitary science and industry; but there is yet much to be done in order to make the arrangements perfect, and to put them economically within reach of all.

It is true that in luxurious dwellings, in the public buildings of large towns, a certain measure of success has been attained in securing sanitary results relatively satisfying; but in our middle-class houses, and especially in workmen's dwellings, in cheap flats, in secondary public buildings, in many of our schools and colleges, in workshops, a proper satisfaction to legitimate demands, and action precisely where the public health is most interested by reason of the accumulation of human beings, is almost impossible. Indeed, it is not sufficient to have modified the planning of dwellings, to have increased the cubic space of air, to have permitted light to penetrate more freely; that which is necessary to-day is the introduction of what is lacking—viz., rationalism and economy in manner of construction, the arrangement of the skeletons of our buildings according to the dictations of rational constructional science, and the necessities of sanitation. Unless we arrive at a radical transformation in this direction, we shall never obtain anything better than very indifferent and expensive arrangements for heating and ventilating our dwellings, or mediocre conditions of working, economy and durability in the installation of the apparatus destined to rid us of waste water and house refuse, the carrying away of which gives rise to so many difficulties and so much expense.

Again, going further than this, is it not evident that the present manner of construction employed in our dwellings does not obey even the most elementary laws of sanitation? Is it not evident that builders are inspired more with the idea of pleasing the eye than with that of economy and giving us protection against the variations of temperature? For example, is it not a striking fact that, especially in our large towns, whilst all walls which can be seen from the street, be it mansion, flat dwelling, or public building, are persistently constructed of massive stone with excessive thickness, those at the back, giving on the courtyards, are built of flimsy brickwork of slight thickness or even of still thinner iron framing and brick? In these buildings we find on one hand a complete absence of rationalism, and on the other hand a complete neglect of sanitary principles. The cause of inequality of temperature in the various portions of the same apartment is even more noticeable, because no account whatever is taken of the ventilation of the walls, of whatever thickness they may be. In these same dwellings, is not a complete sacrifice made of the comfort and health of the dwellers in the roof story, the portion whose thin and imperfect covering affords very indifferent protection from the exterior temperature, in winter as in summer?

Many remarks also may be made concerning the floors, and regret be felt that the filling between the iron floor-joists is too often formed of plaster coming from demolished buildings, and from this reason possibly often containing noxious germs. Besides, in this style of floor the dead-weight is too considerable, necessitating joists and girders of excessive strength, and consequently useless expense. If we leave the question of the construction of vertical surfaces (walls), inclined surfaces (roofs), and horizontal surfaces (floors), and come to examine the manner and arrangement of the ducts for heating and ventilation purposes, and the various kinds of apparatus for water, gas, and electricity, is it not evident that no proper forethought has been made during the study of the planning for the arrangement and fitting up of these indispensable accessories? The result is an incomplete or insufficient installation, unsatisfactory working, and much expense for repairs. It is very often the case that for this reason we are led to employ heating apparatus producing overheated air and unhealthy gases, to neglect the proper arrangements for ventilation, to give a too hasty attention to flushing reservoirs and sanitary apparatus, the outcome being a general condition of unhealthiness in the dwelling, an irregularity, insufficiency or superfluity of warmth, a lack of fresh air, and the inconveniences of frozen siphons and down-pipes.

On looking at the many requirements of the present day, requirements which did not preoccupy the attention of our predecessors, it is difficult to understand how it is that these errors exist, the more so at a time when the science of building and industry comes to the front and offers us all the things which we neglect and important aid in the construction of dwellings of all kinds answering in all ways the necessities of the modern programme.

The consideration and study of this programme, the discussion and study of the proper means, systems, and materials, the guiding of the architect in the new and difficult road he has to follow to-day—such are the important questions which he submitted, maintaining, however, that in order to better the arrangement and fitting up of dwellings the system of construction and general economy must be first and entirely transformed.

M. de Baudot conducted the members of the Congress over the buildings of the Lycée Victor Hugo, Rue Sevigné, and was there able to put his theories to a practical demonstration; the building is from the designs of this architect, and constructed according to his ideas of the rational use of the materials of to-day, containing also the many conveniences of various kinds arising from this manner of construction.

A lengthy paper on house-drains, read by M. L. George, architect, brought forward a number of resolutions regarding the proper ventilation and trapping of soil and other pipes, concluding with a vote that a complete study be made of the well-known and practical systems employed in England. An interesting resolution was to the effect that the surrounding of traps, down-pipes, and flushing cisterns with some non-conducting material affording secure protection from the frost should be insisted upon. This important question forms the subject of much attention at this moment. An interesting report lately read by M. Masson, sanitary inspector for Paris, urging that some such protection be adopted for all hydraulic apparatus liable to attack from frost, was made with the special intention of answering the objections brought up by a large number of architects and engineers who condemn the flushing drainage system as one offering too grave inconveniences in winter time, owing to the freezing of the canalisations, cisterns, down-pipes, and siphons.

The question of compelling sanitary plumbers to pass an examination and obtain proper diplomas was discussed, Mr. E. Tidman, secretary of the British Sanitary Inspectors' Association, explaining that in England the British Sanitary Institute awarded diplomas by examimation, and that examiners were sent by the Plumbers' Company to various parts of the country for the purpose of examining in theory and practice all intending sanitary plumbers. It was to be desired that shortly no plumber would be permitted to execute sanitary work unless he could produce his diploma showing that he was fully qualified. M. Masson, aforesaid, replied that two schools of sanitary plumbing had been established at Paris, and brevets were given to those who passed a satisfactory examination after three years' training. A final resolution was passed by the Congress deciding that every encouragement should be given to such schools, and that certificates of capacity should be awarded to workmen plumbers who could show full competence in their work.

The point being raised regarding the width of streets compared with the heights of houses, brought up from M. Charles Lucas, secretary to the Architects' Mutual Defence Fund, the remark that they, as hygienists, would be constantly obliged to vote in favour of what, as architects, they would have to fight against. Mr. Adolphe Smith argued that it was not their business to consider any special professional interest. A hygienist should know something of medicine, chemistry, architecture, engineering, plumbing, and other handicrafts. As regards localities, what was expedient or practical in any one town or place was not to be specially considered, but a general principle which all localities should endeavour to realise when practicable. The principle in this case, he considered, was that the direct rays of the sun should reach the windows of all buildings once in a day. M. Bechmann, chief engineer of the town of Paris, considered that this was not practicable, M. Cacheux, engineer of the Society for the Creation of Cheap Dwellings, arguing greatly in favour of direct rays of sunlight for all inhabited rooms. The Congress, however, considering the ideal of the hygienists to be impracticable, did not pronounce any decided opinion on this matter.

M. Morin-Goustiaux, vice-president of the Commission on the Unhealthy Dwellings of Paris, read a paper on the necessity of an efficacious control over the sanitary arrangements of dwellings. He stated that a certain number of precautions had been taken against the dangers accompanying the use of gas in dwellings, but up to the present little thought had been given to the dangers arising from the gases contained in the waste water and other drain-pipes which cross the dwellings in all directions, and that the care of the public health exacted that similar precautions be taken for general plumbing work. That there is no service for the inspection of drainage work, the Commission of Unhealthy Dwellings making a few visits, but only when cases are signalled; the result is that the builder in very many cases does exactly what he likes, and very often his ignorance of the most elementary rules of sanitation is absolute. He quoted very fully a number of the regulations enforced in America by State laws, explaining the system of the inspection of work during the course of execution, and the complete collection of documents and plans, making a detailed register of all work done in every street and every house at Chicago and other large cities. After reading the formidable list of rules and regulations enforced by the gas companies, and expressing the desire that such rigorous regulations existed for sanitary work, M. Goustiaux presented several resolutions asking that the rules relating to plumbing work be made as uniform as possible for all towns, whatever be the manner of drainage; that all plans for drainage be submitted to and examined by a competent authority before the commencement of the work; that no drains should be covered over before being properly examined, and an inspection and test made of the various apparatus; and that, similar to the custom in the United States, all contractors for sanitary work should be licensed by the town authorities. These resolutions were adopted by the Congress.

M. Charles Lucas read a paper on the exterior and interior sanitary arrangements of cheap dwellings. These dwellings, he said, consisted either in blocks—viz., houses with several stories comprising a more or less large number of dwellings, and consequently a dense population—or in the shape of family dwellings—viz., small houses, either isolated or in groups, having at most one story, and inhabited by one family; that these dwellings deserved the closest attention of the Congress in point of view of the sanitary measures to be taken. He presented the resolutions, that, when planning such buildings, greater attention be paid to the orientation and the direction of the most frequent winds, in order to guard against, as much as possible, all bad smells, return of smoke, and inconveniences from frequent rain; that every care be taken to provide proper supply of drinking water and washing water, and the proper evacuation of drainage and house refuse; that for the construction of the outer walls—walls which, from reasons of economy, are often made very thin—a larger use be made of materials suitable for protection from both cold and heat, and which are, both as regards their nature and the manner of their jointing, impervious to damp. Regarding the internal arrangements for physical and moral comfort, the following should be carefully examined: the planning of the rooms and the reduction of their number as far as is possible, to enable the mother to watch over her often large family whilst attending to her domestic duties, and also to afford as much economy as possible in lighting and heating; the absence of mouldings, and the adoption of walls with rounded corners, leaving few angles liable to accumulate dirt, mildew, and insects; the preference to be given to oil-painted walls rather than papered walls, allowing thus a frequent washing, and avoiding the deposits of noxious germs; the installation of what could be called fixtures in the way of furniture, decreasing the inconveniences of little furniture, and avoiding the cost of transit for poor families, whose trade or occupation may force them to suffer frequent changes of dwelling.

A resolution urging that the Sanitary Bill, adopted by the Chamber of Deputies, and now before the Senate, should become law at the earliest possible date was unanimously passed; it was also resolved to facilitate as far as possible the creation of sanitary professorships in all the schools of architecture.

An interesting paper on the rational heating and ventilation of dwellings was read by M. Charles Gautier, president of the Society of Government Architects. The opinions of the reporter, given in a rather lengthy paper, may be summed up in the following. M. Gautier began by saying that not being a specialist in the question of heating and ventilating—an architect, indeed, having a very extended part to play had very little time to become a specialist in any matter—he would only give broad views of the various systems employed, with their inconveniences and advantages. Since 30 years great progress had been made in heating the dwellings of our large towns, and much praise must be given to those who were using their best endeavours to improve or replace the old systems, so often incomplete and insanitary. He would divide the matter into six sections, chimney-places, stoves, hot-air stoves, heating by hot water, by steam, and by a combination of hot water and steam. Taking first in order the question of chimney-places, M. Gautier said that the greatest enemies to rational heating of dwellings were fashion and pleasure to the eye; the ordinary chimney-place would never be dethroned, notwithstanding that it is an apparatus heating very indifferently, and affording an even worse ventilation; it has, however, one great advantage, that of considerable cheerfulness combined with an agreeable and artistic form, making it very often one of the most charming ornaments of the dwelling. This being so, the greatest success would attend the inventor of a rational heating apparatus maintaining the form and aspect of the beloved chimney-place; but the many endeavours which have already been made have not been successes up to the present. Again, the large mirror which is nearly always seen surmounting the chimney-pieces of our houses is the cause of a considerable loss of the heat given off by the open fire; if we could persuade the ladies to sacrifice their chimney mirrors, the heat-giving surface would be largely increased; the looking-glass could be advantageously replaced by an open coffer artistically ornamented, and allowing the use of special systems for utilising the heat which is at present wasted. The idea is not new, it is one of the applications of hollow walls advocated by M. Trelat, and other well-known names.

Next taking the question of stoves, M. Gautier said that the chimney fireplace lacking proper heating qualities, a large proportion of the heat being carried off with the smoke, a more efficacious means of heating was sought after, and the stove was invented. The stove might be divided into three categories—the simple stove, the hot-air stove, and the portable stove. The first may be said to give off greater heat than the fireplace; but the ventilation is almost nothing. For this reason, such stoves should be employed only in rooms ventilated in a manner independent of the heating apparatus. Again, these ordinary stoves, much employed on account of their cheapness and economy, are very injurious to respiration by reason of the over-heating, sometimes to redness, of the metallic sides, and this inconvenience has led to the construction of stoves encased in faïence and similar ware, which, whilst attenuating this inconvenience, has the advantage of allowing an artistic and elegant decoration. The hot-air stoves differ from the preceding only as regards the envelope of metal or faïence surrounding the central heating surface, a receptacle filled with water serving the purpose of moistening the heated air. The movable stove is a kind of reaction against the chimney place, which was first intended for burning wood for heating purposes. This combustible being now often beyond the limit of general means, an apparatus for burning the less expensive small coal, or even gas, became a necessity, and the movable stove, with continuous and slow combustion, easily moved from one room to another, and adapting itself to the various fireplaces of the dwelling, was invented. These apparatus, as a rule cheap, and requiring little attention, have much success; but, unfortunately, experience has proved that they are exceedingly dangerous, by reason of the abundant production of oxide of carbon which, when the draught is defective, invades the room. This apparatus is, therefore, probably destined to a decreasing use day by day. At present these stoves are the terror of architects, who are obliged to dissuade their clients from their use, for the chimney flues are by no means suitable for the proper working of such apparatus. The Academy of Medicine is also strongly against their use. Coming to the question of warm-air heating systems employed for the heating of entire dwellings, hotels, public buildings, and houses of many stories, we find that the simplest system is that employed since many years, and which, despite its inconveniences, is not easy to provide a substitute for. Its construction approaches that of the hot-air stoves, only the apparatus consists of a heating-chamber placed in the basement, from whence set out the various flues distributing the heat. These are of two kinds—that distributing the warm gases coming directly from the combustion, and that sending heated air in the necessary directions. Experience has shown that the heating chamber cannot send warm air to large distances; at 50ft. from the focus the loss in heat is already noticeable, and at a horizontal distance of 100ft. the air is almost cold. Despite the studies and researches of many well-known engineers—to whom, however, all homage should be made—this apparatus in nearly all its forms has the inconvenience of drying the air without affording a compensating moisture, and, besides, it conveys much dust and often deleterious gases.

The various systems of heating by hot water may be divided into two classes—that at low pressure, and that at high or average pressure. The first has the inconvenience of obliging the circulation of a large quantity of water through the apparatus, and the consequent necessity of providing flow-pipes of large diameters. The average temperature of the heating surfaces being only about 80° Centigrade, a considerable importance must be given them. In the systems of high or average pressure—generally preferred—the temperature of the water may be carried to 100°, or even above; the distributing pipes have, therefore, need of small diameters—a great advantage. The high-pressure system of Perkins brings the temperature of the water in the pipes to 300° and more, this high pressure occasioning possible accidents. In England and Germany this system has been much employed; but as yet, in France, the preference is for an average-pressure system composed of pipes of small diameter. Such a system is very convenient for dwelling-houses, permitting rational heating by means of a girdle of heat encircling the walls.

The system of heating by steam is obtaining great success in France for large public buildings and industrial buildings occupying large surfaces. It may be considered as one of the most rational means of heating, steam being the most powerful and supple vehicle for the conveyance of heat. With a system at low pressure, there is no fear of fire, dust, or noxious gases. As regards solidity, this system is nothing lacking.

On the question of ventilation, M. Gautier was of opinion that the simpler the system, the better the ventilation; that researches should be earnestly continued for the discovery of a system realising as nearly as possible natural ventilation. He mentioned an invention due to M. Emile Trelat, architect, this being the piercing of window-glass with a multitude of conical holes of very small size, the smaller base being at the exterior. This glazing had the advantages of being always clean, and allowing a mild ventilation without any draught. In the discussion following up this paper, M. Emile Trelat put forward his well-known theories on the matter. It was agreed that heating should be by radiation: the walls, the ceiling, the floor, and the furniture should radiate heat on the occupants of the room; the air itself should not be warmed, but should, on the contrary, be cold. A certain amount was said concerning defective chimney-flues and the injury done to people living on the upper floors through leakage from these flues. A resolution was passed that all newly-constructed chimney-flues should be constructed by the proper authorities, and tested as rain-pipes are tested to see that no leakage exists. This suggestion is really an exceedingly practical one.

M. Philippe, engineer, read a very lengthy paper on public baths at moderate prices, making a complete review of the various systems and apparatus for baths and bathing, giving plans of a model laundry, and comparing the systems of clothes-washing at London and at Paris, concluding greatly to the advantage of the former city. Plans and descriptions of public baths constructed by this engineer at Lille, Armentières, and Douai formed also a very interesting portion of the report.

M. E. Cacheux, engineer, administrator of the Society of Cheap Dwellings, read a paper on the evacuation of waste water in small towns and villages, giving the inconveniences and advantages of the systems of allowing waste water to flow from the houses into the streets; to flow into cesspools, or allowed to penetrate in the earth; to flow into rivers or running water; to be carried off by proper canalisations, and the dangers arising from the improper use or abuse of any of these systems.

M. Leon Benouville read a comprehensive paper on the necessity of a professional sanitary teaching, urging that the first endeavour of hygienists should be the inculcation of ideas of cleanliness and attention to sanitary matters amongst the general public and masses of people; the encouraging of cleanliness in schools, colleges, barracks, and public buildings by means of proper installations of every necessity and apparatus for cleansing purposes, giving no excuse for neglect in washing, bathing, and proper use of conveniences. He said that the State, towns, public companies, railway companies, &c., should give the good example in this way, citing the expenses made by the metropolitan of Berlin in the installation and maintenance of the public w.c.'s and urinals, expenses which were very high, but made so on purpose, in order to impress the public with the respect of cleanliness. He considered that public lectures on sanitation should be organised in a manner similar to those given under the auspices of the Sanitary Institute in England, that sanitary museums should be installed at Paris, and established on the basis of the Parkes Museum at London. At length they should pass resolutions relating to a petition to the Chamber requesting that a sanitary law for France should be adopted as soon as possible—a law giving all authority to mayors, prefects, and others to enforce a proper respect for the modern sanitary necessities; that men with a practical experience of sanitation be those most sought after for the general sanitary committees about to be organised; that proper classes and lectures on sanitation be created at the Ecole des Beaux Arts for architects, at the Ecole Centrale for engineers (or, rather, that the existing classes in the latter school be made more complete), at the School of Arts and Trades, and that associations for the popular teaching of sanitation be organised all over France, not forgetting the creation of museums of sanitation to be supported by the State.

A paper was read by M. Paul Pignant, engineer, on the necessity of the intervention of the public powers obliging the municipal authorities to control and enforce, if necessary, sanitary measures and laws, and that of the municipal authorities obliging private persons to take the measures necessary for the sanitation of private buildings and dwellings.

A very interesting report was made by M. M. Sijmons, engineer, of Rotterdam, on the results obtained by the Liernur system of sanitation applied at Amsterdam. He explained that this system obtains the evacuation of matter and house drains by means of an underground metallic canalisation, hermetically closed, ending at a central works outside the town, and employing suction as motive power. An immediate sterilisation of the waste matter was obtained by means of heating to a high temperature immediately on its arrival at the works, and a transformation into dry manure of a high agricultural value. In 1894 the central works of the Liernur system removed the drainage from 3,678 houses, containing 62,572 inhabitants, producing over 2½ million cubic feet of matter, necessitating the employment of 1,250 tons of coal. The works for converting the drainage dealt with a little over 2½ million cubic feet of matter, to which quantity nearly half a million cubic feet must be added, coming from the quarters not yet connected with the works, a total of about 3 million feet, giving 601·2 tons of sulphate of ammonia, and necessitating a total expense of 1,376 tons of coal. The sale of the produce left a profit of nearly £4,000. The working expenses of the Liernur system was in 1894 1s. 1½d. per inhabitant per year. By reason of this remarkable result, the Amsterdam town council has decided to give a greater extension to this system, and has voted the sum of £10,000 for the work of connecting the remaining 1,102 houses with 21,500 inhabitants with the works. M. Liernur claimed that his system yielded very handsome profits, also that their apparatus could evaporate and dry a little over four gallons by the consumption of 1lb. of coal. The reason of the large profit made was that the population only yielded 5¼ pints per person per day of sewage and house water; the drains and soil-pipes were thus scarcely ever flushed, and were therefore in a continual state of filthiness. Despite all arguments in favour of the Liernur system of drainage by suction, the Congress did not appear to show very much approval, and although the discussion was very animated, no vote or resolution was passed. The Congress seemed greatly in favour of the separate system becoming more and more employed in England. It was urged that with the separate system the quality and quantity of the sewage could be estimated to a near figure; again, the sewage was very easily treated by this system. The combined system of allowing rainfall to mix with the sewage added much difficulty to the work of converting. M. Masson was, however, of opinion that rain-water which had washed the streets was as foul as ordinary sewage, and should, for this reason, be treated as sewage.

A number of papers were read in the afternoons concerning various inventions and systems. The heating of schools, by M. d'Anthonay; the consequences in a health point of view of the dampness of the air in works and workshops, by M. de Betz; a method of purifying river water by means of currents of fresh air forced through the water, by M. Robert, engineer; several inventions for utilising house refuse; an ingenious mask for protecting workmen from injurious dust, invented by Dr. Detourbe; a system of rational closet-pans, suggested by Dr. Chatelin. The inventor maintained that the ordinary closet-seat was injurious, and created a predisposition to hernia, that the hips and spine should form an acute angle, and not a right angle; the closet-pans proposed by the doctor were fitted with a partial seat, which obliged the users to assume a position natural to the laws of anatomy. M. de Montricher explained a system of utilising badly-constructed large sewers by means of small drains placed within the large sewers; in case of very heavy rainfall only, the former would overflow into the latter.

This Congress has certainly been of much good in opening out the way to a better state of sanitation in France, in bringing the public attention to a realisation of the importance of sanitary measures, and in beginning the formation of societies, classes, and lectures on this all-important question.

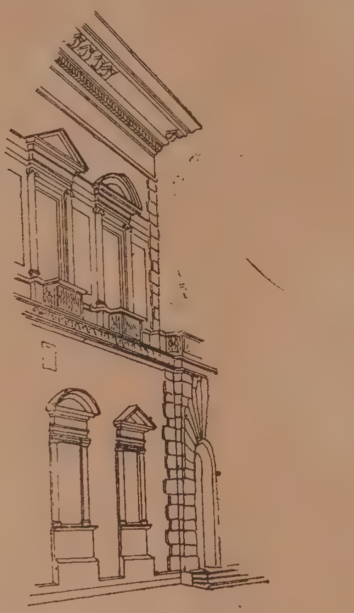
Arthur Vye-Parminter.

CLASSIC DETAILS AND THEIR APPLICATION.*

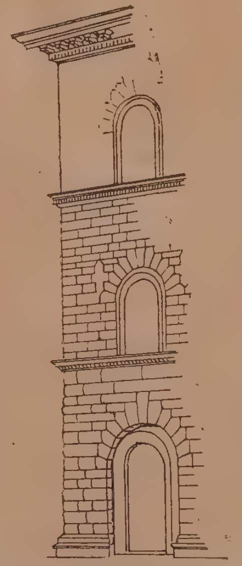
By G. A. T. Middleton.

VII.—ITALIAN RENAISSANCE: BUILDINGS TREATED AS ORDERS.

When Classic architecture was revived in Italy in the 15th century, known as the Italian Renaissance, the most noticeable feature was the manner in which it was at once adapted to the then modern requirements without the least of slavish copying. Nor, on the other hand, did it err in the opposite direction by the mere application of Classic details to buildings which were Gothic in form and principle. A somewhat similar thing had occurred before when Ptolemaic architecture arose in Egypt upon almost precisely the same lines as that of the Theban period of a thousand years before. Between the Roman and the Renaissance also there was a gap of a full thousand years; but this time it was not the same style which arose out of the ashes of the old, but a new style, fully adapted to present needs, based upon the principles of the old, and as instinct as that had been with all that pertains to architectural life—with vigour, with originality, and with high sense of the beautiful.



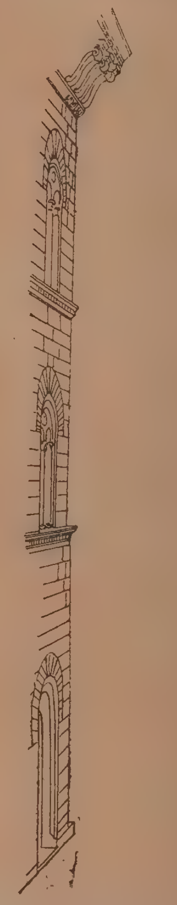
Pandolfini Palace, Florence, by Raffael. (From Schütz.)



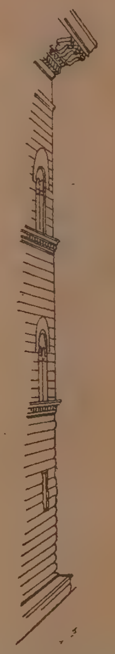
Gondi Palace, Florence, by Giuliano da San Gallo. (From Schütz.)

One of the first results of this was the treatment of buildings as a whole—as single units to which the parts were subordinate. This was especially exemplified in the palaces, which, from the circumstances of the times, were necessarily square masses of solid masonry, with but few and small openings within reach of any street mob which might attack them. Given these conditions, all that was necessary to convert them into architectural units was to crown them with cornices proportioned to their whole height, and this was accordingly done. No columns were used, but the buildings were left, of themselves forming complete orders without their aid.

The entablature, which thus became the chief feature of the design, varied considerably in its design. In the Riccardi Palace at Florence, the architrave and frieze are but slightly indicated, while a heavy cornice is carried by heavy consoles. In the Spannochi Palace at Siena, as also in the Gondi Palace at Florence, the architrave and frieze are missing entirely, while the consoles in the Spannochi Palace are deep, and in the Gondi Palace are widely projecting. Again, in the Strozzi Palace, at Florence, the architrave is missing; but there is a deep plain frieze, with enriched mouldings, then consoles, and then cornice over.



Spannocchi Palace, Siena, probably by Francesco de Giorgio. (From Schütz.)



Strozzi Palace, Florence, by Cronaca. (From Schütz.)

Speaking of the cornice only, which was the one absolutely necessary part of the entablature for the purpose of properly crowning the building, Gwilt gives the following table of proportional heights:—

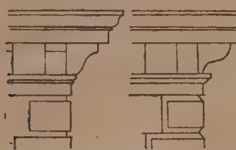
Palace.	Proportion of cornice to whole height.
Spannochi, at Siena	·081
Picolomini, at Siena	·074
Pojana, at Pojano	·071
Strozzi, at Florence	·069
Pandolfini, at Florence	·069
Villa Monteccio	·069
Villa Caldoque	·069
Farnese, at Rome	·059
Gondi, at Florence	·057

As to the rest of the design, it was simple in the extreme. Great use was made of wall-surface, texture to which was obtained by rustication, the degree of rustication varying in most examples, the masonry being exceedingly bold when near the eye, and more and more finely faced the higher its position in the building. In a later school, however—the Roman, to which the Pandolfini Palace more properly belongs—the rustication is confined to angles and to the doorways; and in the Venetian school, to be referred to later, it is often absent altogether.

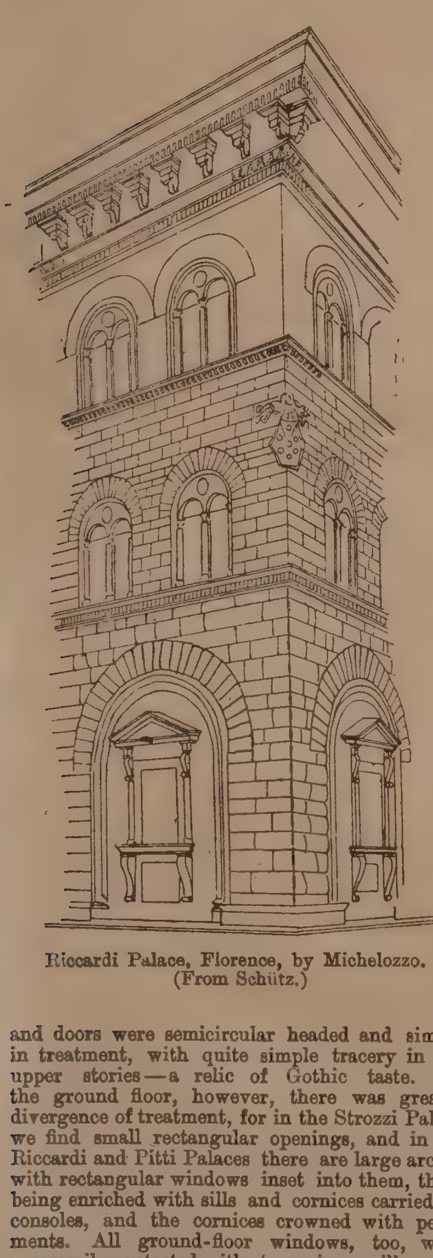
---

* All rights reserved.

The simplicity of the buildings was further enhanced by the regular arrangement of the openings, with doorway usually in the centre of each front, and by the subdivision of their height into stories by the introduction of horizontal strings or intermediate cornices carried right across the front. These were never obtrusive, having just this minor function to perform, generally consisting of a small cyma and corona, with simple consoles under. Still, their depth is nearly that of the main cornice, Gwilt stating $\frac{1}{15}$ of the height of the building, which is very little less than that of most of the main cornices, as given in the above table.


Two Intermediate Cornices, or Strings. (From Gwilt.)

In most of the Florentine Palaces the windows and doors were semicircular headed and simple in treatment, with quite simple tracery in the upper stories—a relic of Gothic taste. On the ground floor, however, there was greater divergence of treatment, for in the Strozzi Palace we find small rectangular openings, and in the Riccardi and Pitti Palaces there are large arches with rectangular windows inset into them, these being enriched with sills and cornices carried by consoles, and the cornices crowned with pediments. All ground-floor windows, too, were necessarily protected with strong iron grilles.


Riccardi Palace, Florence, by Michelozzo. (From Schütz.)

The Pandolfini Palace, it will be noticed, is an entire exception to these rules, for the intermediate string is enriched with the guilloche; the upper story is set back from the lower, and the windows are treated with orders. It was a method of treatment adopted largely in Rome, as witness the Farnese Palace, but rare in Florence.

* * *

LONDON ARCHITECTURE FROM AN AMERICAN ARCHITECT'S VIEW-POINT.

THE *Architectural Record* of New York for the current month contains an exhaustive article from the pen of Mr. Barr Ferree on "Architecture in London." The author freely criticises the buildings seen during a recent visit to the Metropolis, and his remarks are accompanied by nearly a score full-page illustrations from photographs of large residences and commercial buildings. He points out that English architecture "suffers from a unity of purpose among its architects, from the rapid changes in the popular taste of the day, from the importation of foreign styles for a few years only, to be cast aside for something in a later fashion. Even now its architects have scarcely found their level, are not yet wholly certain in what way to direct their talents, what style to use, what form to give that style. But though there is still uncertainty and mixture, there has been an incredible spread of correct architectural taste, of sound artistic feeling, of a striving after better things, of an effort to renew the historical continuity that was broken in the last century; and in this lies the strength of current English architecture. The land is filled with charming structures of previous times when people thought more about architecture and less of other things. These buildings are at the very doors of every living English architect, and in many cases those men who have achieved the greatest successes in recent architecture have been those who have most frequently sought inspiration at this inexhaustible source. This is something quite distinct from anything in any other country, unless it be Italy. The Renaissance in England is strongly tinged with English colour, and the British architect has a long unbroken past which, while it may not help him with models, will at least suggest possibilities of continuance and development."

Mr. Ferree asserts that, owing to the monotony of the older structures in the Metropolis, with the exception of the churches of Wren, and a few other buildings that might almost be counted on one's fingers, the most interesting of London structures are of very recent date. There is, he says, a dulness that permeates whole districts of the City, predominates in street after street of sickening negation, until almost anything is welcomed by way of change. One is not appalled, as in many cities, by the presence of architectural monstrosities; one is hypnotised by the endless reiteration of the same lack of architectural form, the most careless—or is it studied?—indifference to architectural values; the utter ignorance of architectural ideas, the complete mastery of commercialism that would do no more than provide the barest, ugliest shelter, and which, when applied to domestic work, is in the barest, ugliest, most intolerable of all forms, styles, and manners of building. Queen Anne's Mansions are typical examples of this style of building. If the older buildings of London are bad from the absence of architectural ideas, many of the newer ones are, he thinks, quite as intolerable from the attempts of would-be architects, speculative builders, and inexperienced persons to build and endow their city with wondrous things as bad in their positive characteristics as the older structures are in their negativeness.

Turning to the characteristics of the better class of work, the author says that picturesqueness is a strong note, perhaps the strongest note, in all new buildings. It is not always well done; but it is one of the chief ends at which London architects are striving. It may be seen in a somewhat too pronounced tendency to break up surfaces; it may be seen again in a somewhat too great fondness for detail, oft times too frequently repeated; and it may be seen again in the almost universal fashion of finishing a front with a gable. It is a survival or revival of the ancient picturesque quality of English work so commonly seen in all old buildings. This picturesque quality in London buildings is dependent on more than the modern revival. The small size of the buildings, even in valuable city sites, is another striking characteristic. This naturally heightens the picturesque tendency, since it is very much easier—and much more natural—to make a picturesque design on a small scale than on a large one. Owing to the British tenacity of custom, and the further fact that, so far as the writer could make out, unopposed enjoyment of privileges, one has not acquired by purchase, for a certain time, gives one perpetual rights thereto, there has scarcely been a change in heights. Perhaps, as striking an example as could be given of the tendency to the picturesque, is the charming office building designed by Mr. Pearson for Mr. William Waldrof Astor, just now finished, on the Thames Embankment. This is a veritable gem, small and delicate, and quite unlike an office building, so far as commercial exterior is concerned. The New Law Courts, the Imperial Institute, the Museum of Natural History, are all instances of large public buildings into whose design the element of picturesqueness has entered to a perceptible degree. In the Imperial Institute the architect has rather hurt his design than improved it by giving way to this tendency. In the Museum of Natural History there are more towers than there is the slightest need of, and the rich and abundant detail has not well stood exposure to the trying London climate. In the New Law Courts there is much detail and variation for the sake of picturesqueness alone; but take away this element, and the design, in each case, loses distinctly and disastrously, if, indeed, it does not become wholly commonplace.

With a fine determination to make the most of their opportunities, the builders of the older monotonous London houses built with a brick of dull hue, admirably suited, no doubt, to the atmosphere of London, but which enormously heightened the deadening effects of their structures. The architects of to-day bid fair to go as far in the opposite direction as their predecessors went in theirs. Brick and terracotta are the favourite materials, and very good and satisfactory results are frequently obtained with them. New brick of a brilliant red is much used, and some happy combinations are obtained with trimmings of a light buff stone, almost white when fresh. Not so successful is a sort of pink terracotta, an artificial mixture introduced by the manufacturers, and which seems to have "caught on" without any reason for the catching. It speedily becomes faded and dirty, and is not in the least suited to London. When used alone, the effect is bad enough; but, unfortunately, it is often employed in combination with red brick, not unpleasing when new, and, in fact, rather startling, but excessively depressing after the pink has lost its freshness. The ease with which terracotta adapts itself to ornamental and decorative purposes is a great snare to London architects. Centuries of experience do not seem to have impressed the average London architect with the knowledge that the climate of his beloved city is entirely unsuited for elaborate external detail. Sooner or later, detail in any material, in brick, in terracotta, or in stone, blackens and darkens until its value is almost gone, or until what was intended as an ornament becomes a positive eyesore; yet in the face of all but limitless examples many architects go calmly on adding piece after piece of detail to their buildings, and doing, with the utmost apparent glee, and sometimes in the best of good taste, just what they ought not to do. Besides the leading characteristics of current London architecture, already noted, are sundry devices and types of parts so frequently employed as to be fairly considered general, though in themselves scarcely distinctive. These include the constant employment of high-pitched roofs, since the Gothic revival, with gables and dormers, and in almost every sort of structure; in the elevation of the building, wherever possible, upon a low basement, usually partly underground, a system that obtains not only in dwelling-houses—though not now so frequently employed in the suburbs as formerly—but in the business and City buildings, where its use is much less logical; in a very general employment of broad, plain unornamented friezes between windows, bordered by string courses formed by the hoods of the lower windows and the sills of the upper; in the banding together of windows in vertical bays, though often crossed by horizontal lines, and in a land where the buildings are almost universally heated by open grates, the chimneys add a special note of their own to the design, and materially help in giving distinctive character. London architecture is not composed of the materials the architect has to use, of the devices at his command, of the method of design he follows, but in the manner in which he designs. Mr. Norman Shaw, for example, obtains quite unprecedented results by a thorough mastery of form, quite apart from ornamental detail—results, by the way, that many of his copiers and imitators have entirely failed in obtaining, even when they copied him most closely. Mr. Ernest George, whose style is wholly different from Mr. Shaw's, and who uses much more detail, resembles him in standing alone among his followers. It is the man that makes a building great or even interesting; the individuality he puts upon it, the feeling he breathes into it. There is a good deal of building in London in which this may be noted, buildings which lift current English architecture well up from the indifferent and the mediocre, and place it, so far as domestic work is concerned, in the very front rank of modern architecture. If American architects would know the best that is now being done in their art—they cannot afford longer to ignore the claims of modern English architecture. It is not always great, it is not always satisfactory, it is frequently full of faults, and personal affectation ofttimes spoils a design otherwise harmonious and beautiful; but in its best examples it is always interesting, and often rises to the very highest type of modern architecture. With scarce an exception, the modern Renaissance buildings of London which have been designed under French influences are, Mr. Ferree declares, totally uninteresting. Such, for example, are the Bankruptcy Courts, the latest addition to the General Post Office, and Sir George Gilbert Scott's Public Offices, Whitehall. The two former structures are the results of officialism in architecture, which appears to no greater advantage in London than in America. Of the successful Renaissance structures in London the first place is unquestionably held by the City of London Schools on the Victoria Embankment. In striking contrast with the elaborateness of this design at one end of the Embankment, is the New Scotland Yard at the further extremity. This is a severe and stately design by Mr. Norman Shaw, in which the effect is obtained wholly by careful proportions, strong walls, and simple windows. The severity of the architecture, which includes no ornament whatever, save the rings of the turret bases and the heavy entrance porch—barring the not altogether happy gable ornaments—is perfectly in keeping with the purposes of the edifice. Yet, plain as it is, it bears the impress of the work of a consummate architect, who knew exactly what to do in the right place. The author is a perfervid admirer of Sir Charles Barry's Houses of Parliament—"an edifice so grandly thought out, so superbly planned, so satisfactory in its masses, its forms, its detail, that one can scarce realise that it was the work of a single man in the present century. Fortunately it has had no copiers, nor is it a building one would see copied." In critcising Street's Law Courts, he remarks that the almost unparalleled disputes between the architect and his committees, during the construction, were of so painful and vacillating a nature as to be responsible for many of the errors. It is its misfortune to be placed where it cannot be seen. It is especially unfortunate that the main façade should face the winding Strand, since from no single spot can the whole of it be seen. Possibly, Street himself was fully alive to this circumstance when he broke his main front up into almost as many parts as it could be broken into, separated them by turrets that are monotonous in their frequent reiteration, and designed what is really a series of fronts that open up one after the other, as the building is approached from the direction of Charing Cross. Even though necessitated by the site, the building suffers from this treatment, and is lacking in the unity of exterior that may naturally be demanded in so long and important a front. Even as it is, the best use has not been made of it. The turrets are wearying in number, and not altogether pleasing in design. The arcade carried across much of the lower part of the façade, partly as a screen, partly as a dividing line from the street, and partly, no doubt, as a device to unite the whole in one idea, quite fails of its purpose, and scarcely amounts to more than a hindrance to light and air. The entrance to the main hall, originally intended to be parallel to the Strand, instead of at right angles to it, as it now is, is further wanting in the monumental treatment that should have been given to it. But the whole structure is, the writer thinks, a marvellous monument to the industry, the genius, and the ability of the architect. The Imperial Institute, at South Kensington, is the newest large public building in London. Built from the designs of Mr. T. E. Colcutt, it is a notable addition to the large buildings of London. The building was intended to typify and represent the unity and majesty of the British Empire, and both popularly and professionally is regarded in London as completely failing to accomplish the specific purpose for which it was erected. Possibly the error lay in the style, which is a rich English Renaissance. A more stately style of architecture was, perhaps, needed here; but the architect had frittered away many of his opportunities by the elaborateness of his ornament and the breaking up of his surfaces. The design is distinctly ornate, save the tower, which is bold and fine, and is crowned with a dome, unfortunately not of stone, surmounted by a lantern. It is quite justifiable to find fault with the immense quantity of detail applied to this structure. Very good in itself, there is quite too much of it for the London climate, and in a very few years its ornamental value will have entirely departed. Of the other new public and semi-public buildings in London there is little to be said, save that none of them approaches in interest those that have been named. The new Admiralty Offices are of commonplace design, treated with pavilions at the ends and in the centre, and with engaged columns of buff stone against a brilliant red brick, a combination that in its unfinished state is more noteworthy for its colour than for its design. The new Record Office in Chancery-lane follows very closely the design of the older structure, and is, in consequence, a somewhat notable instance of good taste on the part of the architect. Mr. Waterhouse's building for the City of London Guilds and Technical Institute, at South Kensington, avoids the too rich detail with which his near-by Natural History Museum is ornamented, and in the severity of its forms not unnaturally suggests the mechanical arts taught within it. In the additions to the National Gallery, a more severely Classical design than that of any other public building in London, the architect had the extremely difficult task of having to piece a new part on to an old structure of rather tame if refined design, and which he performed as well as the conditions of the case permitted. In business buildings London offers examples of every sort, the good and the bad, the old and the new, with a preponderance of both the bad and the old. Yet with so many horrible examples of what not to do the modern architect often fails in his commercial designs. Usually he errs in putting on as much ornament and detail as he can, as though architecture began and ended with this silly process. One of the best of the new buildings is Mr. John Belcher's Institute of Chartered Accountants. Yet it is hidden in a maze of narrow streets where the average passer-by would never stop to look for it, where even those seeking it may miss it, and where its value both to itself and as an ornament to the City is almost totally lost. Internally the building is not so happy as without. The detail, while well worked up, is sometimes heavy, and the proportions unpleasing; but taken as a whole this is one of the most interesting of the newest of London buildings. The new building of the Metropolitan Life Assurance Society in Moorgate-street, by Mr. Aston Webb, is an eminently successful and interesting design. It is entirely harmonious; it is not four designs heaped one on the other, but a single design divided by four lines; the distinction is very great, and the success of the building depends on the way in which this has been done. London contains many other buildings, some good, some bad, with emphasised horizontal lines, but it is seldom that one discerns an element of discord. The principle of unity is well understood, and this is one of the important lessons that current English architecture can teach American architects.

Mr. Ferree adds: Interesting as many London commercial buildings are, they scarcely approach in interest the domestic buildings. These are of amazing richness and variety of design, and here the English architects appear, as a whole, at their best. Of the many English architects engaged in actual practice none has produced more notable domestic buildings than Mr. Norman Shaw. That such a man should have his imitators is without question, and quite as natural is it that his copiers should, most of them, entirely fail in approaching him in the quality and beauty of his designs. The houses of Mr. Shaw are notable for the obtaining of architectural effects with the simplest materials. Ornament is the least important servant he calls to his assistance, and not unfrequently he dispenses with it altogether. His thorough mastery of design, and his keen artistic feeling enable him to produce extraordinarily interesting results of the very highest type of fine domestic building, where a less sensitively artistic man would have only failure and dissatisfaction. The newer parts of London contain many interesting groups of houses. Mr. Ernest George has impressed his personality upon one notable district, and has contributed to the adornment of many others, while other architects, in their own special way, have added their quota to the interesting new dwellings of London. Mr. Ernest George's work is wholly distinct from that of Mr. Shaw, depending as it does more upon detail and a general richness of design for its effect. If there is sometimes a greater variation of surfaces than seems always necessary, if there is an enrichment of parts and a wealth of ornament, it is at least satisfactory to feel that it is always good and very often intensely and charmingly picturesque. If the traveller in London will compare the older parts of the city with the newer, he will not long remain in doubt as to the value of the work English architects are now doing. Take, for example, the streets in the neighbourhood of Russell-square, or even the older streets in the neighbourhood of Hyde Park, and compare them with the groups of houses in Harrington-gardens, in Collingham-gardens, with Mr. Shaw's houses in Queen's-gate or on the Chelsea Embankment with the newly-built section in and around Cadogan-square, with Kensington Court-gardens, or with the artist homes in Melbury-road, and he will realise, as it is otherwise impossible to realise, just what the English architects of the present day are doing for their Metropolis. The success achieved by the leaders in the new movement has provoked a host of copiers. It is this inferior work that predominates in the new localities, or, rather, which surrounds the kernel of good buildings which marks the beginnings of many of the new districts. Whether in time to come the progress of the inferior architecture and its indefinite multiplication will cause a revulsion towards a new series of models the author is not prepared to say.

In conclusion, Mr. Ferree devotes some space to the consideration of modern London churches. Mr. Pearson clearly takes the lead in this work, though the churches of Street, of Bodley, of the younger Gilbert Scott, and of Sedding should not be overlooked. "The churches erected by this quintette of architects are, taken as a whole, real churches, characterised by a true churchly feeling, a feeling that, in many instances, permeates the whole design and gives it a life of its own quite apart from the form used. Mr. Pearson has been especially happy in giving this effect to his churches, and while his exteriors are not always as expressive nor as inspiring as his interiors, it is impossible not to feel their originality and true churchly nature. Most of these new churches are in brick, stone sometimes not even appearing in the detail, save in the window tracery. Yet though brick is the most difficult material with which to obtain monumental effect, there is no poverty in the design, either external or internal. The lesson these churches teach is unmistakable. The architect is master of his work. Mr. Pearson, for example, never copies Mediæval forms, never reproduces Mediæval churches, but builds a modern 19th-century church with the materials handed down from the Middle Ages. It is not the least remarkable feature in current English work that an architect in active, busy practice can produce buildings of such a character. It shows that English architecture—yes, English Mediæval architecture—contains elements of vitality with which as yet we on this side of the Atlantic are scarcely acquainted."

COUNTY LUNATIC ASYLUMS.—XXIV.

By George H. Bibby, F.R.I.B.A.

SANITARY BUILDINGS.

In no part of an asylum is the evil of overcrowding (occasioned by the constantly-increasing numbers of the insane without corresponding extensions of accommodation) more likely to be detrimental to the health and well-being of the patients than in the buildings for sanitary purposes, whether these be attached to the main buildings, as described in my last paper, or in connection with the workshops and airing-courts for patients.

The necessity for providing ample means of inspection of the occupants of these sanitary buildings would be better understood by an architect, and he would be better able to appreciate the great difficulties connected with the subject, if he would (instead of merely passing through the pleasant and tastefully-decorated day-rooms occupied by quiet and orderly patients, the great majority of whom are frequently industriously employed, or amusing themselves, and sometimes interesting to converse with), inspect the wards occupied by the disorderly and refractory patients, say, on a *rainy day*, when eighty or ninety patients are confined to their rooms. He would then have an opportunity of witnessing the evil effects of crowding a number of excitable patients into rooms of insufficient area (frequently without proper outlook or surroundings), and would sometimes find such a scene of anger, turmoil, foul language, and coarse laughter as would sadden and horrify him; that such scenes yet occur may be seen by reference to the "Forty-second Report of the Inspectors of Lunatics for Ireland" (p. 94), where the Governors of the Belfast Asylum had their attention directed to the fact that their patients were "*crowded promiscuously together without order or regularity into a human mass of mental degradation and confusion*," and where they (the Governors) are reminded that the accommodation must be greatly increased, both in the wards and administrative buildings.

If to all the above-named disadvantages there be added the occasional occurrence of outbreaks of diarrhœa and sickness amongst the patients, the asylum architect cannot fail to perceive that the plans to be prepared for asylum sanitary annexes have to be considered subject to many complications and under, perhaps, conflicting conditions.

Perhaps nowhere do the sanitary arrangements appear to be more defective than in some of the Irish asylums, and in the wards for idiots and lunatics in some of the Irish workhouses (as appears by the report I have above referred to) matters appear to be worse than in any part of England or Scotland; but in many cases the governors of the district asylums in Ireland are said to be fully aware of the necessity of meeting the requirements of their respective districts, and in a large number of instances have already sanctioned the necessary expenditure for alterations and additions; so we may hope, within a reasonable time, that the accommodation will be rendered in some degree better adapted to meet the immediate wants of the insane poor.

The working patients in asylums may be divided into two classes: those employed upon field or garden works and occupations requiring physical strength in workrooms, &c., and those only capable of employment upon tailoring or light occupations.

Separate water-closet or earth-closet, urinal, and lavatory accommodation is advisable for these classes, and should be in proximity to the workshops and workyards, and so arranged that one class shall not be brought into contact with the other—i.e., the stronger with the weaker.

The water-closets and urinals to be provided in connection with the workshop buildings should never be placed in direct communication with any of the apartments, whether occupied by the workers or used for storage purposes; but some similar arrangement to that provided for the wards should be adopted, with similar means of inspection of the patients, and separate closets for the use of attendants and work-master (provided with lock and key), and if slightly detached from the workshops, covered ways should be provided. Some of the patients have not sufficient intelligence either to avoid a shower of rain or to perceive the necessity of a change of clothing after getting wet through, and an attendant might not notice, until too late, the condition of his charges; hence the necessity of a covering roof from the workrooms to the closets.

The water-closets for the sick and infirm or bed-ridden patients, and in the asylum fever wards, may usually correspond with those provided in the best modern hospitals, but with due attention to the precautions already referred to with regard to cases which may be suicidal, and the means of observation of the patients. The annexes in which they should be placed may also contain a space for a movable bath, and the ordinary adjuncts and utensils required for *hospital* use.

Near to the entrances to the various wards, from the airing-courts and grounds, an earth or water-closet is sometimes conveniently provided, the door should open outwards, as for all other closets intended for patients' use, and be without bolt or other fastenings, that the attendants be not excluded should it be necessary to exercise restraint or control of a patient. In suicidal cases, I believe, it is usual to issue to the attendant, when taking charge of a dangerous case, a form upon a slip of parchment, which the attendant is required to sign, and which, after giving details of the patient's condition, states:—"*I am not to leave him for any purpose without giving him in charge to another attendant, to whom I am, at the same time, to give this caution I am to accompany him to the closet, to search his bed-clothes before he goes to bed, to remove and search his clothes, and see him dress in the morning*," &c. Bearing this precaution in recollection, it will not be difficult for the asylum architect to realise that the arrangement and position of sanitary buildings for the use of patients require more than ordinary consideration.

The forms of water-closet pans most in favour in asylums are the wash-out and wash-down, both of which have the manifest advantage of being without valves or moving parts, and therefore have no mechanism liable to become disarranged or broken by the patients.

Instead of the chain usually provided for the purpose of setting the water-waste preventer, an iron rod or wire should be provided within a casing of wood or metal, as the chain might be used for suicidal purposes.

The urinals should not have any pans or receptacles above the level of the floor. There should be an automatic flush every few minutes, and there should be laid on a supply pipe from the nearest hot-water cistern, so that the urinals may be easily scalded out occasionally.

As urinal pans should not be adopted, and as a gutter in the floor is all that is necessary, it would be advisable to provide a gutter receptacle for the urinal-tablet disinfectors, which are now in general use; or otherwise, these would be liable to removal by the patients, many of whom meddle with or steal the most trifling objects. These "Sanitas" urinal tablets are very useful, especially during hot and close weather, and they may also be used in the cisterns which supply the water-closets, and for this purpose should be placed in specially designed cases so that the pipes may not be clogged with the tablets.

The sanitary annexe may also contain a cupboard or locker for the storage of disinfectants, &c., so that the nurses and attendants may not have to leave their charges to go to the general stores for what they may require. Disinfectants are largely employed in asylums, for their use in water-closets, urinals, ward sculleries, &c., tends to keep the atmosphere pure. The objection which some people have to the strong odour which most of the disinfectants possess, prevents them from using these valuable agents, so useful where large numbers of dirty insane patients are accumulated.

The bath for patients of dirty habits, which may sometimes be advantageously placed within the sanitary annex, should have some disinfecting arrangement. A bath is made with an internal flushing rim which is supplied with water that has passed through a disinfecting box. This apparatus is manufactured by Messrs. Adams and Co., of Westminster, and is an antiseptic apparatus for hospital use, which also appears to be very suitable for the dirtier classes of asylum patients.

With regard to the sanitary building generally, it must be remembered that fevers and other fatal diseases are generated more or less by atmospheric impurities, and that the more patients of dirty habits are crowded together, and have the light and air shut out from them through defectively planned asylums, the more do they become liable to these and other maladies. Effectually comprehensive measures are yet necessary in many districts. There can be no doubt that the habitual respiration of the air of ill-ventilated and gloomy alleys in large towns is a powerful means of augmenting the hereditary disposition to scrofula, and even of inducing such a disposition *de novo*. Physiologists show that those distressing maladies, *goître* and *crétinism*, are due to noxious local influences, chiefly to a stagnant atmosphere; and, as is well known, the complaints are most prevalent in deep valleys, in which the circulation of air is very intermittent or languid, and the fact remains that improved structural arrangements neutralise, if they do not destroy, the causes of mischief, and contribute to the permanence of health. Even without seeking for special cases, we may rest assured that impure air, among other ill effects, causes deafness, and in other ways injures the individual, leaving him a victim to various ills. Architects and builders of former times appear to have been most astonishingly ignorant of the physiological fact that man carries an arrangement of lungs beneath his ribs fitted only to inspire a pure atmosphere. In asylums especially, attempts for education and improvement of patients, if concurrently *without sanitation*, must be inefficient and unsatisfactory, for it is not easy to elevate minds familiarised with filth and squalor, and there is an essential dependence between physical and moral purity.

The instructions and suggestions issued by the Commissioners in Lunacy to architects and others concerned with asylum works do not particularise the kinds of apparatus and fittings to be provided in the sanitary buildings, and indeed give but little information beyond pointing out the necessity for efficient ventilation, and the desirability of using tiles, glazed bricks, or cement for the floors and walls of the water-closets and lavatories, &c.

The selection of a suitable apparatus is a matter of some difficulty. There are, I believe, about 25 well-known firms in this country who manufacture sanitary ware and apparatus of various descriptions, and of these there are several who make wash-out, wash-down, and trough closets that are suitable for asylum patients. For instance, large numbers of the "Sydney Syphonic Cistern and English-made Closets," manufactured by John Jones, of Chelsea, have been used in lunatic asylums. Amongst other firms who have supplied suitable water-closets and apparatus are Messrs. W. H. Bodin and Co, of Wednesbury; Messrs. T. and C. Clark and Co., of Wolverhampton; Mr. T. W. Twyford, of Hanley, Staffordshire; Messrs. A. Emanuel and Sons, Limited, of London; Messrs. Joseph Cliff and Sons; Messrs. J. Taylor and Sons, Limited, of London; The Water Carriage Engineering Co., Limited, of Sheffield; Messrs. Charles Winn and Co., of Birmingham; and Messrs. Adams and Co., of Westminster, and from these may be selected fittings to meet the varying preferences of committees, medical superintendents, and others connected with asylums; but some authorities are of opinion that a perfectly suitable apparatus has not yet been contrived satisfactorily meeting all the requirements of the case as regards the most demented and dirtier classes of patients.

Whatever mechanism be used for the flushing of the closets, it is necessary that it shall be suitable for the unintelligent and violent classes of patients; it should not depend for its action upon a varying strength or length of pull, and if a pull be used at all it should act instantly. An objection has, however, been raised to automatic flushing arrangements set in motion by the movement of a door or seat, or foot pressure, not only upon the ground that these are liable to get out of order, but also for the reason that the patients should be encouraged in the smallest matters to use their reason so far as their mental condition will permit. But there are certain of the worst class of patients who are confined in single rooms; these are the most disgusting, to the attendants, of all, and are left alone during the night to do as they will, and are taken out in the morning in a condition of filth that is beyond all powers of description. In public asylums for boroughs and counties, and in the lunatics wards of workhouses such cases and arrangements may be expected; but in private asylums, where a larger proportion of attendants and nurses are provided, the patients would probably receive more attention.

During the past twenty-five years, or more, I have been engaged upon the plans of as many lunatic asylums, and from the first have noticed that the architect must often find that the medical superintendent of the asylum frequently influences the schemes for the structures to a considerable extent, and, indeed, somewhat encroaches upon the special province of the architect.

A medical man, connected with an asylum, recently wrote as follows (entirely ignoring architects and other scientific men):—"It is curious that there are only three professions. All over the civilised world, parsons, lawyers, and doctors are regarded as members of the three professions, and the rest of the world is placed in a heterogeneous mass and called unprofessional. However, when the word is used loosely, we sometimes speak of actors, and so forth, being professionals; but this only shows to what base uses words may come, and everyone still recognises the three professions, the earthly trinity of intellect."

If these words, and the spirit in which they are evidently written are to remain unchallenged, architects may incur the disadvantages to be expected by those who permit their occupation to be interfered with or discredited by untrained persons engaged in other pursuits. It is, therefore, as necessary that architects should possess at least an equally intelligent knowledge, for instance, of asylum doctors and patients and their requirements, that asylum doctors have (or may consider they have) of the duties of architects and the building requirements of sanitary buildings.

(*To be continued.*)

TRANSPORT OF BRIDGE GIRDERS BUILT UP TO THEIR SITE.

IT has always been a recognised maxim in all workshops, and by all classes of artisans, craftsmen, and workmen, from the principal downwards, that the more of the work belonging to any particular job that can be done in the shop the better. Not only is it done in a superior and more satisfactory manner than in the field, or outside the shops, but it is done a great deal cheaper and a great deal quicker. There is no description of metallic construction to which this remark applies more forcibly than to bridge and roof girders and trusses, the majority of which are frequently erected far from where they are partially built up, and often in very exposed situations. The greater the number of pieces in any particular example, the greater will be the number of joints, and the larger the number of bolts and rivets required to form the connections. Riveting and bolting up separate pieces of iron and steelwork outside in inclement weather in winter-time, in even our comparatively mild climate, is unavoidably a troublesome, a tedious, and unpleasant undertaking. The difference in the style of the work, between that executed in the shops and in the field, is sometimes so marked that an experienced professional eye has little or no difficulty in detecting generally what portion has been put together in one locality, and what has been built up in the other. If these disadvantages are so marked at home, it is not difficult to imagine how gravely they become accentuated in foreign and semi-savage countries. It is no wonder, therefore, that engineers and architects are desirous of despatching their girders and trusses for bridges and roofs, to be erected abroad, in as few component parts as possible. Cast-iron girders all in one piece, when of small span, unquestionably offer better facilities for erection in distant and uncivilised lands than their wrought-iron rivals. Against this advantage must be set the greater liability of the cast-iron girders to injury, and even to actual fracture, during transit. It is essential that a cast-iron girder should arrive at its destination in a condition as sound and as perfect as when it left the premises of the manufacturer. This condition is frequently a somewhat hazardous one to accomplish, when we take into account the chances of injury which may occur to it during its transport. Again, the difficulty attending the safe carriage of castings increases notably with their size and weight, which in their turn depend upon, *cæteris paribus*, the span of the bridge or roof.

So far as the transport of large and heavy girders, trusses, and frames, whether of cast or wrought iron, is regarded solely as between port and port, there is little or nothing to be feared, unless in very exceptionally stormy weather. The ships which carry merchandise and goods of every description to the remotest parts of the world are now sufficiently large to house examples of iron and steelwork endowed with dimensions and proportions which some years ago would have been deemed excessive. It is when the outgoing vessel arrives at the end of the voyage that the risk and trouble begin. In the majority of instances there is not the shadow of a port or harbour of any description, or the slightest sign of wharf, jetty, or landing-place to disembark heavy and valuable machinery and other weighty and costly commodities. As a highly favourable case, let us suppose that there is fair landing accommodation, and that it is possible, either by the use of the shore cranes or the steam winches belonging to the vessel, to hoist out of the hold and safely deposit on *terra firma* the heavy ironwork sent out. If it were required for the port itself or the immediate vicinity, the job might be considered pretty well at an end; but in nine cases out of ten it is wanted many miles up in the interior of the country, especially when it is intended for mining purposes. We can call to mind an incident connected with the transport of mining machinery in the Malayan Archipelago. Some heavy and expensive quartz-crushing gearing was in the act of being hoisted into a native boat, when by some neglect or other the hoisting tackle slipped, the hoisting chain ran out, and the quartz-crushing machinery stove in the bottom of the boat, and went clean through it, into the muddy bed of the river, where, there is not the slightest doubt, it is now deeply buried. A delay of nearly a year in the ultimate prosecution of the mining enterprise, which, contrary to what so often occurs, was a very successful venture, was the result of this unfortunate *contretemps*.

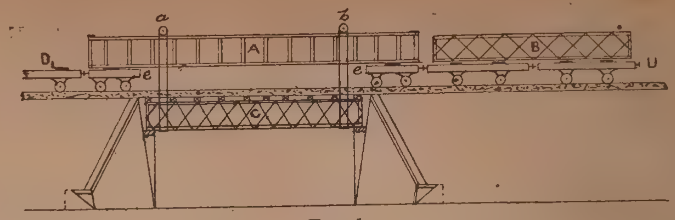


Fig. 1.

Where circumstances will permit, whether at home or abroad, it is, from what has already been stated, a decided advantage to rivet up a bridge girder complete and transport it bodily, all standing, to its future resting-place. There are several methods of accomplishing this desirable operation, and one which is novel and possesses particular merit is represented in Figs. 1 and 2. It will be seen, as we proceed with the description, that the principle is of general application, although, for the sake of a clear illustration, the particular example shown in the figures will be adhered to. A pair of plate girders, A, are firmly secured to a pair of short waggons or trollies, *e e*, one at each end, which gives to the whole arrangement a strong resemblance to one of the large bogie swing saloon carriages on our large railways. The space between them is necessarily open, save for a few cross-planks here and there, which can be removed and replaced, as permitted by the exigencies of the hoisting and lowering appliances. Coupled to the shorter trollies are two ordinary trucks, D and D_1. Three or more may be used, according to the length of the girder B, although there is a practical limit to that dimension. In the example before us it is proposed to remove the old girder C, Fig. 1, and replace it by a new one, B, Fig. 1, which has been hauled to the site upon the platforms of the waggons D. The pulleys *a b*, carrying the chains and other tackle, are free to run along the upper boom of the plate girders, which, in the position represented in Fig. 1, are brought right over the old girder C, and the tackling chains made fast underneath it. The sleepers and ballast can then be removed, and the preparations concluded for hoisting it up out of the way. When slung up between the pair of lifting girders, a part of it can, by means of the running pulleys, be slewed on to the waggons D_1, and finally adjusted and secured. By reversing the direction of the running tackle, the new girder B can be hauled in between the girder A, and gradually lowered down upon the bed-plates as shown in Fig. 2. Should it happen that the old or new girder exceeded in depth the lifting girders A, the difficulty of hoisting the one and lowering the other can be readily obviated by placing a rail on the upper boom of the former. The new girder B, having been installed in the seat of the old one C, the cross-beams and planking can be relaid, and the road metal or permanent way renewed, accordingly as the bridge is a road or a railway structure.

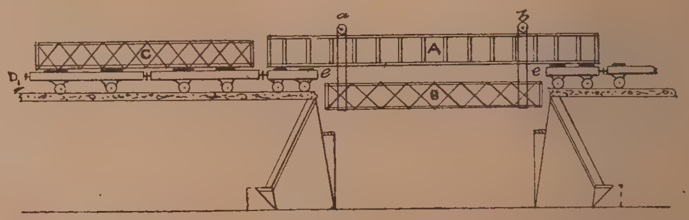


Fig. 2.

The span and weight of the new girder will evidently determine the limit to which this portable method of depositing it *in situ* can be extended. Owing to the ever-increasing loads to which both railway and road bridges are, and will in future be, subjected, it may be concluded that the new girder will always exceed in weight its disused predecessor. When the girder B in Fig. 2 is being lowered into its place, one-half of its weight is carried upon each of the small trollies *e e*, and if R and R_1 represent the two reactions, we have the well-known equation—

$$R = R_1.$$

But in hauling the girder B into the position to admit of its being lowered away, the whole weight may for a short period of time rest upon only one of the trollies *e e*, so that, in this case, if W be the weight of the girder B, the reaction is—

$$R = W.$$

At the present time when a large number of railways, both at home and abroad, are replacing their old bridges by new ones, it is clear that by giving a maximum span to the lifting girders, A, the arrangement would be available for all structures of a less lineal dimension. Considerable use of the method illustrated in Figs. 1 and 2 has been made on some of the Austrian lines of railway, but the maximum span to which it has been applied has not exceeded 40ft. There would be no difficulty in extending in this country the span to 60ft., which is a very usual one for both railway and road bridges, and, moreover, has been largely employed in India. Indeed, in the early days of railways in our empire of Hindostan, when large rivers had to be crossed by bridges consisting of numerous spans, the problem of the most economical span to adopt, so as to determine likewise the most economical number of piers, was very seriously and carefully considered. The result was that a span of 60ft. was adopted, which was found, local circumstances and other conditions permitting, to afford the most satisfactory solution of the whole question.

◆

The new schools, Tonyrefail, are being warmed and ventilated throughout by means of Shorland's patent Manchester grates, the same being supplied by Messrs. E. H. Shorland and Brother, of Manchester.

Mr. James Saunders Randell, of Bath, has been elected a director of the Bath Stone Firms, Limited, in the place of the late Mr. James Stone. Mr. Randell was the senior partner of Randell and Saunders, the well-known stone firm, of Corsham. He has a practical knowledge of the trade and a wide experience which cannot but be of much service to the company.

Messrs. Maxwell and Tuke, architects, surveyors, &c., of 41, Corporation-street, Manchester, have now prepared plans, and are proceeding with the erection of an extensive cattle-market, abattoirs, and agricultural hall, for Mr. Thomas Johnson, Prescott-street, Wigan.

Messrs. Anniston, contractors, of Alabama, U.S.A., have secured the contract for the supply of iron water pipes, to be shipped to Tokio, *viâ* Liverpool. The English, German, and Belgian contractors were underbid.

CONTENTS.

Another Competitions Committee 177
The Institute Schedule of Conditions 178
General Building Lines 179
The Architectural Association Excursion, 1895.—I. ... 180
The International Health Exhibition and Congress, Paris.—III. 182
Classic Details and their Application 184
London Architecture from an American Architect's View-Point 185
County Lunatic Asylums.—XXIV. 186
Transport of Bridge Girders Built up to Their Site ... 188
The Building News Directory ... ... IX.
Our Illustrations 189
Obituary 208
Building Intelligence 208
Competitions 210
Correspondence 210
Intercommunication 210
Legal 211
Legal Intelligence 211
Water Supply and Sanitary Matters 213
Statues, Memorials, &c. 213
Our Office Table 213
Trade News 214
Tenders 215

ILLUSTRATIONS.

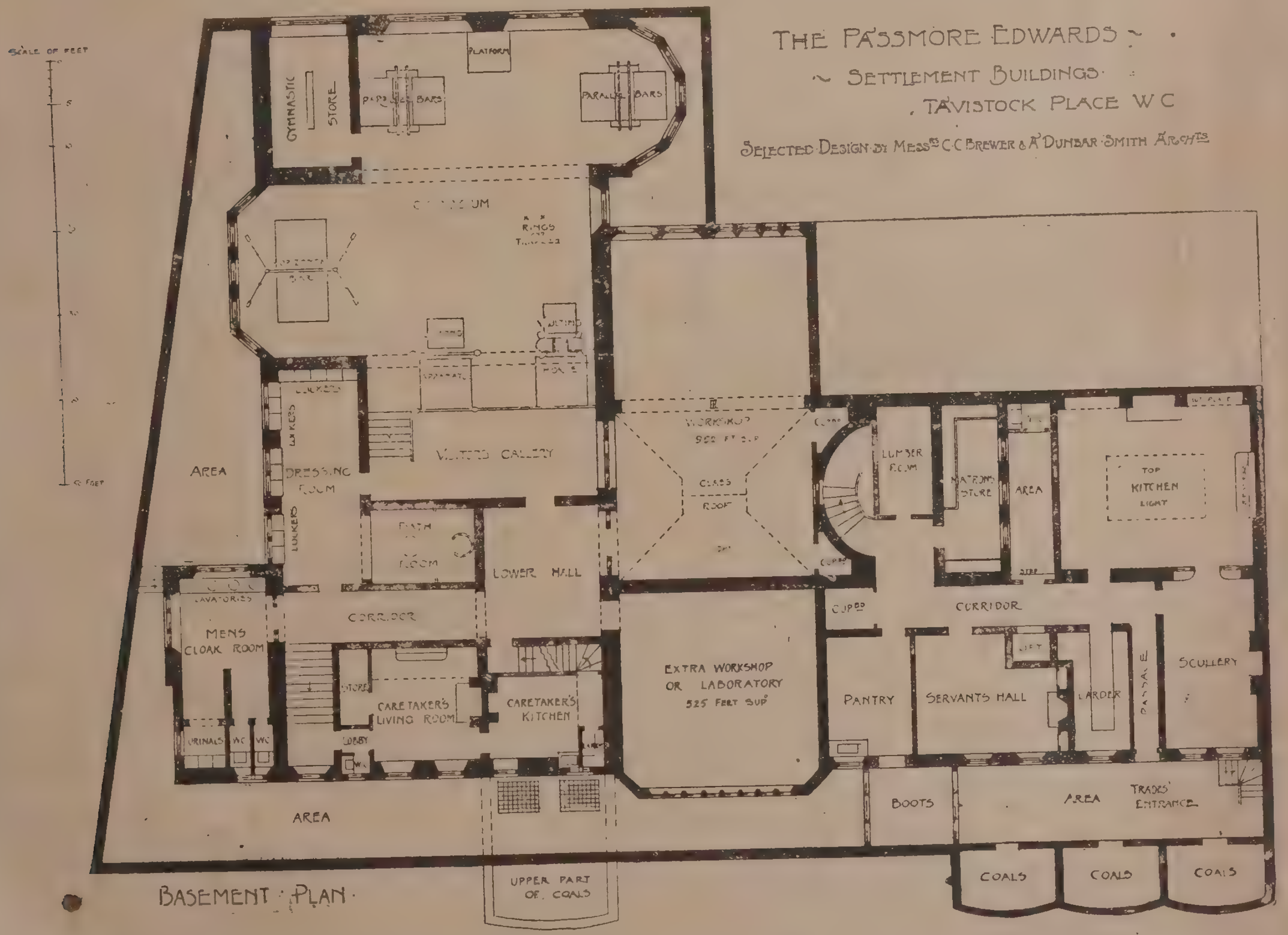
THE PASSMORE EDWARDS SETTLEMENT.—STANWAY HALL: ARCHITECTURAL ASSOCIATION EXCURSION SKETCHES IN GLOUCESTERSHIRE.—HOME AT CHALFONT (MR. EDWARDS'S) —GLOUCESTER CATHEDRAL.

Our Illustrations.

◆

THE PASSMORE EDWARDS SETTLEMENT BUILDINGS, TAVISTOCK PLACE.

We illustrate the selected design chosen by Mr. R. Norman Shaw, R.A. The rooms are in all cases of the maximum size mentioned and arranged in accordance with the competition instructions. The hall has been placed in Little Coram-street, and the residence in Tavistock-place, as being more appropriate for living-rooms, owing to the greater width of the street, with the added advantage that the rooms at the back look out upon the gardens. The hall and residence have been kept quite distinct, with separate entrances, but connected by a corridor. The hall, seating 456 persons, has been placed on the first floor, the staircases constructed in accordance with the London County Council regulations, and provided with ample retiring-rooms. Care has been taken to make the library as attractive a room as possible; it overlooks the gardens on two sides, and is planned with a large bay-window. The reading-room also overlooks the gardens, and is placed in a quiet position. The billiard-room is placed between the hall and residence. The four class-rooms are grouped together. A large gymnasium has been placed in the basement, with a gallery for spectators at one end. The large workshop is top-lighted, and an extra workshop or laboratory has been provided. The caretaker's rooms open off the stairs to the basement close to the front door. The residence practically consists of two separate blocks, united by the staircase and bath-room accommodation, which are thus kept away from the rooms, and are well ventilated, while the unsightliness of external soil-pipes is avoided. All the sitting-rooms have an aspect overlooking the gardens, except the dining and billiard rooms, which have a north light. The entrance is placed near the centre of the Tavistock-place front. The drawing-room is opposite the entrance, and is placed on the garden level, with a lobby leading out to the garden. A detail drawing is shown of this room. The dining-room, with servery, is on the first floor, the warden's residence is placed over the drawing-room, and a private way is provided for him into the hall. The common room is placed among the residents' rooms, which occupy the two upper floors. Fixed lavatories have not been shown in the residents' rooms; they would add enormously to the cost and seem scarcely necessary, as bath-rooms and lavatories are provided on each floor. Store-cupboards are provided over the lobbies. The matron's room opens from the entrance vestibule, and commands the tradesmen's entrance, and the servants' bedrooms are so arranged that the only access to them is past both the matron's rooms. The question of cost has been kept constantly in view, and the simplest possible treatment has been adopted both internally and externally, as will be seen by referring to the detail drawings, although it is thought that the appearance of the building will not suffer on that account. After going carefully into the question with a quantity surveyor, it is believed that the cost of the building will only slightly exceed £12,000. Messrs. C. C. Brewer and A. Dunbar Smith are the architects.



A.A. EXCURSION TO GLOUCESTERSHIRE.

A descriptive account of the places to be visited during this excursion will be found, together with further illustrations and a map of the district, on p. 180, *ante*.

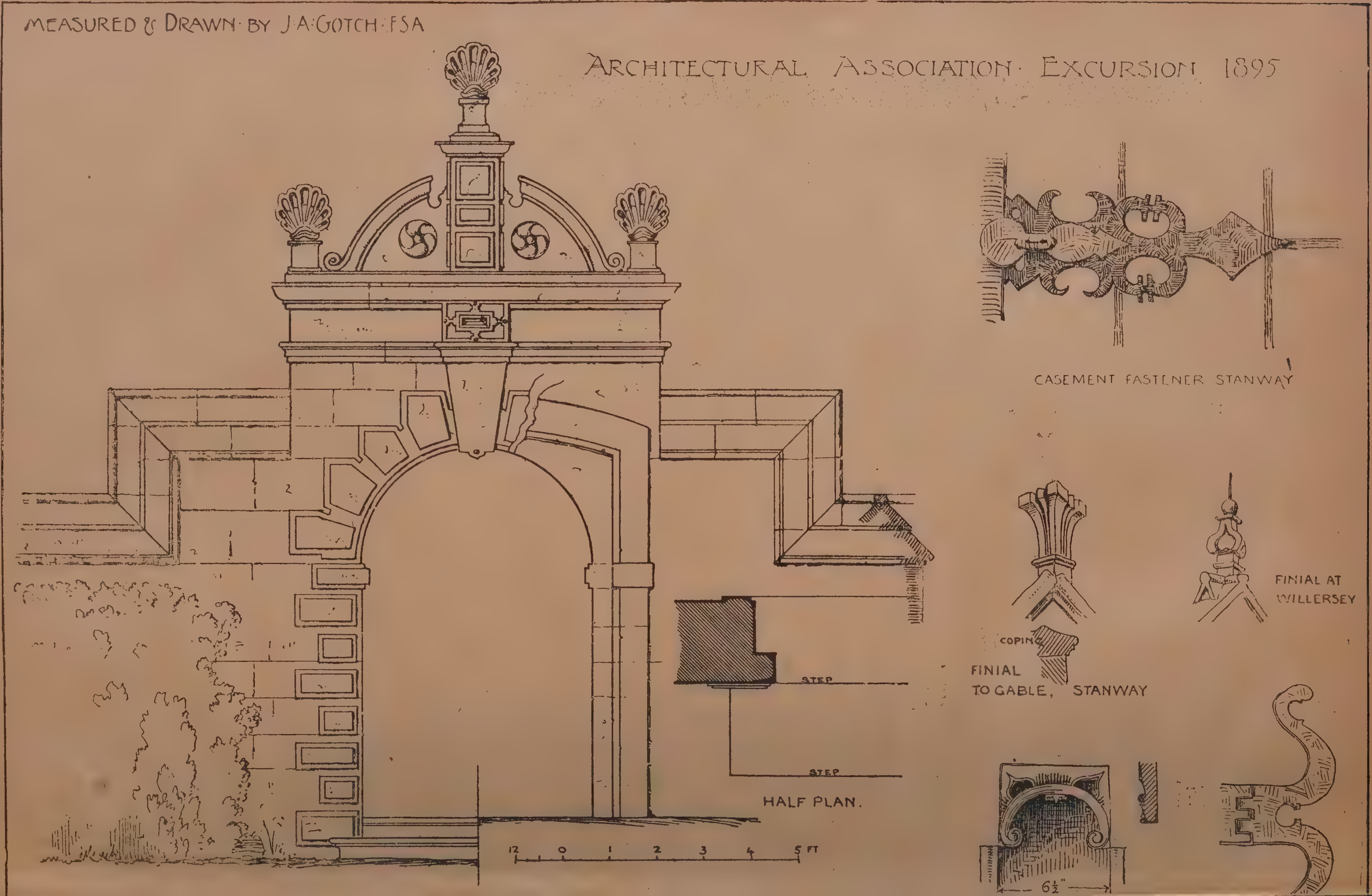
HOME FOR EPILEPTICS, CHALFONT ST. PETER'S, BUCKS.

This home for men has been erected at Chalfont St. Peter's, aided materially by Mr. J. Passmore Edwards, who laid the foundation-stone November 14th, 1894. It was to have been opened by the Duke of Devonshire on Wednesday last, the 7th inst.; but owing to the fact that almost at the last moment the Duke was summoned to Osborne by the Queen, the opening ceremony of the building has unavoidably been postponed till the autumn. This building is the first permanent home built by the Society for the Employment of Epileptics on their estate in Buckinghamshire. The accommodation is provided for 18 colonists, in addition to an isolated room with two beds. The finishing of the building, both inside and out, is of the plainest description, it having been necessary to exercise the utmost economy in the matter of expenditure. The work has been carried out in a most efficient manner by Mr. Darlington, of Amersham, under the supervision of the architects, Messrs. Young and Hall.

◆

The foundation-stone of the esplanade extension at Lynton will be formally laid on Thursday next, the 15th inst.

Mr. W. B. Richmond, R.A., who has been travelling in Italy, has lost this week his fourth son, John Sebastian, who died in an hotel at Paris on Monday, aged 19 years.



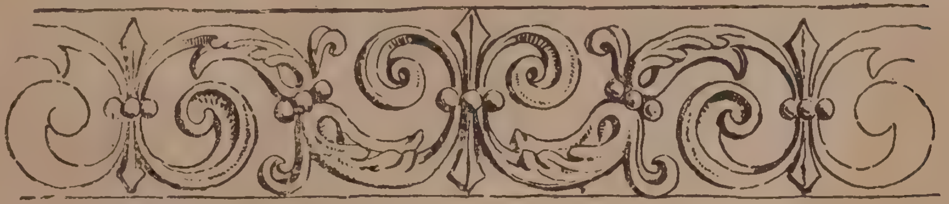
MEASURED & DRAWN· BY J·A·GOTCH·FSA

ARCHITECTURAL ASSOCIATION· EXCURSION 1895

STANWAY GATEWAY FROM COURT TO CHURCH-YARD

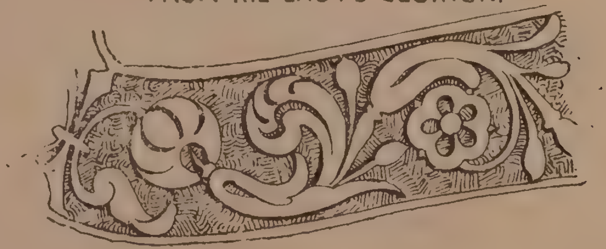
FROM A PEW IN STANTON CHURCH

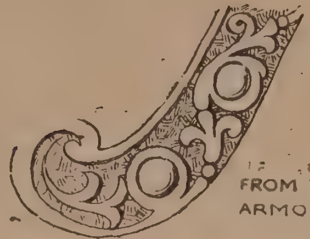
DETAILS FROM STANWAY AND NEIGHBOURHOOD



FROM THE KNIGHT'S CUSHION.

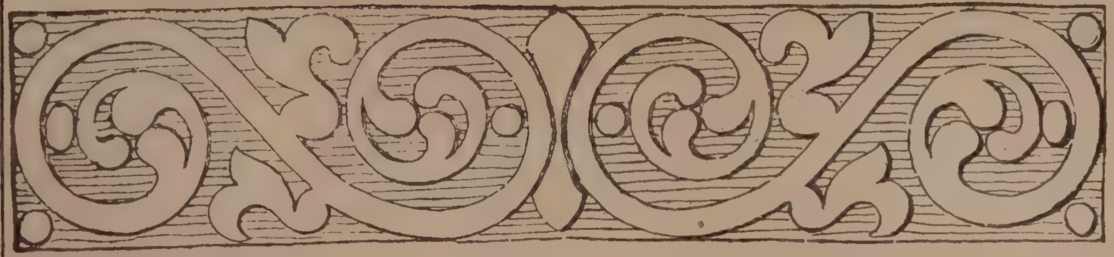
FROM THE LADY'S CUSHION.



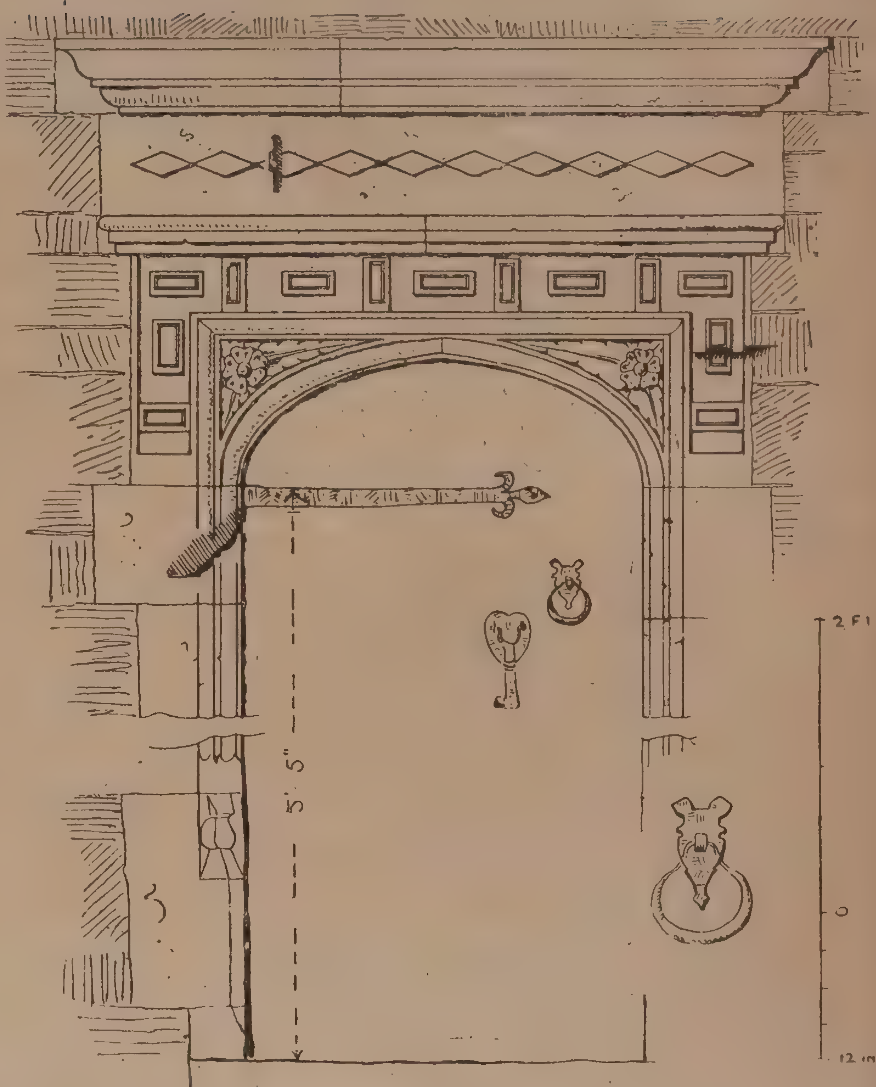


FROM THE ARMOUR.

FROM THE FRIEZE.



DETAILS FROM THE SANDYS TOMB WICKHAMFORD CHURCH



DOORWAY TO HOUSE AT STANTON

FROM GOTCH'S "ARCHITECTURE OF THE RENAISSANCE IN ENGLAND"

OBITUARY.

By the death of Mr. Samuel Loxton, which took place at his residence at Cannock on Monday morning, after a week's suffering from rheumatic fever, one of the oldest and best-known architects and surveyors in South Staffordshire is taken away. For many years he and his brother practised at Wednesbury—their birthplace; but some twenty-five years ago, when the partnership was dissolved, he removed to Cannock, and carried on business there and at Walsall. Among the public edifices in that immediate district which were built from his designs are the Town Hall, Wednesbury; Wesley Chapel, Wednesbury; the Temperance Hall, Walsall; the Trinity Wesleyan Chapel, Walsall; the School Board Offices, Walsall; and some of the schools belonging to that board, in addition to many other important buildings farther afield. He was also in great request as a witness in the law-courts on questions relating to building and surveying.

The sudden death is announced of Mr. Arthur Ebden Johnson, F.R.I.B.A., of Market-buildings, Melbourne, the president of the Royal Victorian Institute of Architects. Mr. Johnson read a paper at a recent meeting of his institute held at Melbourne, and appeared in excellent spirits. On the following morning, when proceeding to his business from his residence in Windsor, and about to enter a tram-car in Chapel-street, Prahran, he fell down dead. Mr. Johnson won the Soane Medallion of the R.I.B.A. as far back as 1843, and was very many years connected with the Public Works Department of Victoria, as architect. On retiring from the Colonial service he entered into partnership with Mr. A. L. Smith, forming the well-known firm of architects of Smith and Johnson. Among the numerous public buildings in Melbourne in the construction of which he was professionally interested, may be mentioned the Law Courts, Union Bank, Colonial Mutual Insurance Buildings, and Bank of Victoria. Eleven years ago he joined the R.I.B.A. as a Fellow. Mr. A. E. Johnson stood at the head of his profession as an architect, and as a citizen was highly esteemed for his courteous manner and kindness of thought and action.

Mr. Edward Swansborough, architect, died at his residence, 68, Richmond-road, Barnsbury, N., on Monday last, aged 72 years. He was formerly in practice at 6, Great James-street, Bedford-row, and was at one time an Associate of the Royal Institute of British Architects, but had retired from the profession.

M. Ancelot, the well-known architect, died in Paris on Monday in his 66th year. He designed the new frontage of Pau Castle, the theatre at Compiègne, and the new buildings of the Arts et Metiers at Paris. Since 1873 he had been a professor at the school of fine arts.

◆

Mr. W. O. Dalgleish, of Errol Park, Perthshire, has just presented to the Dundee Museum a fine specimen of an ancient Caledonian canoe, recently discovered in the River Tay, opposite Errol. Formed of a single oak-tree, and probably hollowed out by means of fire, the canoe measures 29ft. in length and 4ft. wide at the stern; it narrows to about 2ft. wide at the bow. The stern only has been a separate piece, and has been inserted into a groove 3½in. wide. One side of the canoe is almost complete, while the other has sustained considerable damage. At the bow there is a hollow, as if intended for the attachment of a figure-head.

The members of the Kent Archæological Society held their 38th annual meeting on Tuesday and Wednesday in last week, the headquarters being Cranbrook. In that village the parish church was visited, and a paper on its history read by the Rev. J. Cave-Browne. Glastonbury House and Goudhurst Church were also visited on the first day, the proceedings closing with a dinner at the George Hotel, Cranbrook, and an evening meeting. On the second day, Beneden and Hawkhurst Churches were seen, under the guidance of Mr. J. Oldrid Scott, and also Bodiam Castle, where Mr. W. H. St. John Hope read a paper.

It is the intention of Messrs. T. B. and W. Cockayne, of Sheffield, to construct an arcade from Angel-street towards Meeting House-lane in that town, and the work will be proceeded with at once, under the superintendence of Messrs. Flockton and Gibbs, architects. The scheme is to convert Watson-walk into an arcade 12ft. wide and 43 yards long, commencing from Angel-street, at which end it will be widened, and shops will be constructed on either side of the arcade.

Building Intelligence.

Bootle.—A start has been made with the erection of the new Presbyterian Church of England, Peel-road, Bootle. The church is designed to accommodate 600 worshippers on the ground floor, having no galleries, and will be built of grey and red brick artistically treated. It will have a large single-span roof, divided into bays with transepts. There will also be vestries and rooms for Sunday-school purposes. An organ gallery will be provided in the west transept. The present church will be used as a school with a covered connection with the new church. The work is in the hands of Messrs. Raffle and Campbell, of Liverpool, contractors, and will be completed in about twelve months. Messrs. Woolfall and Eccles, Castle-street, Liverpool, are the architects.

Ipswich.—The Eastern Counties Dairy Institute, Limited, which has been incorporated since Old Michaelmas Day, 1888, has recently made an important forward step in transferring its business from Rise Hall, Akenham, to Gippeswyk Hall, Ipswich. At the new premises a dairy has been built which was formally opened on Tuesday. Messrs. Eade and Johns, of Ipswich, are the architects, and the work of building was intrusted to Messrs. Grimwood, of Sudbury and Ipswich. The new building, the side of which abuts upon the Ancaster-road and the front on the main drive to Gippeswyk Hall, is a two-story edifice of red brick, covered with a roof of Broseley plain tiles. There are three gables in front, finished with tile-hanging above the windows, and also with framed barge-boards. The main rooms, which are paved with York stone, and have dadoes of glazed tiles, are the cheese-room, 20ft. square, lecture-room, 40ft. by 20ft., and the churning room. The sale-room has marble fittings, and is paved with tiles.

Pontefract.—The Right Rev. Lord Bishop of Beverley laid the foundation-stone of the new national schools at Pontefract on Friday last. The new building is to be erected from the plans of Mr. J. H. Greaves, architect, of Leeds and Pontefract, which were accepted in competition, and will be a fac-simile of a school recently erected at Featherstone (three miles distant) from the designs of the same architect, and will give accommodation for 350 girls. The large school-room is divided into three classrooms by means of glazed movable partitions, each room having separate exits to the cloakrooms. There are also to be two classrooms, each for 60, and adjoining the central room and end classrooms. Provision is made for adequate heating of rooms and lavatories by means of slow-combustion open fires. The new school will occupy a position adjoining the boys' and infants' schools, and will cost, exclusive of site, £1,500.

Wandsworth.—The first section of the new Church of St. Thomas of Canterbury at West Hill, Wandsworth, was opened on Sunday week. The church as designed, and when completed, will consist of nave, aisles and transepts, chancel with two side chapels, sacristies, and tower with baptistery. The general dimensions of the completed church will be as follows:—Nave, 92ft. by 30ft.; chancel, 25ft. 4½in. by 30ft.; aisles, 15ft. wide; transepts, 22ft. 10in. deep (the one built) and 25ft. deep; Lady-chapel, 24ft. 7½in. by 15ft.; side chapel, 17ft. 7½in. by 11ft. 3in. The nave is 30ft. to the under-side of the tie-beams, and 42ft. to the top of barrel. The chancel will be in three bays, vaulted in wood. The aisles will have flat wooden panelled ceilings, and large windows. The baptistery under the tower is to be sunk three steps, and will be vaulted in brick with bands of stone. The total seating capacity of the church is for 700 persons. The materials are red bricks and Bath stone for the exterior. The roofs are to be of pitch pine covered with Westmoreland black slates, and the flooring of nave is in wood blocks—pitch pine under the seats, and oak in the passages.

York.—Sir G. W. Kekewich, K.C.B., Secretary to the Education Department, on Saturday formally opened two new board schools at York, which have been erected at a cost of over £30,000. The new schools have been erected in Fishergate and in Lowther-street, and both are built on the central-hall system, which is being generally adopted by the School Boards throughout the country. The Fishergate school is built on the site known as Mollett's field, and will provide accommodation for 1,250 children. It is built in the style of the Georgian period, of red common bricks, the total cost, including the site, being about £14,000, or an average of £11 4s. per scholar. The Park-grove school has been built on a site between Lowther-street and Park-grove, and will accommodate 1,486 children. The buildings are in the Georgian style of architecture, and are of plain, substantial materials. The cost of school and site has been £17,000, equivalent to £11 8s. per head. Both schools have been built from the designs and under the supervision of Mr. Brierley, of Messrs. Demaine and Brierley, architects, York. The brickwork, masonry, and joiner-work of the Fishergate school was executed by Mr. T. P. Barry, York, and of the Groves school by Messrs. Thos. Arnold and Sons, Doncaster.

CHIPS.

A large new clock has been fixed in the church of Norton-sub-Hamden, Somersetshire, which chimes the Westminster quarters and strikes the hours. It has been made generally to the designs of Lord Grimthorpe by Messrs. John Smith and Sons, Midland Clock Works, Derby, who also made the clocks of the neighbouring church-towers of Shepton Beauchamp and Kingsbury.

On Saturday morning the workshops of Messrs. S. J. Waring and Sons, Limited, cabinet-makers, situate in St. Anne-street, Liverpool, were destroyed by fire. The damage is estimated at over £20,000.

At the Liverpool Assizes on Monday, Mr. Justice Wills, sitting without a jury, awarded a widow living in Southport £120 as damages, with costs, against Messrs. Blanchard and Son, contractors, of the same town, for injuries sustained by plaintiff in falling into an unprotected hole 6in. deep made in a street by plaintiffs to receive a scaffold-pole outside a shop. The defence was that men in the employ of the corporation were flagging the street in question, and had not come within 7ft. of the hole when the accident occurred.

The roof of the nave of Winchester Cathedral is reported by the architect to the Dean and Chapter, Mr. John B. Colson, of Winchester, to be in a very unsatisfactory state. Several extensive fissures exist in the vaulting, owing to the shifting of timber tie-beams, so that their weight falls upon it. The urgently necessary work is estimated to cost £6,000.

After a long discussion, the Wallesey district council agreed to promote a Bill to enable the council to extend the promenade from Marine-terrace, Liscard, to the ferry at New Brighton, this scheme having previously been approved by the board.

Good progress is being made with the works of the Upper Stour Valley Main Sewerage Board, who have just completed the purchase of land for a sewage farm at Whittington. Messrs. C. B. Martin and W. J. Fiddian, of Birmingham, are the engineers.

The very interesting old pre-Reformation clergy or priest's house at Alfriston, near Eastbourne, is to be preserved to the nation, the Ecclesiastical Commissioners having consented to transfer the building for a nominal sum to the National Trust for Places of Historic Interest or Natural Beauty.

The foundation-stones of a new Wesleyan chapel, which is being erected in the Himley-road, Gornal Wood, were laid on Monday. The building is being erected on the site of the old chapel, which had become dilapidated owing to mining operations and other causes. The new building is being erected by Mr. J. E. Buxton, from designs prepared by Mr. J. Hall Gibbons, Birmingham, at an estimated cost of £1,640.

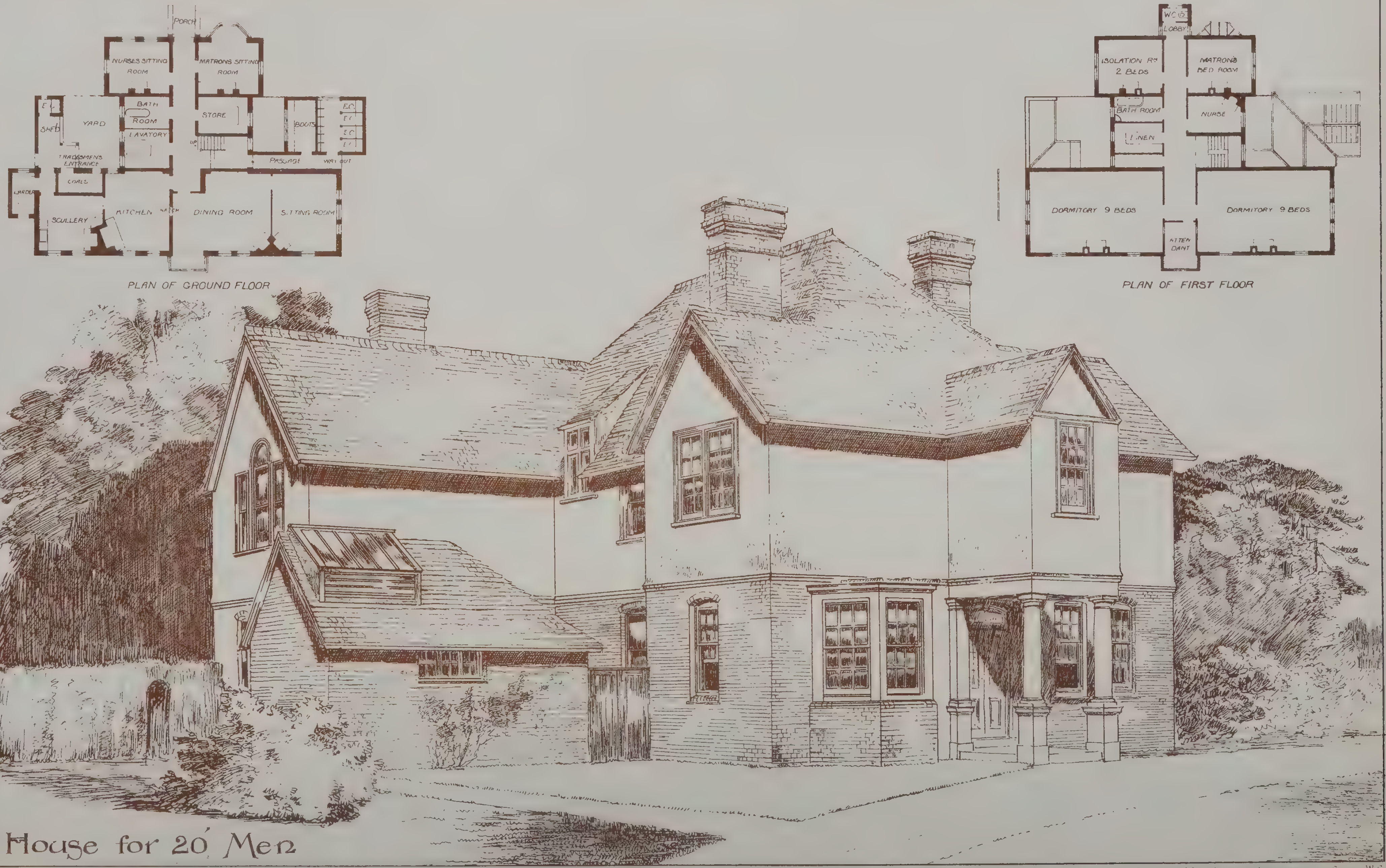
A public memorial is to be placed in the Fraser Chapel of Manchester Cathedral to Mrs. Fraser, widow of the second bishop. It will take the form of a stained-glass window and a tablet.

Major General Scott, the water examiner of the Metropolis, is instituting inquiries on behalf of the Local Government Board into the causes of the scarcity of water in the East-end. Mr. A. R. Binnie, the engineer to the County Council, and Mr. W. B. Bryan, the Water Company's engineer, are assisting Major Scott in the preparation of his report to the Local Government Board.

A striking picture of Wells Cathedral has been painted by Mr. Walter Severn for Bishop Kennion, who intends to present it to the public gallery at Adelaide as a memorial of his Australian episcopate.

The city council of Coventry adopted, at their last meeting, a scheme prepared by Mr. James Mansergh, C.E., for the disposal of the sewage by the extension of the present works, and the acquisition of additional land for the filtration of the effluent in the Avon Valley. Mr. Mansergh was instructed to prepare the necessary detailed plans for the carrying out of this scheme.

HOME · FOR · EPILEPTICS · AT · CHALFONT · ST PETERS · BUCKS · KEITH · D · YOUNG · FRIBA · ARCHT



PLAN OF GROUND FLOOR

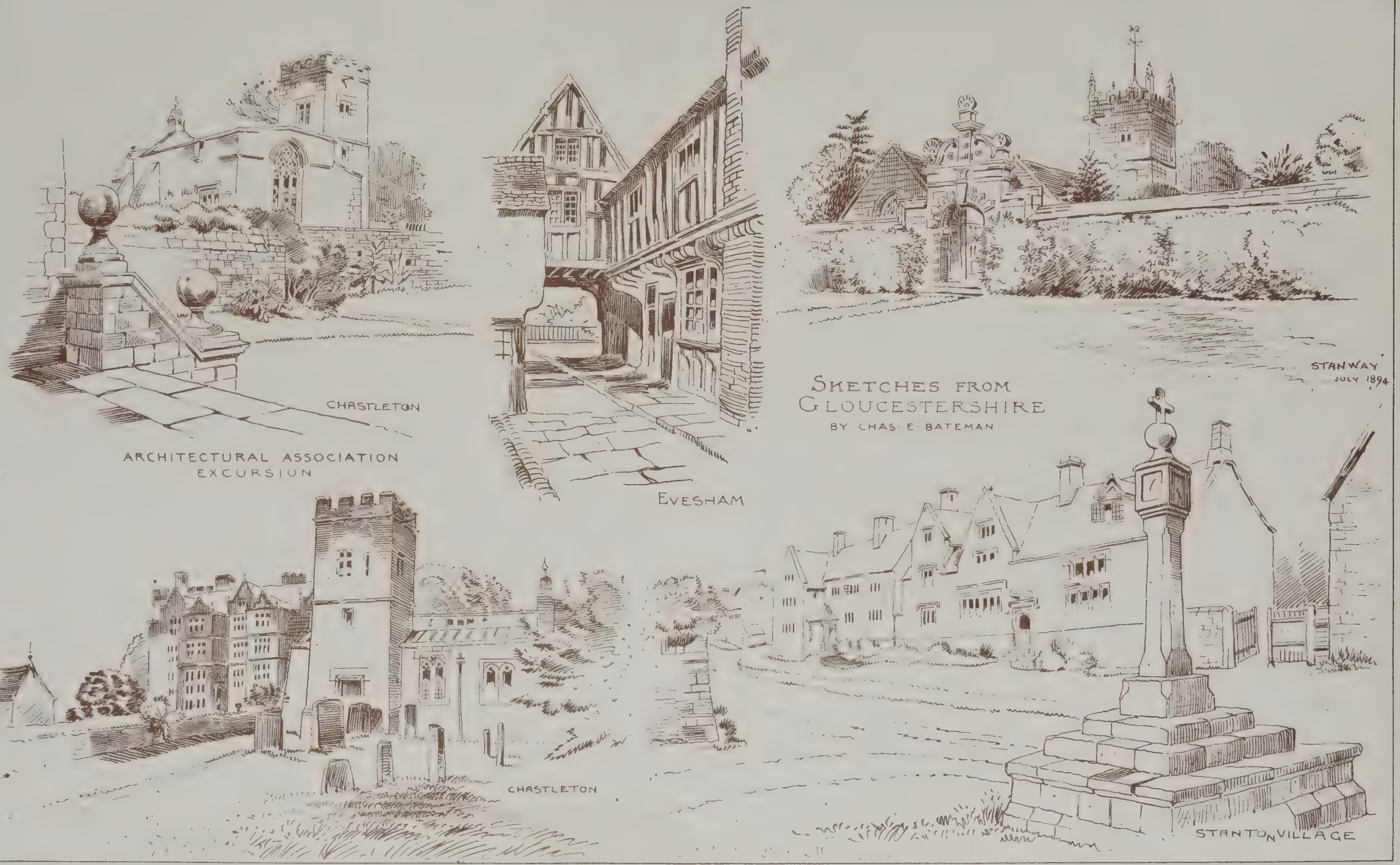
PLAN OF FIRST FLOOR

House for 20 Men

Photo Lithographed & Printed by James Akerman, 6 Queen Square W.C.

SKETCHES FROM GLOUCESTERSHIRE

BY CHAS. E. BATEMAN



CHASTLETON

ARCHITECTURAL ASSOCIATION
EXCURSION

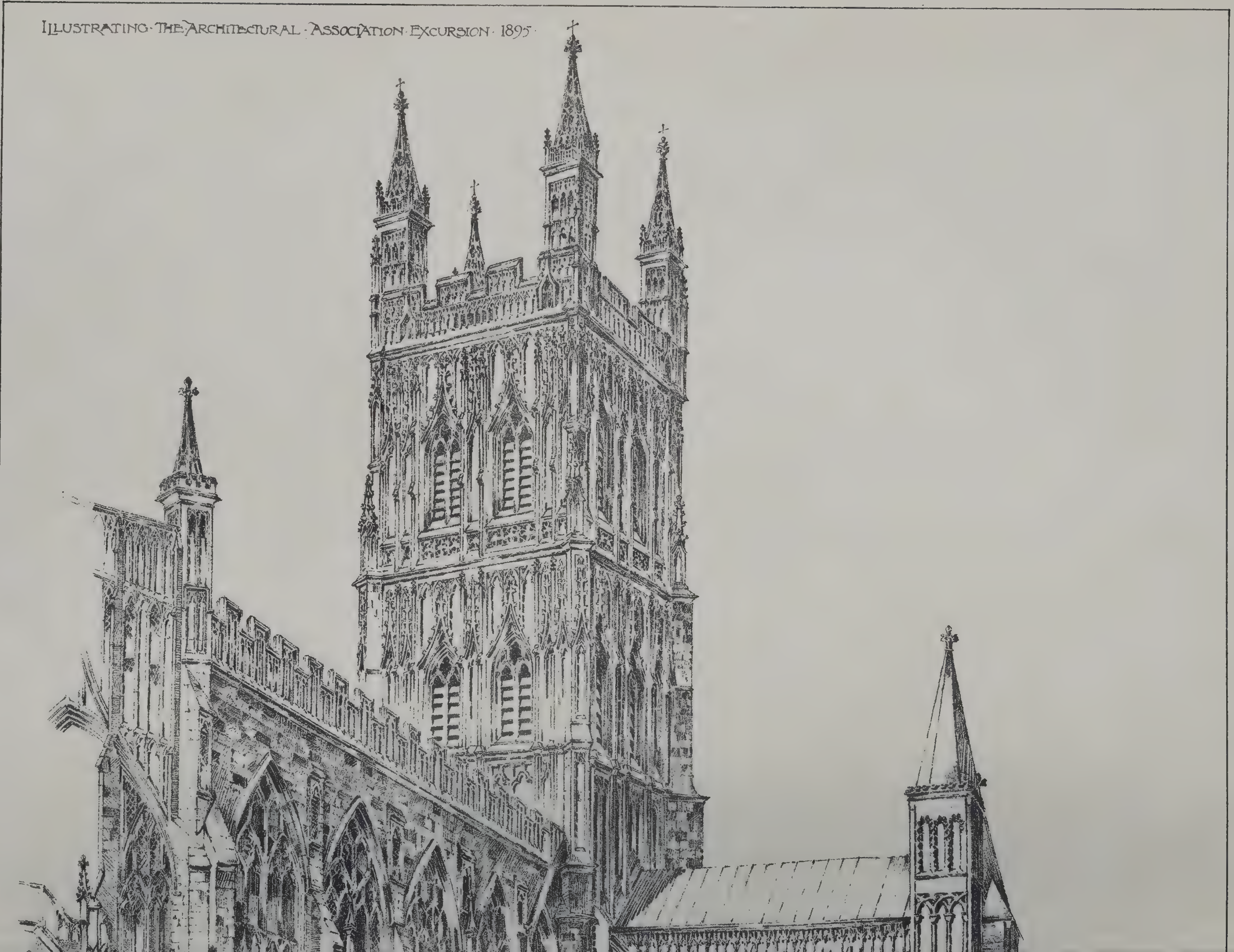
EVESHAM

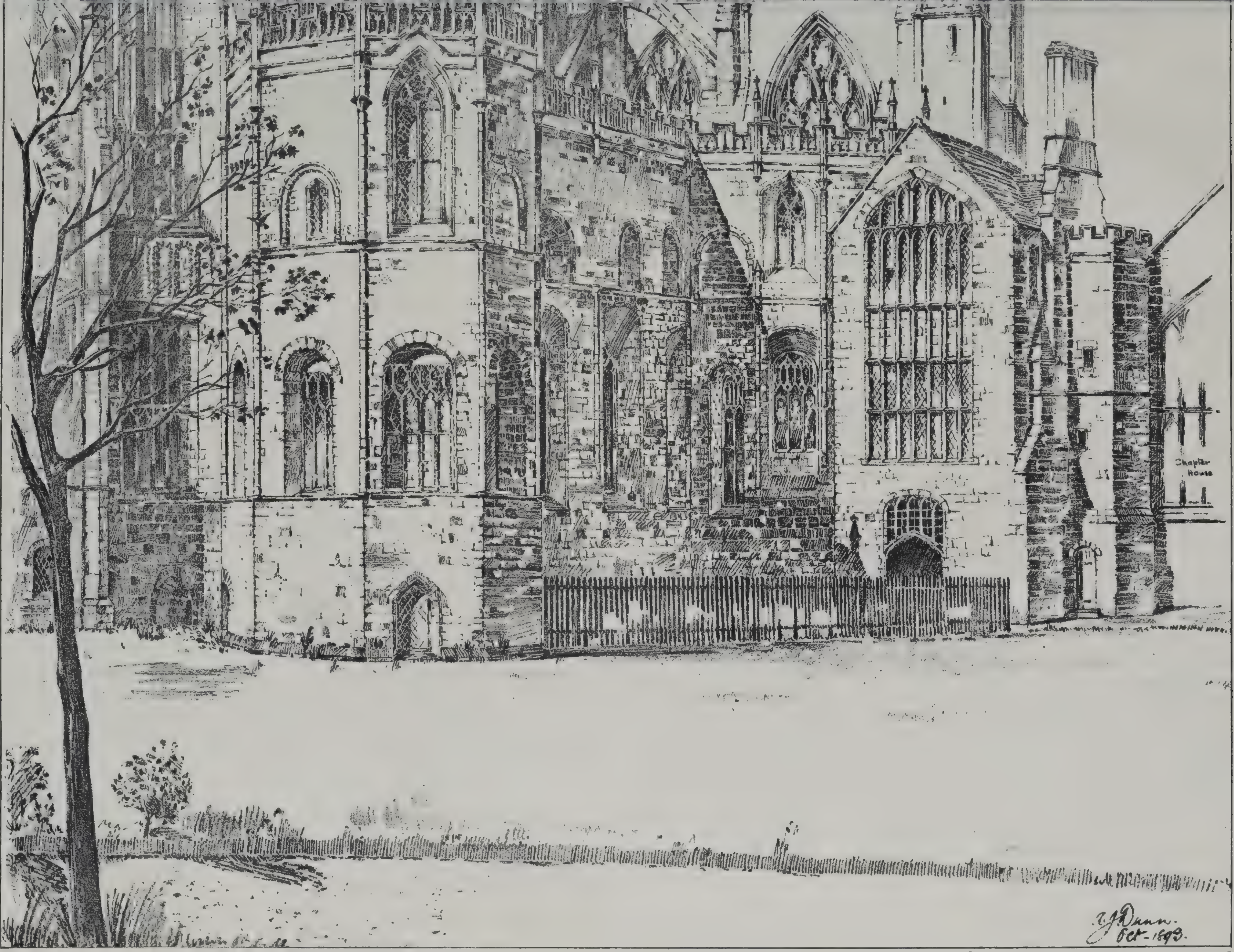
STANWAY
JULY 1894

CHASTLETON

STANTON VILLAGE

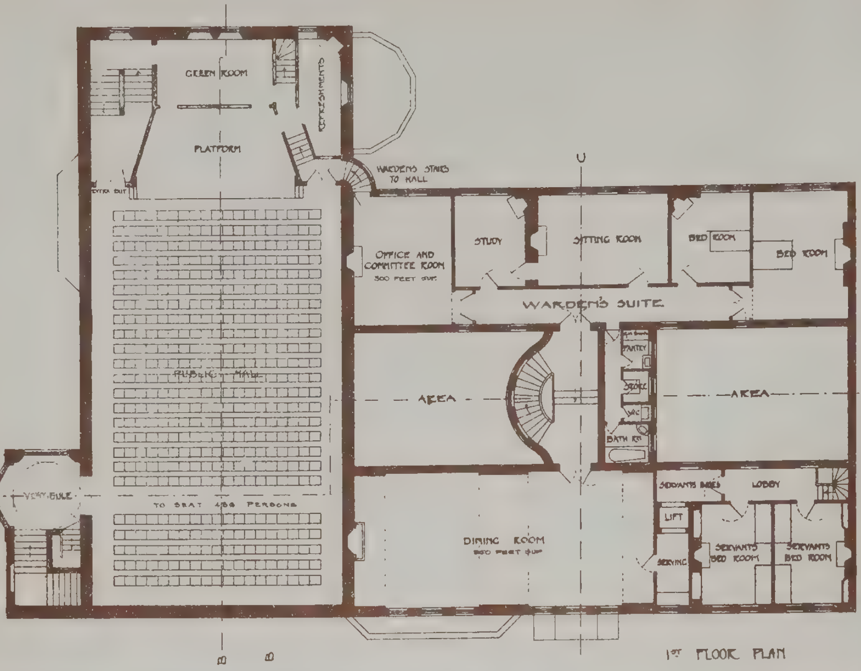
[illegible]


ILLUSTRATING · THE ARCHITECTURAL · ASSOCIATION · EXCURSION · 1895 ·


Chapter House
A. J. Dunn.
Oct-1893.

"Photo-Tint," by James Akerman. 6. Queen Square London. W.C

GLOUCESTER CATHEDRAL · VIEW FROM N·E · R·I·B·A · PUGIN · TRAVELLING · STUDENTSHIP · PRIZE · DRAWINGS · BY · ALFRED J. DUNN ·

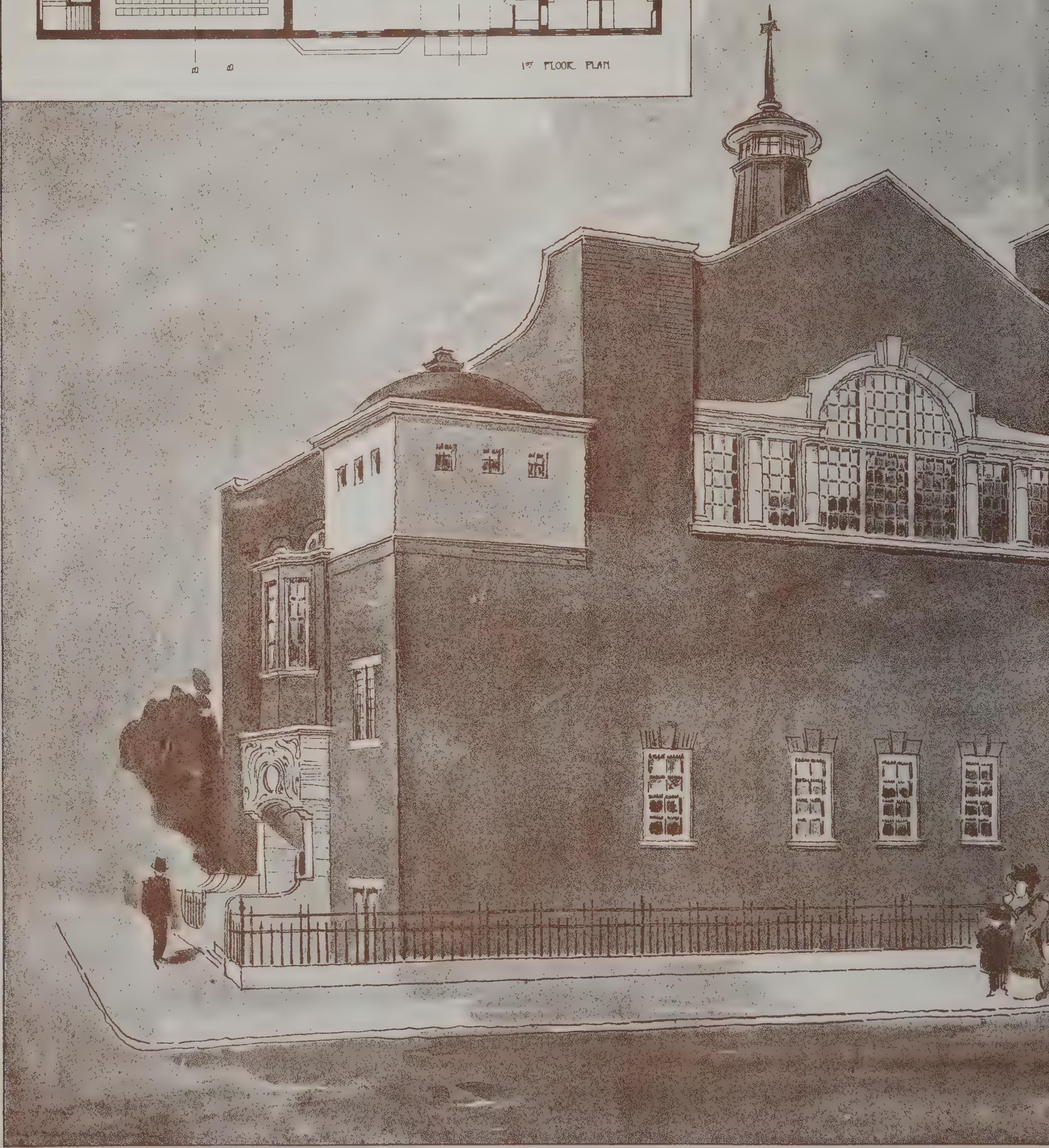


1st FLOOR PLAN

THE "PASSMORE-EDWARDS"

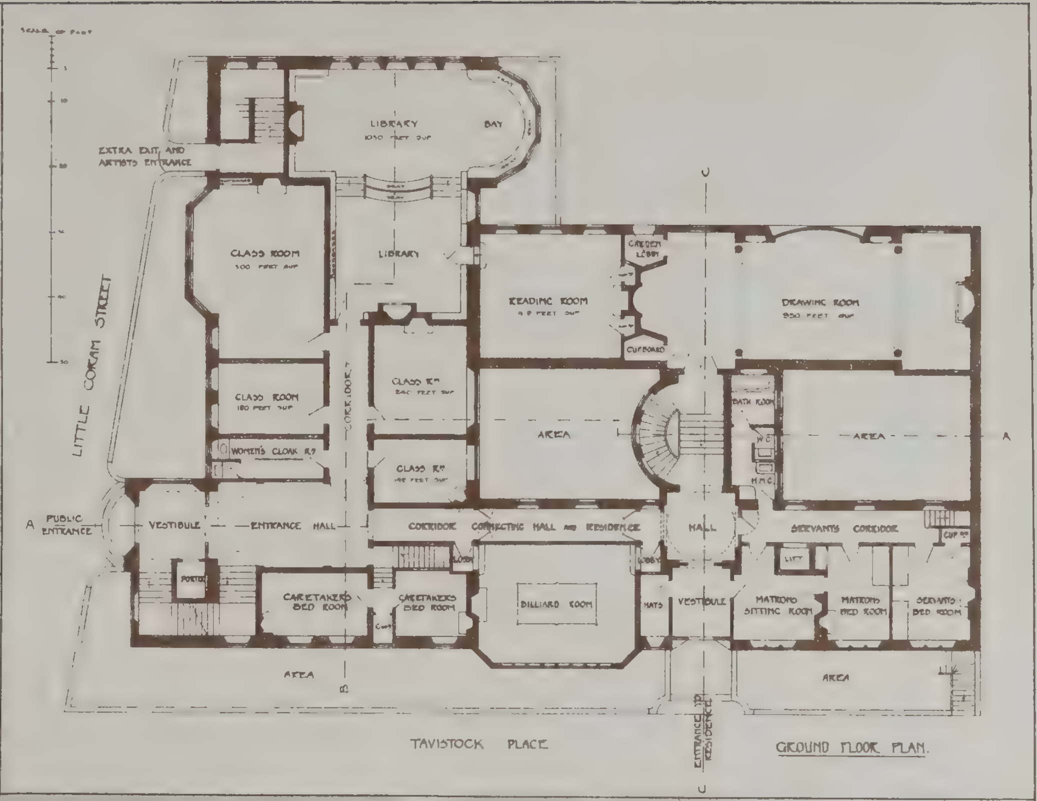
TAVISTOCK·PL

SELECTED·DESIGN BY·MESSRS C·C BR

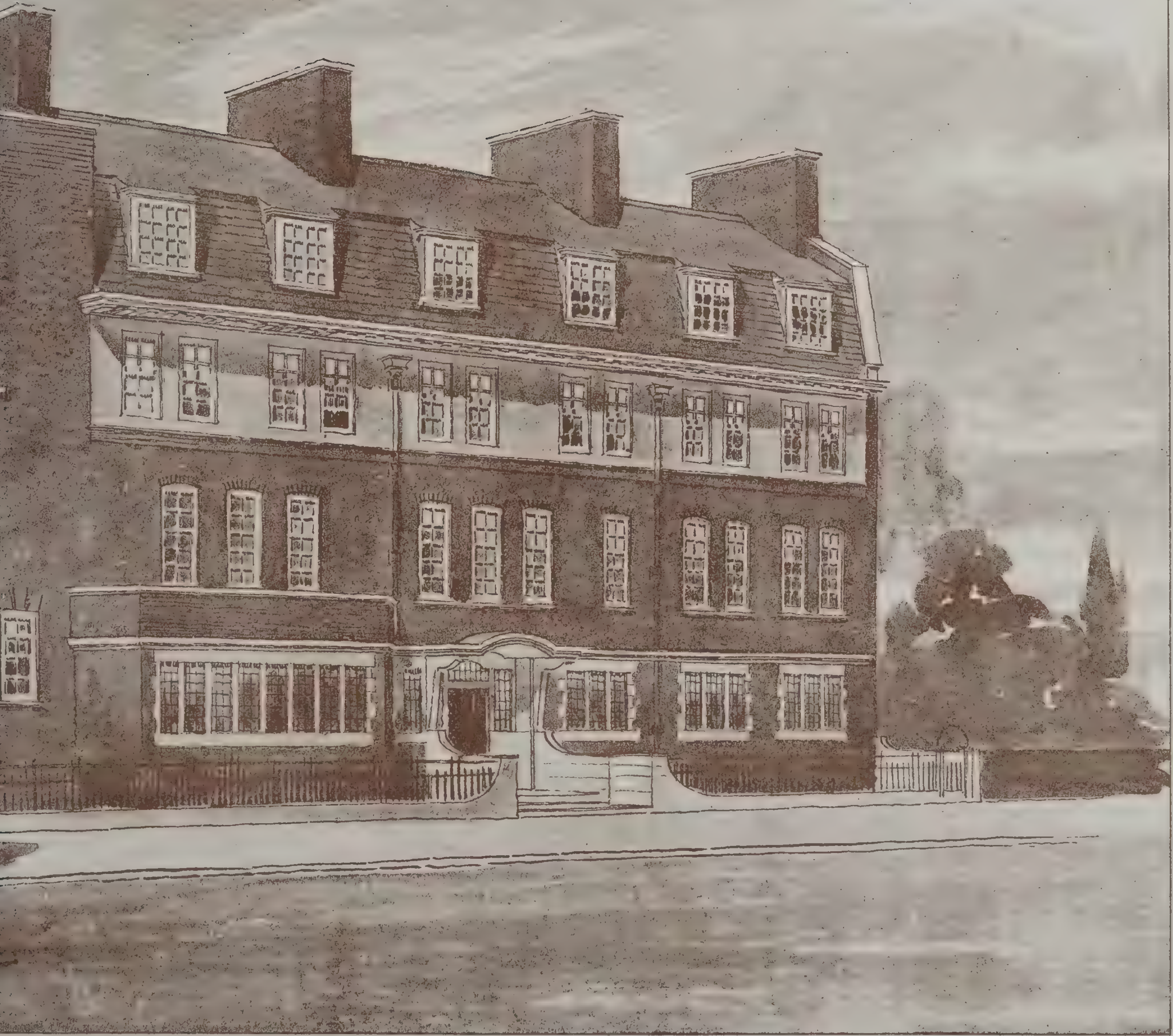


ETTLEMENT·BUILDINGS·
E·W·C

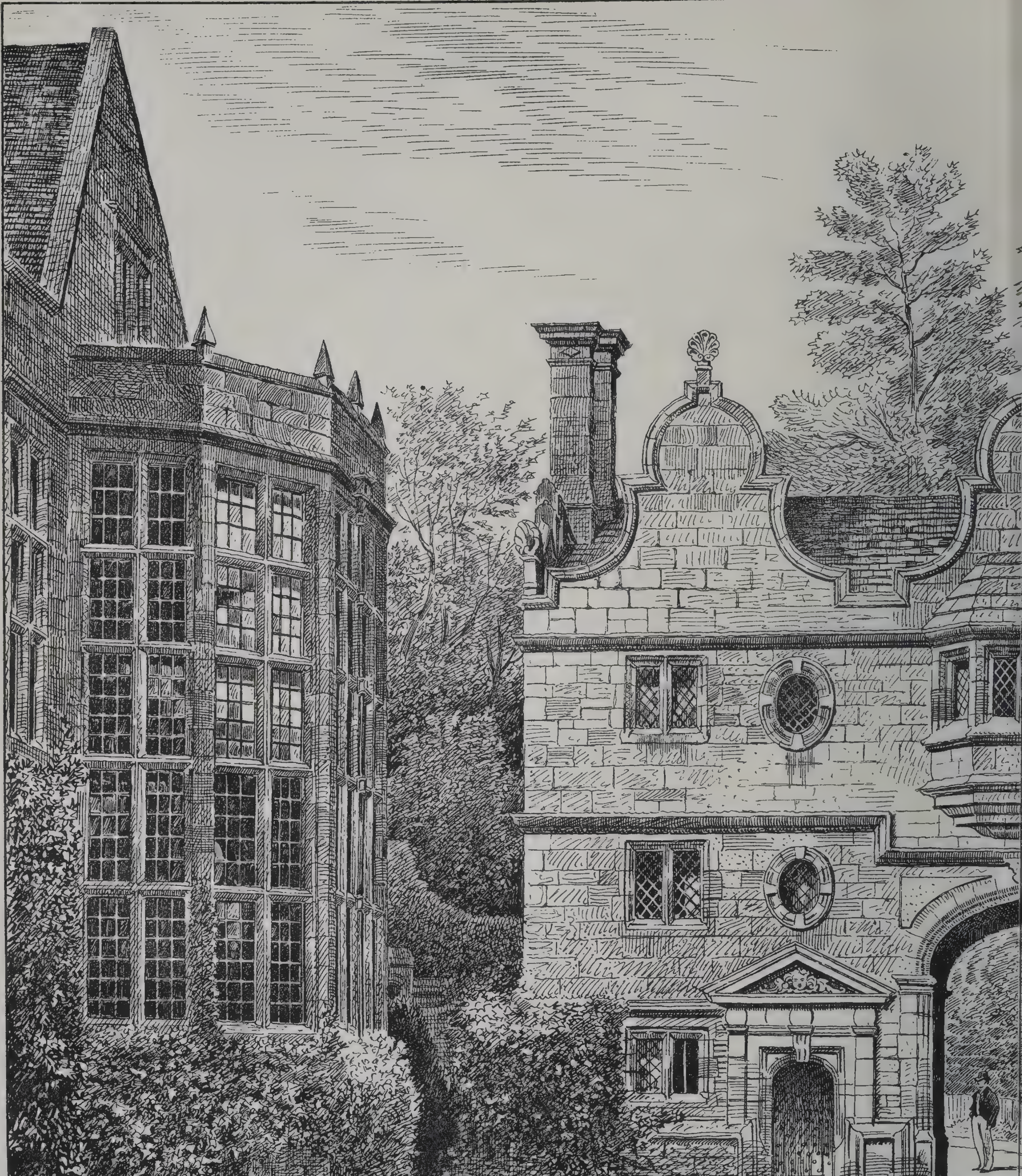
ER & A·DUNBAR·SMITH·ARCHts



GROUND FLOOR PLAN.



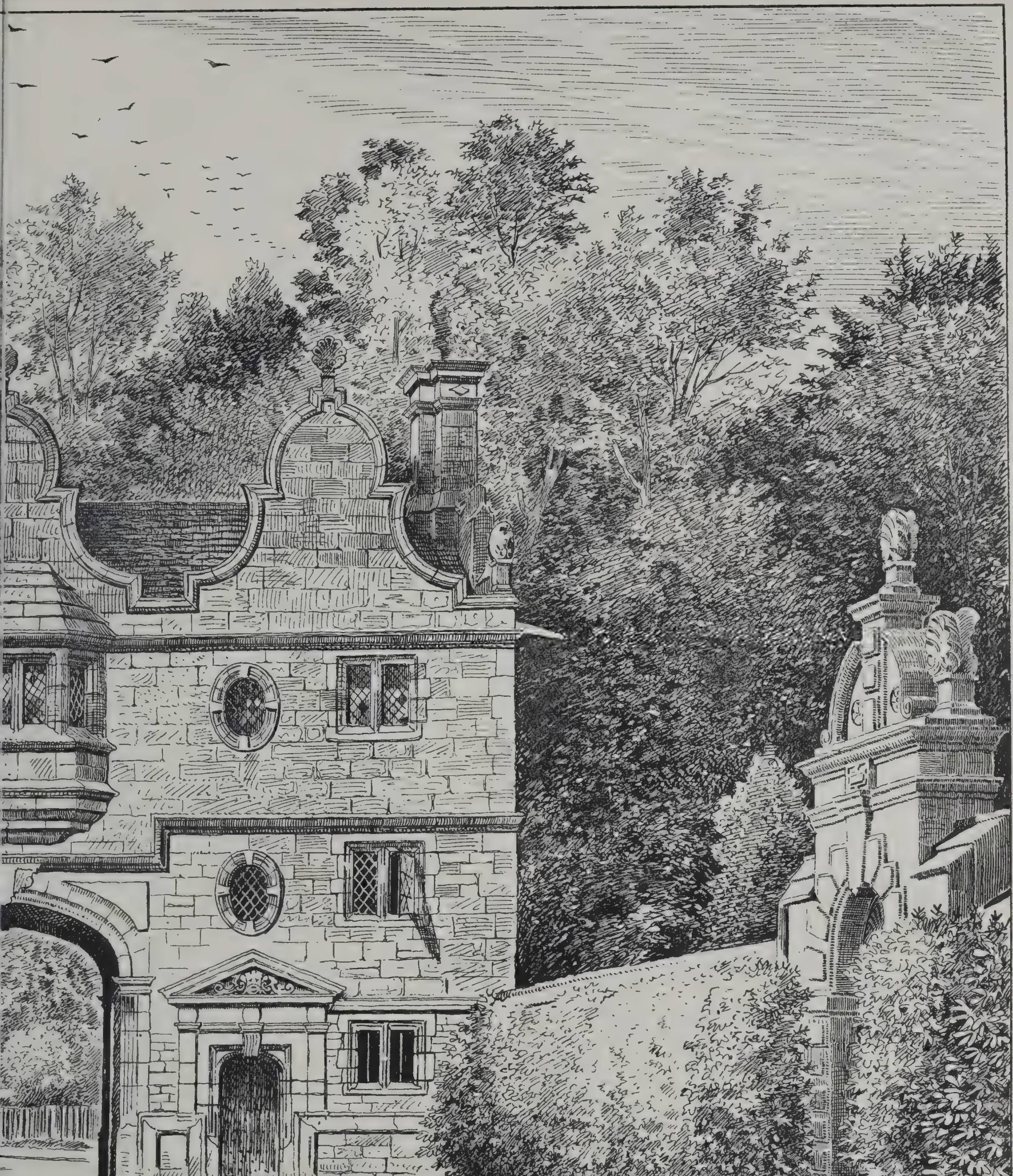
"PHOTO-TINT," by James Akerman, 6 Queen Square, London, W.C.



STANWAY HALL GLOUCESTERSHIRE The Sea

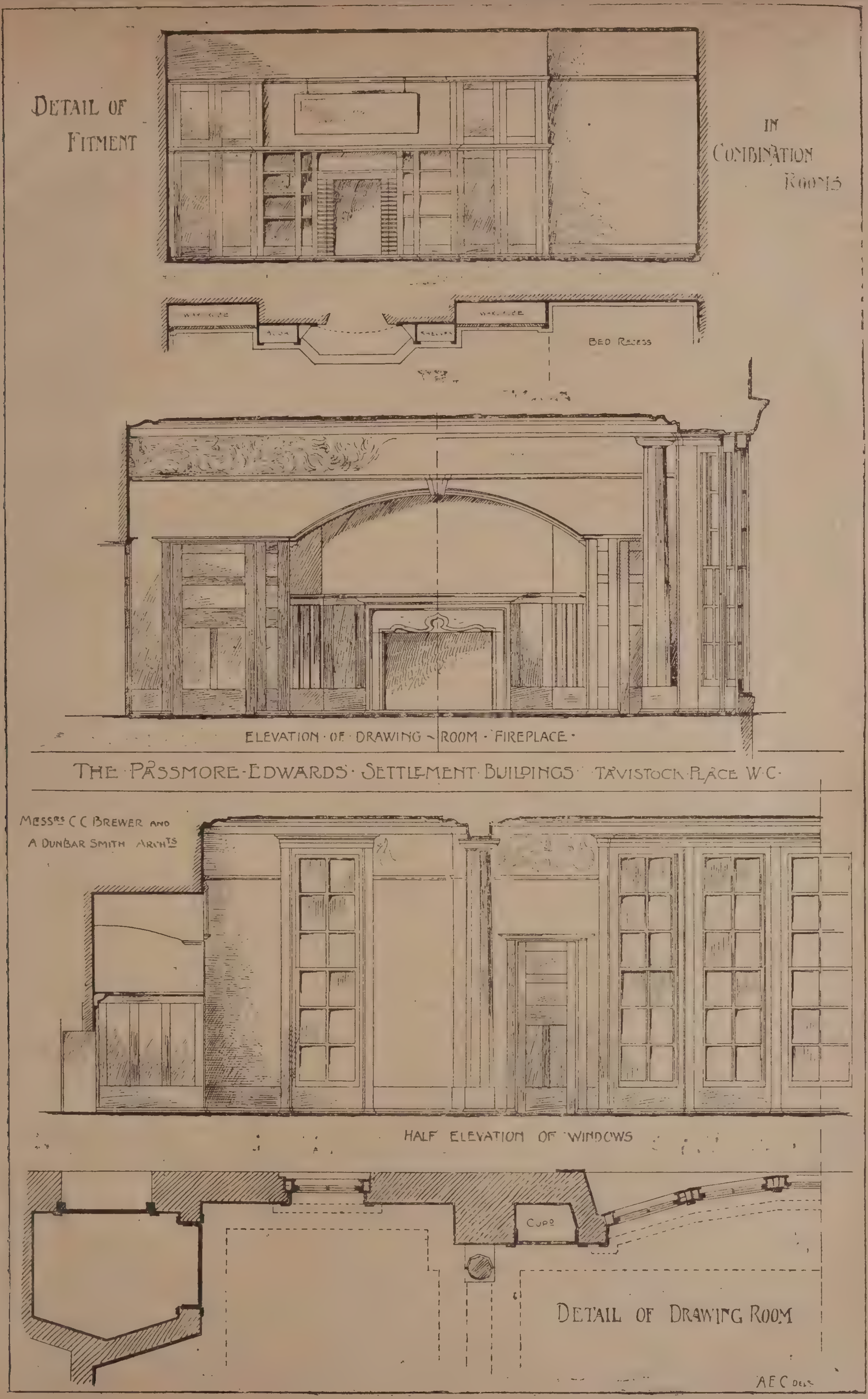
FROM GOTCH'S "ARCHITECTURE OF THE RENAISSANCE IN ENGLAND".

Photo-Lithographed & Printed b



of LORD ELCHO VIEW OF THE COURTYARD & GATEWAY.

s Akerman, 6, Queen Square, W.C.


DETAIL OF FITMENT
IN COMBINATION ROOMS
WARDROBE
SHELVES
SHELVES
WARDROBE
BED RECESS
ELEVATION OF DRAWING-ROOM FIREPLACE
THE PASSMORE EDWARDS SETTLEMENT BUILDINGS TAVISTOCK PLACE W.C.
MESSRS C C BREWER AND A DUNBAR SMITH ARCHTS
HALF ELEVATION OF WINDOWS
CUPD
DETAIL OF DRAWING ROOM
AEC DELT

COMPETITIONS.

Chester.—The Chester Baths Committee have received and approved the award of Mr. Frank Baggaley, 66, Conduit-street, Regent's-street, placing the design with the motto "Plan" first in order of merit. The author of the successful scheme is Mr. Harold T. Burgess, 33, Palliser-road, West Kensington. There were about 170 inquiries for block-plan and conditions, but only 27 designs were sent in response to the town council's invitation.

Durham County Council Buildings.—Mr. J. Vickers Edwards, county architect, Wakefield, acted as referee in this competition, and not Mr. MacVicar Anderson, as inadvertently stated in a paragraph printed by us last week.

Eisteddfod Pavilion. — At the National Eisteddfod, held at Llanelly last week, the awards of prizes were announced on Friday. An important item on the list was the competition for the best design for a movable permanent pavilion suited for the requirements of the National Eisteddfod, with complete specifications, estimates, and full details, for which the National Eisteddfod Association offered a prize of £25. The object of the association is to secure a permanent building for the future national gatherings in North and South Wales, and thus avoid the annual outlay of large sums of money to the towns in which the Eisteddfod is held. The adjudicators were Messrs. Charles Evans Vaughan, F.R.I.B.A., London; W. E. Davies, and Rhys Davies. The result of the adjudicators' examination was to the effect that only one set of plans came to hand. The design proved to be a facsimile of the pavilion erected at Pontypridd in 1894, but of lesser area. The internal arrangements were nearly alike to those at Wrexham, 1888, and Swansea, 1891, but precisely similar to those at Brecon, 1889. The design showed a considerable improvement upon all of them in respect of the offices and committee rooms, and the addition of a museum and art department attached to and connected with the main building was a feature not hitherto followed in temporary pavilions. The adjudicators agreed that a pavilion built in accordance with the design would be convenient and satisfactory. The author had omitted to couple with this plan the complete specifications. If these were supplied they recommended that the prize be awarded to him.

Ipswich.—The guardians of the Ipswich union have adopted the recommendation of the assessor, Mr. Charles Barry, F.S.A., and have awarded the first premium in the competition for a new workhouse to the plans prepared by Mr. W. Lister Newcombe, of Newcastle-on-Tyne, and Messrs. Salter and Adams, of London, acting conjointly. The outlay will be about £20,000.

◆

The Sunday-school buildings on the north side of Crown-street Congregational Chapel, Ipswich, are being extended. The new buildings, of which the memorial-stone was laid by Mr. D. Ford Goddard, M.P., on July 30, are of white brick, with Monk's Park Bath stone dressings. They include a men's classroom, 40ft. by 17ft.; infants' schoolroom, 15ft. by 17ft.; two other classrooms, and kitchens. Mr. Frank Brown, of Ipswich, is the architect, and Messrs. T. Parkington and Son, of the same town, are the builders.

At the last meeting of the district council for Lynton a communication was read from Mr. Pickell, Cardiff, stating that some seven years ago he had taken soundings for the construction of a pier at Lynmouth. He now made a proposal to obtain a Provisional Order for constructing a pier 200ft. long from the end of the new Esplanade and 25ft. in width. Its cost would be about £25,000. It was resolved that the clerk be instructed to write Mr. Pickell, saying that the council was favourably disposed to consider the matter, and that, after a consultation with the ratepayers, he should hear something more on the subject.

The opening of the new chapel which the Sisters of Mercy have built on to their convent in Blandford-square took place on the Feast of St. Anne. The chapel, which was designed by Mr. Edward Goldie, is 109ft. long by 26ft. broad and 47ft. high. The shape is a simple oblong, without side chapels. A feature of the interior decoration are six tall niches in the side-walls, three on either side, with carved pediments and canopies, which are ultimately to contain statues of saints. A high altar, in carved white stone, the reredos adorned with figures in high relief of angels and of St. Peter and St. Edward, has been erected. The eastern façade of the chapel, overlooking Blandford-square, is all of stone, and is adorned by a white stone statue of Our Lady with the Holy Child.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to The Strand Newspaper Company, Limited.

TERMS OF SUBSCRIPTION.

One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India, £1 6s. 0d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front-page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No Front-page or Paragraph Advertisement inserted for less than 5s.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page Advertisements and alterations in serial advertisements must reach the office by Tuesday morning to secure insertion.

Situations.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., LI., LIII., LIV., LVIII., LIX., LX., LXI., LXII., LXIII., LXIV., and LXV. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Received.—B. Farnley.—Amateur.—J. W. and Co.—E. S.—Cestus.—B. F. and Co.—J. T. (Dudley).

E. W. Meredith, Torquay. (We published the selected plan for the Fulham Palace-road board schools, by Messrs. Arnold Mitchell and A. M. Butler, in our issue of July 19, 1894, side by side with the plan by Mr. T. J. Bailey, F.S.A., the architect to the London School Board, for the schools of the same capacity (1,200 places) built in Lillie-road, Chelsea. Comparison of the two schemes will be interesting and helpful.)

Correspondence.

DURHAM COUNTY BUILDINGS COMPETITION.

To the Editor of the Building News.

Sir,—Your report of the proceedings of the Durham County Council, in your last issue, is somewhat inaccurate and misleading. We trust you will therefore afford us space to make one or two corrections. In the first place, Mr. MacVicar Anderson was not the assessor, but Mr. Vickers Edwards, architect to the County Council for the West Riding of Yorkshire. In the second, you state that the assessor awarded the first place to us, and the second to Messrs. Barnes and Coates, of Sunderland.

We wish to point out that the assessor's award has not been made public, although it has been asked for by one of the competitors, and that we have the best of reasons for believing that the latter owe their position entirely to the action of the Council, of which, we are informed, the father of one is an alderman.

Your report then seems to imply that we have been passed over, through our not having strictly complied with the conditions.

These have in every way been most carefully adhered to by us, and in spite of the fact that we were only allowed a fortnight in which to obtain a *bonâ fide* tender, we *did* submit one, by Messrs. Holloway Bros., of Battersea, which was in amount even less than our own. We had to submit this on or before the 18th of May last, yet the meeting of the Council was not till the 24th of July. We can now read between the lines. Not being able to trip us in this way, it is now evident that the Council (of which Mr. Samuel Storey is the chairman) felt bound to award us the first premium, and then threw us aside in favour of their friends.

It is certainly time that strong measures should be taken to prevent, if possible, architects from receiving such unfair treatment at the hands of public bodies.—We are, &c.,

Cooksey and Cox.

19, Craven-street, Charing Cross, W.C., Aug. 6.

Intercommunication.

QUESTIONS.

[11391.]—**Workmen's Houses.**—I wish to build some workmen's houses, two rooms each, with scullery behind; room's size 15ft. square. How should I get at the cost? Are there any books that will give me the information independently of my local workpeople? It is near Glasgow, and the material should be brick or concrete.—A. A.

[11392.]—**Polisher.**—Will any kind reader tell me the best way to French polish new mahogany shop-front sashes, &c., to bear against weather, or any other polish used as substitute?—Killarney.

[11393.]—**Ice Chambers.**—Will any reader kindly direct me where I may get information *in re* above? If any book is published, will be pleased to have title. Or if any one could furnish sketch and description, a favour will be conferred on—Colonial.

[11394.]—**Cement Facing.**—Will some practical reader inform me what is the best material with which to face the panels (on brickwork) in the old timbered style for gables, &c., so as to dry a white or cream colour? I have already put on a ground of Portland cement, and am thinking of facing with Keene's. Will this stand weather for a length of time? Full particulars will oblige—J. C.

CHIPS.

The Bishop of Norwich, on Thursday in last week, preached at the reopening of the church at Burnham Market, Norfolk, the birthplace of Nelson, which has just been restored at a cost of £7,000. The reopening was on the 97th anniversary of the victory of the Nile.

Considerable additions are about to be made to the Dominican House at Hawkesyard, Armitage, near Rugeley, which was given last year to the Fathers, together with a large estate, by a generous benefactress. A new church and priory are to be built, under the supervision of Mr. E. Goldie, architect. The existing mansion is to be converted into a college for aspirants to the Dominican Order.

The remains of the old market cross of Congleton were recently presented to the corporation of that borough by Mrs. Johnson. It has now been decided to re-erect the stones on a vacant site in the High-street.

The special committee appointed by the Manchester City Council have at length come to a decision as to the most suitable sites for the two drinking fountains presented to the city by the late Mr. Jardine. They recommend that the larger of the two fountains should be placed in Queen's Park, and the smaller one at the corner of Butler-street, Oldham-road. These recommendations have been adopted.

The will of Mr. Charles Bartholomew, C.E., formerly of Broxholme, Doncaster, and late of Castle-hill House, Ealing, who died on January 12, was proved on July 18, the value of the personal estate amounting to £290,955.

It was announced at Wednesday's meeting of the Manchester City Council that the portrait by Sir J. E. Millais of the late Bishop Fraser has been bequeathed by Mrs. Fraser to the Corporation of Manchester.

On Friday, in the presence of pupils and friends of the Bristol Cathedral School, the completion of the restoration of the beautiful Early English doorway, leading to the school, which has been undertaken at the expense of past and present pupils of the establishment as a mark of esteem to the head master, was celebrated. The archway has been restored under the superintendence of Mr. J. L. Pearson, R.A.

On Saturday, a new public park for Falkirk was opened. The park formed part of the grounds of Thornbank, in the northern part of the burgh. The ground was purchased by the town council, at a cost of £5,500. It is about 16¼ acres in extent, and has been named the Victoria Park.

The adjourned inquest on the body of David Jones, the fifth man who was suffocated at the East Ham Sewage Works on July 1, was concluded on Wednesday. The jury returned a verdict that death was due to suffocation by sewage gas, adding the expression of their opinion that the East Ham district council was guilty of great negligence in not providing proper appliances to prevent such an occurrence.

Legal.

DISTRESS FOR RENT.

THE judgment of the Court of Appeal confirming the ruling of a Divisional Court in the recent case of "Palmer v. Bramley" (*Times*, 20th July) is one of much importance as an authority upon the principle involved. The Courts have formerly held up the right of a landlord to distrain as something so sacred that he did not abandon it, even if he took a security from his tenant for the rent in arrear. Thus it is laid down in the older books that, even though a landlord takes his tenant's bill of exchange for the rent due, he is not bound to wait until that has been dishonoured; but can exercise his summary remedy of distraining meanwhile, and notwithstanding. Seeing that by the ordinary law, if a creditor takes his debtor's bill for a debt owing, he certainly cannot sue for the money while that bill is running; it seems somewhat harsh to allow a landlord to have it both ways; yet, in the case above noted, where a tenant had given his acceptance, and the landlord distrained before it was due, the County Court judge held that he was entitled to do so according to the earlier authorities.

Fortunately, the Court of Appeal, following the Divisional Court, has reversed their judgment. They held that the taking of a bill of exchange by a landlord is some evidence that he agreed to suspend his right of distraint while the bill was running, and, therefore, that the jury should have been asked to decide whether this was so or not. The case was thus practically sent back to the County Court to be tried again; but in a general way any jury and any man of business would at once say that if a landlord takes his tenant's bill of exchange for rent owing, he does thereby agree to wait until that bill is due, and not to distrain meanwhile. One object of the bill being given is obviously that time should be granted for payment, while another may be that the landlord should have a security upon which he could, by discounting it, acquire the money if it is wanted. To allow a landlord to take and hold his tenant's acceptance, and at the same time to use his summary remedy by distraint, is certainly to give him an unfair privilege that is denied to all other creditors, and it is satisfactory that this should be no longer legal.

Fred. Wetherfield, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

Enquirer.—Estimate.—Tender.—I do not see how the contractor could make any claim against anyone for the time and trouble taken by him in preparing his estimate and tender—which no one was bound to accept, and which, although in fact the lowest, was not accepted—unless there was some agreement as to such a payment.

◆

The medals and decorations of Lord Nelson, which were recently purchased by the Treasury from Lord Bridport, on behalf of the nation, have been handed over to the Royal Hospital, Greenwich, and will shortly be placed with the other mementoes of Lord Nelson in the Painted Hall of the hospital for exhibition. Mr. J. A. Mullens has also presented to Greenwich Hospital the gold sword-hilt presented to Lord Nelson by the captains who served under him in the battle of the Nile and the gold box in which the Freedom of the City of London was presented to him.

Discontent is said to prevail in the Straits Settlements, because of the manner in which the present governor, Sir Charles Mitchell, interferes with the action of the municipal councils of these towns. The case at issue is that in agreeing to advertise in England and elsewhere for a civil engineer to take charge of important works, the municipal council fixed a dollar salary equal to about £900 a year, being the sum they had paid to the deceased engineer. The governor refused to sanction a salary beyond £775 a year; and the members of the municipal body are now forced to advertise the appointment at a salary they have declared to be insufficient.

The dissolution of partnership is announced of the firms of T. E. Watkins and A. M. Alexander, under the style of A. O. Watkins, Son, and Alexander, Newport, architects, engineers, and surveyors. Dissolution of partnership is also notified of the firm of C. H. Payne and F. C. Martin, architects and surveyors, Chesterton, under the style of Payne and Martin.

LEGAL INTELLIGENCE.

Committee's Promises are Binding.—Graham and Sons v. Huddersfield Corporation.—This case, which was heard on July 29 and 30 before Mr. Justice Mathew and a special jury, was brought to recover the sum of £999 11s. 10d., the balance alleged by the plaintiffs to be due to them by the Huddersfield Corporation on a contract entered into in June, 1891, for the construction of a brick culvert. The defendants contended that only the sum of £66 was due. The cost of the work, the plaintiffs stated, was much greater than had been originally anticipated. Mr. Waddy, for the defence, urged that by the terms of the contract the plaintiffs were bound to make the sewer, whether they had to deal with soil or shale or rock. The contract had been made upon the footing that the plaintiffs were not going to have to deal with any rock. That was where they made their blunder, and why their estimate was about £1,000 less than that of anybody else, because the other people had taken into consideration that there was rock. The committee were strongly against giving plaintiffs anything, and they absolutely denied having promised to make the defendants an allowance.—Mr. Atkinson, for the plaintiffs, said the work was stopped for fifteen weeks because of the refusal of the plaintiffs to go on until they had written instructions from the committee that they would pay. Instead of an open trench, the plaintiffs were called upon to make 240 yards of tunnel. Mr. Graham went before the committee, and his statement was that he got a promise from the committee to be paid whatever Mr. Dugdale, the borough surveyor, thought proper. Counsel also pointed out that the committee had made an offer to pay £250 entirely without prejudice. That minute was not ratified by the town council, but was sent back to the health committee for reconsideration. His Lordship, in summing up to the jury, referred to the minutes of the health committee's proceedings, which, he said, showed that the plaintiffs were to go on with their work, and that on its completion they should renew their application. It was perfectly open to the committee to say to the plaintiffs that if they did not wish to abide by their contract, other contractors would be engaged to carry out the work. If that had been so, however, there would have been some record of it; but, so far from that being the case, there was a distinct record showing that the plaintiffs might renew their application on the completion of the work. The jury found that the defendants had promised to make an allowance, and that the promise had been broken, and they gave a verdict for the plaintiffs for £800. Mr. Manisty made application for a stay of execution on the ground that the promise made was not binding on the corporation. His Lordship: Not for a day.

Building Act Appeal.—Crow, Appellant, v. Redhouse, Respondent.—The Court of Appeal heard, on July 31, an appeal from the judgement of the Divisional Court upon a case stated by a metropolitan police magistrate on an appeal by Samuel Redhouse under section 150 of the London Building Act, 1894 (57 and 58 Vict. c. ccxiii.), against a decision by Arthur Crow, the district surveyor for the Whitechapel and Spitalfields district. Section 150 provides that where it appears from the building notice served on the district surveyor under this Act that it is proposed to erect any building which may be in contravention of this Act, the district surveyor shall serve upon the builder or building owner a notice of objection, and it gives an appeal to a magistrate from this notice. It appeared that Redhouse proposed to rebuild a six-story warehouse, No. 3, Church-street, which, in consequence of a fire, was taken down as dangerous in November, 1894, for more than one-half of its cubical extent, so that the proposed building would be a "new building" as defined by section 5, subsection 6, of the London Building Act, 1894, which defines the expression "new building" as "any building which has been taken down for more than one-half of its cubical extent and re-erected, or commenced to be re-erected, wholly or partially, on the same site after the commencement of this Act." A notice of objection was served by the district surveyor on Redhouse. The matters in the notice were, however, remedied with the exception of the objections made to the use without thickening of a wall, forming the west boundary of the site as the party-wall between the reinstated warehouse and the adjoining warehouse, No. 1, Church-street, the said wall not being in conformity with the provisions of the Act as to new party-walls. Before the fire the party-wall had been the party-wall between Nos. 1 and 3. So far as the party-wall concerned No. 1, which had not been seriously injured by the fire, it had been reinstated in the course of the reinstatement of No. 1. These reinstatements had not amounted to the erection of a "new building" at No. 1. Redhouse appealed to the magistrate, on the ground that he was not compelled by law to make the party-wall conform to the provisions of the Act of 1894. The extent to which the party-wall had been burnt and taken down in consequence of the fire amounted only to one-third of its superficial area. The remainder was safe. The party-wall had been erected in conformity with the previous Building Acts, but was not of the thickness required by the Act of 1894. Redhouse contended that as the party-wall had not been taken down, burnt, or destroyed to the extent of one-half thereof, by virtue of section 208 of the Act of 1894 the proposed use by him of the party-wall was not in contravention of the Act. Section 208 enacts that "unless in any case the Council otherwise allow, where a party-wall or external wall not in conformity with this Act has been taken down, burnt, or destroyed to the extent of one-half thereof (measured in superficial feet), every remaining portion of the old wall not in conformity with this Act shall either be made to conform therewith or be taken down before the rebuilding thereof." The surveyor, Crow, contended that the proposed re-erection being a "new building" within section 5, subsection 6, of the Act of 1894, the party-wall should be so erected as to comply with the provisions of the Act, and that there was no exemption enacted or implied in section 208. The magistrate held that Redhouse's contention was correct, and that he could not be compelled to take down, rebuild, or thicken the party-wall. In the Divisional Court Mr. Justice Wills held that the magistrate's decision was right, Mr. Justice Wright dissenting. The magistrate's decision was accordingly affirmed. The district surveyor appealed. The Court dismissed the appeal. The Master of the Rolls said that they could not find any section in the Act which enabled the surveyor to deal with this wall. Section 10 of the former Act (the Metropolitan Building Act, 1855) seemed to have been dropped out of the present Act, and the Court could not read it in. As to section 5, that section merely defined the expressions used in the Act, and it was clear that it was not an enacting clause. Lords Justices Kay and A. L. Smith concurred.

Leith Builders' Claim against the Caledonian Railway Company.—Evidence was begun on Monday in the Windsor Hotel, Edinburgh, in an arbitration between Messrs. Bryson and M'Intosh, builders, Thorntree-street, Leith, and the Caledonian Railway Company. A portion of the Company's new Leith line runs diagonally through a square of tenements (bounded by Easter-road, Gordon, Thorntree, and Halmyre-streets) belonging to Bryson and M'Intosh. Seven of the blocks are to be acquired by the Railway Company, and the purpose of the arbitration is to fix their value and the amount of depreciation suffered by the adjoining blocks owing to the proximity of the railway. Bryson and M'Intosh claim £24,000. Mr. Comrie Thomson, advocate, is oversman, and Mr. John Blair, W.S., and Mr. A. W. Belfrage, C.E., act as arbiters.

A Building Act Conviction Quashed.—Wood v. London County Council.—In the Queen's Bench Division on Tuesday, Mr. Justice Grantham and Mr. Justice Lawrance heard a case stated by the metropolitan magistrate at Westminster, after a hearing of a summons upon complaint by the London County Council that Joseph Carter Wood, the appellant, did, contrary to the provisions of section 7 of the London Building Act, 1894 (57 and 58 Vict. cap. ccxiii.), unlawfully commence to form and lay out a certain street for carriage traffic without having first made an application in writing to the County Council and obtained their sanction thereto. The question was whether a courtyard of some mansions in Victoria-street, Westminster, to be laid out for flats, was a street used for traffic so as to be amenable to the provisions of the London County Council under the Act. The magistrate had convicted the appellant. The site in question formed part of the site of the old Artillery Brewery and of a private house connected therewith. In 1891 the brewing business ceased. In 1894, after the passing of the London Building Act, the appellant decided to extend the building by erecting flats around a quadrangle. He gave notice to the district surveyor, but without asking the sanction of the County Council. The case stated that when the proposed buildings are completed by extending them round the other three sides of the quadrangle they will contain 42 flats (of which 14 are in the block already erected in Victoria-street), and will have two entrances and staircases leading from the quadrangle. There will also be an estate office, with a separate entrance. There will be no entrance from the quadrangle except by the archway in Victoria-street, which will be closed by lofty iron gates, and this archway and the quadrangle will be for the use of the tenants of the flats in the proposed new buildings and the tradesmen and others visiting them on business or pleasure, with or without carriages, and the public at large will be entirely excluded therefrom. The magistrate delivered his decision in these words:—"I found as a fact that the place in question was a street, and I held that the appellant had, under the circumstances, commenced to form and lay out for carriage traffic within the meaning of section 7 of the said London Building Act, and I accordingly convicted the appellant and ordered him to pay a nominal fine." Mr. Lawson Walton, Q C., for the appellant, contended this courtyard was only a curtilage of the building. He cited "Davies v. London County Council," "Pilbrow v. Vestry of Shoreditch," Nathan's Case. A courtyard laid out solely for the benefit of the tenant was not open to traffic within the meaning of the Act. Mr. Cripps, Q.C., for the County Council, urged that it was purely a matter of fact as to whether it was a street or not, and the magistrate had found that it was. The same remark applied to the finding as to the traffic, which might be a special traffic or a general traffic. In all cases cited the magistrate's decision had been upheld. He referred to "R. v. Shiel." The Court quashed the conviction. Mr. Justice Grantham said the question was whether the magistrate was right. The answer to that was that, in the opinion of both their Lordships, the magistrate was wrong. It was argued for the respondents that the Court ought not to interfere because the magistrate had found as a fact that this was a street, and it was said that other magistrates were entitled to find differently on exactly the same facts. The converse argument to this had been used by the junior counsel for the respondents in a former case. The magistrate, however, was not entitled to find as a fact that which the law did not allow to be fact. Turning to the facts, the owner had used the site of the brewery as a brewery for many years. In those days there were ways used by him for carts to the brewery. Those ways, in fact, were more like streets than the present courtyard would ever be. The appellant pulled down the brewhouse and stables, and proposed to build mansions round a quadrangle. The plot being pulled down, he proposed to leave a lawn, with a road round it wide enough for the carriages and cabs brought there by the tenants of the mansion. The whole thing was as private as could be. The appellant reserved the whole right of permitting people and carriages to come in. Could this be said to be a street for carriage traffic within the meaning of the Act? If it were, it would be necessary to get the sanction of the County Council, and the appellant would have to give a width of 40ft. for the drive and 20ft. for the footway, which would be absolutely useless. The case of "Davies v. London County Council" was not absolutely in point, but in it, and in other cases cited, a place such as the present was given as an instance of a place which could not be called a street. The Court was not asked to define the word "street," and did not mean to attempt it. No one had yet done so. All that the Court had to say was whether the place in question was a street. They thought it was not, that the magistrate was wrong, and the conviction must be quashed.

The Savoy Hotel Sky-Sign.—In the Queen's Bench Division, on Tuesday, before Mr. Justice Grantham and Mr. Justice Lawrance, a motion was made on behalf of the London County Council for a rule *nisi* for an order to Mr. Vaughan, the magistrate at Bow-street, to state a case in reference to an alleged sky-sign on the Savoy Hotel, kept up without a license. Mr. Avory stated on behalf of the London County Council that the London Sky-signs Act, 1891, did not include a solid board, but by the London Building Act of 1894, section 125, such a board was only excluded if it were 3ft. high or under. The board in question in this case, however, was some 7ft. high. It was 118ft. long, and fixed above the roof on an iron frame work. It was now a board of one face, with letters 5ft. high of embossed glass in a metal frame. It was visible against the sky from the Embankment and other places. At one time the letters had no board at the back of them. The magistrate had found the board not to be a sky-sign on the ground that the words in the Acts, "visible against the sky" meant such signs as showed the sky through them. There had, however, been a conviction in a similar case by another Metropolitan police magistrate. Mr. Justice Grantham said as there was a difference of opinion amongst the magistrates, a rule would be granted. Mr. Justice Lawrance concurred.

London Building Act, 1894, Secs. 59 and 73.—At the Lambeth Police-court, on July 16, before Mr. Denman, Mr. T. Sloman, of Albany-road, Camberwell, was summoned by Mr. Bernard Dicksee, district surveyor for East Newington, for non-compliance with a notice of irregularity, requiring him to carry up the party-walls 15in. above the roofs, as required by sec. 59 (i.), and to corbel out the party-walls 4in. beyond the eaves or cornices, as required by sec. 73 (i.). Mr. T. Seager Berry, instructed by the County Council, appeared for the district surveyor, and Mr. R. A. Kingsbury for the defendant. Mr. Dicksee gave evidence to the effect that on January 10 last notice was given him by the defendant of the erection of five new dwelling-houses, Nos. 26 to 34 (even), Bagshot-street, Newington, and that in the building of them certain irregularities were committed, and on May 10 he served upon the defendant a statutory notice (copy of which was produced) to remedy the same. Some of these irregularities had not been amended, and consequently the summons was issued. Since the commencement of the proceedings the defendant had amended certain irregularities in the back eaves mentioned in the notice by corbelling out the party-walls as required by witness, but otherwise nothing had been done. A diagram showing how the work had been executed, and how the Act required it to be executed, was put in and explained to the magistrate by witness. The party-walls had been carried up 13in. to 13½in. above the upper surface of the slates instead of 15in. as required by sec. 59 (i.). The irregularity complained of in the eaves was that a wooden facia or gutter board, which had been nailed to the rafter feet, projected beyond the face of the brickwork, the iron gutter was screwed to this facia, and a fillet of wood was nailed to the face of the facia to support the underside of the gutter; this facia was prohibited by sec. 73 (i), unless the party-wall was corbelled out 4in. beyond the eaves. Defendant had roofed in and practically finished the buildings since the irregularity had been pointed out to him. Cross-examined, witness said that he had measured the party parapets from the upper surface of the slates to the point where the parapet became less than 8½in. in thickness, the minimum thickness allowed by sec. 59 (i), the height above the rafters was 14½in. to 15in., the slate battens measured ¾in., and the three thicknesses of slates ¾in., making together 1½in. Asked whether he was willing to treat the facia as part of the roof, if it were completely covered with metal, he acquiesced, provided that the rules applicable to roofs were complied with so as to remove the facia from the operations of sec. 73 as a projection. Defendant then agreed to amend the eaves in this manner. Mr. Kingsbury argued that the district surveyor had measured the parapet in the wrong manner; he should have measured from the rafter, not from the slates. He quoted sec. 61 in support of this argument; in this section the roof was required to be covered with slate, tile, metal, or other incombustible material; therefore the roof existed before it was covered, and the roof must be taken to mean the rafters, not the covering of the roof. This practice had always been followed in the past. Mr. Denman said one object of a new Act was to abolish old practices. Mr. Berry pointed out that by Sched. I., Prelim. Rule I., every building was required to be inclosed by walls, and said nobody could contend that the walls were not part of the building; similarly, the roof was to be covered with slates or like material, but the roof was not complete without the covering; he contended the district surveyor's method of measuring was correct. Mr. Denman said the expression "above this roof" in the section must be taken to mean above the roof as a whole, and not above any particular part of the roof; the defendant was not entitled to dig down into the roof to find a point from which to measure. The measurement must, therefore, be taken above the surface of the slates; but the deficiency was small, and he therefore thought some arrangement might be made with the district surveyor. Mr. Berry pointed out that the district surveyor had no discretion in the matter; the section laid down a minimum, and that minimum had not been complied with. Mr. Denman finally decided to adjourn the case for 14 days, in order that the defendant might alter the eaves as arranged, during which time he would further consider the question of the party-walls. At the adjourned hearing on July 30, Mr. Berry said that the defendant had covered the wooden facias with zinc, but that was not sufficient to satisfy the district surveyor, as they should also have been set back flush with the face of the brickwork, whereas they still projected, and consequently were contrary to the section. Mr. Kingsbury objected that the defendant had done all that he undertook to do; he only agreed to cover the facias with incombustible material. Mr. Denman said that he understood that the defendant had made an offer to do certain work which the district surveyor had accepted, and he (Mr. Denman) had not taken particular notice of what had been agreed upon; but if the district surveyor was not satisfied, and the matter had to be argued out afresh, a new summons had better be taken out, as the work was now different from what it was at the first hearing. Mr. Berry argued that the case really stood where it was, as the notice of irregularity had not been complied with. With regard to the party-walls, there was another point which was not gone into at the first hearing. There were, in the rear of the houses, four water-closets in pairs; in these the party-walls were not carried up above the roofs at all; there were absolutely no party-parapets; the statutory notice and summons would cover this irregularity. Mr. Kingsbury objected that this matter was not mentioned at the previous hearing, and therefore ought not to be gone into; besides which, the roofs of the water-closets contained no woodwork whatever, and therefore no party-wall was necessary. Mr. Berry dissented. Mr. Denman thought that as these particular party-walls were not mentioned at the first hearing they should be made the subject of a fresh summons, or the case further adjourned. Ultimately Mr. Berry said that having regard to a remark that the magistrate had made at the first hearing as to the small amount of deficiency in the height of the party-walls of the main buildings, he would be willing, if the magistrate would give for future guidance a definite ruling of the subject, to withdraw the present summons, without prejudice to the question of the facias and the party-walls to the w.c. buildings. Mr. Kingsbury said that he had several witnesses to prove that the custom for the last 30 years had been to measure from the rafters. Mr. Denman said that he had considered the matter, and he was prepared to hold that the measurement must be taken from the upper surface of the roof, as contended by the district surveyor. The summons was then allowed to be withdrawn, defendant to pay £1 1s. costs to the district surveyor, it being understood that if necessary a fresh summons would be taken out for the irregularities in the facias and the party-walls to the w.c.'s.

Neglect to Give Notice.—Messrs. T. White and Son, of 52, Fairfield-road, Bow, E., were summoned at North London Police-court on Aug. 1 by Mr. A. Payne, district surveyor of East Hackney, South and North Bow, for commencing works in rear of 114, Cadogan-terrace without the notice required by Section 145 of the London Building Act. The defendant admitted the offence, but said it took place owing to a misunderstanding with his employer, the occupier of the house. The magistrate said that the notice ought to be given, and imposed a fine of 2s. 6d. a day from the time when the notice should have been given, and allowed 12s. 6d. costs.

Ancient Lights in the City.—Lord Battersea and Others v. the Commisioners of Sewers for the City of London.—In the Chancery Division, on Friday, before Mr. Justice North, a motion was made on behalf of the plaintiffs, the lessees for a long term of Weavers' Hall, in Basinghall - street, for an injunction to restrain the Commissioners of Sewers from building at 72 to 75, Basinghall-street in such a way as to obstruct the ancient lights of the plaintiffs. The plaintiffs stated that the building which formerly stood on the site now belonging to the Commissioners was 12ft. high to the eaves, and 19ft. 6in. to the apex; but the defendants were now proposing to erect a lofty building, for their offices, 66ft. 3in. to the eaves, with turrets, towers, and battlements considerably exceeding that height. Inasmuch as the proposed building is exactly opposite Weavers' Hall, the plaintiffs submitted that it would very materially obstruct their light, especially as the street was only 25ft. wide at the spot. The defendants contended that the building which was demolished to make room for the new building was a temporary erection on the site of a much higher frontage which was pulled down in 1875, so that they should be allowed to build on the scale they now intended. The Judge granted an injunction restraining the defendants from building a portion of the erection above a certain height, but gave leave to appeal.

CHIPS.

At the meeting of the Birkenhead Town Council on Wednesday a scheme for the improvement of two unhealthy areas, situated in Tunnel-road and Egerton-street respectively, was adopted.

The big tunnel on the new Sheffield Extension line to London is near Rugby, and corresponds to the celebrated Kilsby tunnel on the London and North-Western Railway. Half-a-dozen shafts are sunk already, and six more are in progress. The material is good for working, and almost free from water. Stone is very sparingly used in the construction, Staffordshire blue bricks being found better.

To-day (Friday) the Newcastle Society of Antiquaries will visit the Roman station at Aesica, on the line of the Roman Wall, some three miles from Haltwhistle. Under the guidance of Sir William Crossman and Dr. Hodgkin, the newly-excavated portion of the camp will be inspected and described.

The Meffan Trustees have acquired by purchase the large building, 12 to 16, West High-street, Forfar, the sum paid being £1,300. Miss Meffan, the legatee, died in 1879, leaving her trustees a large sum of money to be used for the moral and intellectual improvement of the community of Forfar. The sum left has now accumulated to over £6,000, and the trustees purpose demolishing the building they have bought and erecting thereon a Meffan Institute, which will contain a library, reading and recreation rooms. The new building will cost about £3,000, and the surplus of the trust will be held as an endowment.

The Hackney Vestry, in emulation of their neighbour Shoreditch, have decided to utilise the heat of their refuse destructor for steam-raising purposes in order that they may be able to introduce the electric light into their district. The scheme has been intrusted to Mr. Francis H. Medhurst, their consulting electrical engineer, who holds similar appointments for Bedford and several other corporations.

WATER SUPPLY AND SANITARY MATTERS.

Scheme of Water Supply for the Metropolis.—The scheme propounded by Mr. A. R. Binnie, the engineer of the London County Council, for a new water supply for the Metropolis, may (says the *Engineer*) be properly termed colossal, both in design and cost. Two of the reservoirs will be the largest ever constructed in this country. The works would possess a dual character, including two aqueducts, the largest in the world, one 150 miles in length and the other 176. The former would be the first to be constructed, the latter awaiting commencement at a subsequent date. Each is to convey 200 million gallons per day, and both are to be entirely covered over for their whole length. The northern or Midland Counties aqueduct will start from Hay, in the Wye Valley, and discharge into a service reservoir a little to the north of the Elstree Hills. The southern aqueduct would also pass from the Wye Valley, and would run parallel with the first as far as Chedworth, after which it would proceed by way of Hungerford, Basingstoke, and Guildford, to Banstead. Some deviation from this plan of the aqueducts is possible, but Mr. Binnie does not appear to recommend it. The proposed sources of supply are situated at altitudes ranging from 600ft. to 2,800ft. above the sea level, at the head-waters of the Rivers Usk, Wye, and Towy, in the counties of Cardigan, Brecon, Radnor, and Montgomery. The water will flow by gravitation into the service reservoirs; and the only pumping required will be for the small areas on the summits of Hampstead, Highgate, Shooter's Hill, and the Sydenham Hills. Such are the leading features of the project, which practically involves the abandonment of the present sources of the metropolitan water supply, except that derived from springs and wells in the chalk. The estimated outlay is £18,000,000.

Shrewsbury.—At special meetings of the town council, held last week, it was decided to carry out the schemes for the new water supply of the borough, and the interception and disposal of the sewage, prepared by Messrs. John Taylor, Sons, and Santo Crimp, of Westminster. The water scheme involves the construction of a large impounding reservoir, together with the necessary filter-beds, pumping station, service reservoir, and necessary mains for obtaining a Severn supply. As regards the main drainage, it is proposed to carry out a complete system of intercepting sewers, which will discharge at a central pumping station, from which the sewage will be pumped to land for purification. The schemes are estimated to cost about £85,000, exclusive of the cost of land.

In the parish church of Porlock, Somerset, which was restored in 1892 under the supervision of the late Mr. Sedding, new choir-stalls were last week erected. They are of oak, worked from the drawings of Mr. Sedding. In the front of the seats are panels carved in various devices. The ends of the seats are similarly treated, but each with different foliage. The poppy-heads, which are not so large as usual, are more ornately worked. The backs of the seats are chiefly in "linen work," but the clergy desks are elaborately carved. The whole work has been done by Mr. James Huish, of Porlock.

Mr. Thomas Codrington, one of the Local Government Board inspectors, attended the Leigh Technical School on Friday to inquire into an application of the Leigh and Atherton Joint Sewerage Board for sanction to borrow £45,207 for the purpose of sewerage and sewage disposal. The evidence given by Messrs. J. H. Stephen (Leigh) and E. Pritchard (London), engineers for the board, showed that the scheme proposes to deal with the sewage of the townships of Atherton and Leigh on farms held by the Leigh Local Board prior to the formation of the joint board in 1894. The estimated cost of the construction of joint sewers is £17,407 3s. 8d., whilst the cost of works on the farms is estimated at £27,800, making a total of £45,207 3s. 8d. The farms have an acreage of 228 acres; but at present it is only proposed to deal with 80 acres, leaving the remainder for future utilisation.

The will and four codicils of Mr. Francis Vigers, formerly head of the firm of Messrs. F. Vigers and Co., estate agents and surveyors, Frederick's-place, Old Jewry, late of The Mole House, Kersham, Surrey, who died on February 14, were proved on July 23 by Mr. Astley Vigers and M. George Vigers, the sons, and Mr. Edward Rushworth Keele, the executors, the value of the personal estate amounting to £9,125.

The school board for Leeds accepted at their last meeting tenders amounting to £14,117 18s. 6d. for a school to be built at Burmantofts. The buildings will accommodate 1,600 children in three departments, and will thus cost £8 16s. 6d. per head. At the same meeting plans were adopted for a new school for 750 children, to be built in Gledhamroad, Roundhay.

STATUES, MEMORIALS, &c.

Bury, Lancs.—A Runic cross has recently been erected in St. Paul's-churchyard to the memory of the late Mr. Lawrence Booth, architect, of Manchester and Bury. The cross is 5ft. 6in. in height, and stands on a solid stone base 2ft. in depth. The whole of its front surface is worked into panels with carved interiors, the four panels in the top portion being filled with Masonic emblems to illustrate the various ranks which the late Mr. Booth held as a Mason—viz., Craft, Past-Master, Royal Arch, and Mark Mason. On the front of the stone base is the following inscription, the letters of which are let into the stone with lead:—"In loving memory of Lawrence Booth, F R.I B.A. Born March 17th, 1837. Died July 25th, 1894." The cross, which is of Macclesfield stone, has been executed by Mr. J. Rawson, of Knowsley-street, Bury, from a design prepared by the late Mr. Booth's eldest son, Mr. Richard Booth.

York.—Mr. Hamo Thornycroft's recumbent figure of the late Archbishop Thomson, in York Minster, has been placed upon the tomb erected some time ago, and the unveiling takes place with due ceremony to-day (Friday). The effigy, which is life-size, is sculptured in cream-coloured statuary marble. His Grace is represented in his archiepiscopal surplice and bands. His hands are clasped, and a favourite dog rests at his feet. The statue has been carved out of a solid block of marble. The canopy and altar tomb, designed by Mr. G. F. Bodley, A R.A., are Early Perpendicular in style. The plinth and step of the altar tomb are of Belgian black marble, and the step is paved with black marble of the same description and white Carrara marble. The remainder of the work is of white Tottenhoe Clunch stone from the Bedfordshire quarries. The front of the tomb is divided into nine panels, filled by figures of angels. The panelling is surmounted by a moulded slab of marble, on which the sculptured effigy has been placed. Round the edge of the tomb there is a Latin inscription on brass, and on each side are buttresses, with pinnacles, rising from the base to the cresting on the canopy, in which are traceried windows, perforated and enriched with crockets, finials, and other ornamentations. The whole is surmounted by cresting elaborately carved, in which roses from a conspicuous ornament. The canopy is groined beneath with fan-groining, terminated by pendants, and there is a carved inscription, intersected by a floriated cross just below the groining.

CHIPS.

According to the designs of Mr. H. H Bridgman, C.C., F.R.I B.A., the St. Pancras Female Orphanage, Hampstead-road, is about to be rebuilt at a cost of nearly £6,000.

The Glasgow Dean of Guild Court have just approved of Mr. Frank Matcham's plans for the reconstruction of the Gaiety Theatre, which is to be converted into the Empire Palace. Operations will be begun in October and finished about the end of the pantomime season.

An ornamental recreation ground at the southernmost extremity of the Isle of Dogs was opened to the public on Saturday by Mr. W. Crooks, chairman of the North-East District Parks Committee of the London County Council. The land has an area of three acres, and is opposite the front of Greenwich Hospital.

A new reading-room at Springfields, Wolverhampton, built by a bequest by the late William Butler, of that town, was formally opened on Friday. Mr. J. Lavender, of Wolverhampton, was the architect, and Messrs. J. Bradney and H. Lloyd were the contractors.

The Liverpool Corporation have acquired the Liverpool Electric Supply Company's undertaking for the sum of £400,000, subject to the approval of Parliament. The corporation also agreed to pay any sum which the company have expended on capital account for the benefit of the concern over and above its share capital.

The school board for Watford have appointed as architect for their proposed schools in Fearnley-street, Mr. C. P. Ayres, of that town, whose design was selected in competition.

The most serious fire that has happened in the centre of Birmingham since the destruction of Marris and Norton's furniture establishment occurred on Friday night in Paradise-street, and resulted in the entire destruction of the interior of the premises of Messrs. J. R. Lee and Co., decorators and workers in stained glass. The building consisted of four floors in Paradise-street, with a modern stone front to that thoroughfare, and having basement and sub-basement; the premises extended backwards in four stories as far as Swallow-street. The front rooms were occupied as stock and show rooms, the basement was filled with a large quantity of oils, varnishes, and other materials, and industrial operations were carried on at the rear.

Our Office Table.

Mr. Cecil Harcourt Smith, of the Department of Greek and Roman Antiquities in the British Museum, has been appointed by the managing committee of the British School at Athens director of the school for the next two years, in succession to Mr. Ernest Gardner, who has held the office since 1887. The Trustees of the British Museum have, with the concurrence of the Treasury, given Mr. Smith special leave of absence for the purpose. Since the meeting held by the Prince of Wales at St. James's Palace on July 9, a number of additional subscriptions and donations have been promised in support of the work of the school.

In the course of the excavations that are being carried on by the Greek-Archæological Society on the site of the ancient city of Mycenæ, in continuation of the work of the late Dr. Henry Schliemann, several more prehistoric tombs have been discovered and opened. Among other objects, M. Tsountas, the Inspector of Antiquities, has found two mirrors of brass, two poniards of copper, seven rings of gold without ornamentation, and twelve others adorned with various figures.

The new art gallery which Mr. Tate is building on the site of the old Millbank Penitentiary, as a gift for the nation, has already risen to a height of some 20ft. above the ground level, and all but the lofty central portion will probably be roofed in before the winter. The whole will, it is expected, be completed in another twelve or eighteen months. Mr. Sidney R. J. Smith, the architect of the gallery, considers that the pictures may be displayed in it with very little delay after completion, as the walls are to be lined not with plaster, but with wood, and as the roofing-in will shortly be done, there will be ample time for the necessary drying. The remaining portion of the land will be utilised as the sites for a small military infirmary, a hall for Civil Service examinations, and some model dwellings to be erected for the London County Council.

At the last meeting of the town council of Glasgow an animated discussion took place as to the purchase for £400 by the Art Committee of a portrait of Cornelius de Witt, by Van der Helst, as an addition to the permanent collection. A. M. Shearer asserted that this was a sort of picture that only strangers to Glasgow could appreciate, and very few of them. It would have been better to buy £400 worth of grocers' calendars and send them through the community! As the picture had been bought from the surplus derived from admissions to the picture exhibitions, the matter dropped, although two or three other members thought the purchase a bad bargain.

The report to the Livery of the Carpenters' Company for 1895 states that the expectations expressed in the last report, with respect to the result of the examination at the Stratford Institute, have been more than realised, the grant received from the Science and Art Department being considerably larger than in the previous year. The Court believe that much of the success of this institute is owing to the personal supervision given by various members of the company. The Livery had lately the opportunity of seeing the buildings now complete. More warm baths have been added since the last report, and both these and the swimming-bath are more largely used than ever. The work at Titchfield-street, W. (formerly the West London School of Art), is also of the most satisfactory character. To the classes mentioned in the report of last year is now added one for plumbing. Every effort was made to induce the Plumbers' Company to join; but as they did not seem willing, the Court determined on starting one themselves, and opened with 16 students, about as many as there is accommodation for; in fact, the whole building is now almost fully occupied. At the close of last year lectures were given to those intending to sit for examination on sanitary matters, and in December 41 came up for examination, of whom 30 gained a certificate. In the spring a course of popular lectures was given to large audiences. A course of purely practical lectures was given in May to candidates for examination in carpentry and joinery, and there was an average attendance of upwards of 100. Seventeen went in for the examination, of whom five gained first-class and seven second-class certificates. The technical library continues to be largely used, and the Court draw attention to the gift of Mr. Henry Harben, the late Master, of the bookcase and its contents which stands in the drawing-room. The classes at King's College and University College are being carried on with vigour, and the numbers of the latter show a considerable improvement. The classes for wood-carving at King's College have been very satisfactory, and the work done by the students there, and sent to the exhibition last month, showed a marked improvement on former years. Those at Titchfield-street confined to the trade have somewhat fallen off in numbers, but the wood-carving trade has experienced a time of great depression, which may possibly account for it.

The Yorkshire Branch of the Sanitary Inspectors' Association held a general meeting at Huddersfield on Saturday. Inspectors first visited the Hillhouse refuse destructor, and returning to Huddersfield, were entertained to lunch in the Mayor's reception-room at the Town Hall, by the Health and Sanitary Committees of the corporation. The members were afterwards conveyed by a special tramcar to the borough sewage outfall and purification works at Deighton. These works, which, with the land, have cost about £100,000, were inspected with much interest, attention being called to the comparatively clear effluent from the tanks, as compared with the inky and repulsive character of the sewage before it passed into the works. Mr. R. S. Dugdale, C.E., the borough engineer, acted as guide, and described the works in detail. Alderman Jessop, at a subsequent meeting in the board-room, stated that the corporation were not tied to any particular system of purification. In the No. 1 tank they were at present experimenting on the International Sewage Purification Company's system. The cost of the chemical precipitant was 28s. per million gallons of sewage purified, and if that system were adopted, in the whole of the 24 tanks at the works, the cost per one million gallons would be 16s. Having returned to the Town Hall, the members heard an address from Mr. R. W. Cass, surveyor and inspector of Pudsey, on "Some Important Details in Drainage and Sewerage." Mr. T. Pridgin Teale, of Leeds, president of the branch, occupied the chair. Mr. Cass dealt chiefly with the defects noticeable in house-drains, pointed out where mady of the arrangements were at fault, and laid a heavy hand on the too-often scamped work of the jerry builder. By a series of diagrams, photographs, and models, he clearly illustrated the manner in which dwellings often became insanitary, and how such serious evils might be overcome.

The new City and Waterloo Railway, says a daily contemporary, has got quite clear of the river. One end has pushed up into Stamford-street, and is making rapidly for Waterloo; the other has burrowed under the District Railway near Blackfriars Station, and is just entering Queen Victoria-street, where it will have above it not only the underground line between Blackfriars and Mansion House, but a main sewer that runs under that. Plans for the two terminal stations are now being elaborated, and negotiations are proceeding with the new Central London Company for determining the details of the connection between the two lines underneath the roadway in front of the Mansion House.

The extensions of the Thomason Hospital, Agra, are illustrated in *Indian Engineering*. The building is in a Gothic style, treated in a semi-Indian manner, the walls of brick pointed externally and plastered internally. The new buildings comprise a dispensary-block, one public and two private wards, a European ward, and subsidiary buildings. The public ward is the chief addition. The plan shows a long building surrounded by a verandah, with Tudor-shaped arches and a tile lean-to roof. The two wards are each 60ft. by 22ft., and are separated by a passage or corridor in the centre, connecting the front and back verandahs, and giving access to the wards, &c. The main roof of ward is also of Allahabad tiles on *sâl* wood trusses. The floors are of mosaic; the walls are painted with silicate paint to 6ft. high round wards, and panelled cloth ceilings are put up in the European ward. Scouring sluices for flushing and cleansing the floors have been provided in all the wards. The designs were prepared by Mr. C. J. Sheridan, executive engineer, and carried out by Mr. Murphy, district engineer.

Trade News.

WAGES MOVEMENTS.

Edinburgh.—At a meeting of the Edinburgh and Leith Master Builders' Association, held on Tuesday night, it was unanimously agreed not to entertain the demand for an increase of joiners' wages, it being considered that the state of trade did not warrant it.

CHIPS.

A tower is about to be added to the church of St. Bartholomew, Bolton, as a memorial to the Rev. H. Loxham.

A new bridge across the Seine at Paris, joining the Quai de Javel to the Quai d'Auteuil, has just been finished. The bridge, which is to cost altogether 2,000,000 francs, was begun two years ago, and is to be called the Pont Mirabeau.

At a special meeting of the Pudsey District Council, the No. 4 section of the Pudsey sewerage scheme has been let to Messrs. Garforth Bros., of Mirfield, for £1,924. This section includes the whole of the Waterloo, March, and Gibraltar portions of the township.

At the closing meeting of the annual congress of the British Medical Association, held in London on Friday, a resolution was adopted declaring that in the interests of the public health, and in justice to provincial medical officers, it was desirable that they should enjoy the same security of tenure as is enjoyed by the poor law medical officers and London medical officers of health, and also Scotch medical officers.

A purchase has just been made, on behalf of the Nelson Corporation, of eight acres of land, situate on the higher side of the town. The land, which will be laid out as a park, has been acquired for about £300 per acre.

A proposal is on foot for establishing a new secondary school at Shepton Mallet, to supersede the present grammar school. Towards the outlay that will be involved the governors of Sexey's Hospital will contribute £1,500, and the Somerset County Council £750, while £800 has been subscribed locally.

A new lighthouse on Spurn Point, Yorkshire, will be brought into use next month. The light will be visible seventeen miles off, the lantern being at an elevation of 120ft. above high-water mark. There will also be three subsidiary and distinct lights—two at 60ft. above high water, and one at 45ft. The lighthouse, which is built of Staffordshire brick, stands on a very narrow spit of land, and has been erected by the London Trinity House.

At a recent meeting of the guardians of the Pontefract union, the unanimous decision of the building committee for the appointment of Mr. J. H. Greaves, of Leeds and Pontefract, as architect for the new laundry and washhouses, porter's lodge, and vagrant wards, was confirmed by 35 votes to 2. The new infirmary, recently erected from the designs of the same architect, is now near completion, and will accommodate 100 beds, at a cost of £7,000, the contract for which has been successfully carried out by Messrs. H. Arnold and Son, of Doncaster.

The subscriptions to the rebuilding fund of St. Peter's Church, Oldham, now amount to £6,311. An effort is being made to obtain £7,000 by the end of the year.

The Wilmslow District Council, on Thursday in last week, considered tenders for the construction of the northern sewerage scheme. After some discussion, the Council decided to accept the lowest, that of Mr. J. A. Ewart, of Warrington, the amount being £5,279. The work is to be proceeded with at once. The outfall works are to be constructed on land near Styal, which had been purchased from the Chorlton Board of Guardians. Mr. Bowden is the engineer.

The members of the North-Western Sanitary Inspectors' Association will visit Darwen tomorrow (Saturday) by the invitation of the mayor (Mr. William Pickup) and corporation of that borough.

Messrs. Fambrini and Daniels, Architectural Concrete Works, Lincoln, have secured the contract for supplying a series of 26 tracery windows for St. Wilfred's Catholic Church, Hull. The above are of various sizes, those for the sanctuary being 16ft. high. Messrs. Smith, Broderick, and Lowther, Hull, are the architects.

A Local Government Board inquiry was held on Friday at the Courthouse, Stockport, by Mr. Thomas Codrington, concerning an application to the Local Government Board by the Stockport town council to borrow £37,636 for purposes of street and bridge improvements and public parks, also for £2,024 for the extension of the technical school.

A column of red granite erected at Uxbridge to the memory of John Bedford Leno, the veteran Chartist and Socialist, was unveiled in the presence of the members of the Hotspur Club on Sunday.

The United Asbestos Company, Limited, of Dock House, Billiter-street, London, E.C., have been awarded the contract for the supply to the Admiralty of asbestos packing and other goods for the ensuing year, 1895-6.

The parish church of St. Martin's at Brighouse, which has been closed for the purpose of restoration, was reopened on Thursday in last week. The principal alteration has been the re-pewing of the church and the building of a new porch. The sermon was preached by the Bishop of Wakefield.

A newly-erected Primitive Methodist church and schools in Front-street, Shotley Bridge, were formally opened on Saturday afternoon. The building, which supplants incommodious and inconvenient premises in Wood-street, has been erected at a total cost of £2,100. There will be accommodation for 400 worshippers.

Mr. George Woofenden, of Kenwood Bank, Sheffield, who died last June, has left some munificent bequests to his native place. His will has just been proved at £134,000, of which £120,000 is to be devoted to the erection and endowment of convalescent homes and almshouses.

The memorial to the late William Charles Fynes Webber (1815-81), consisting of a tablet in Dove marble and a medallion portrait in Carrara marble, has just been placed in the crypt of St. Paul's Cathedral. The design is by Mr. F. C. Penrose, P.R.I.B.A., architect to the Dean and Chapter.

The tender of Messrs. Dorse and Co., of Cradley Heath, Staffordshire, has been accepted for the erection of new engineers' shop and offices, at Cradley Heath, for J. Stevens and Co. Tender A, not providing bricks, £1,700. Tender B, providing bricks, £2,400.

The Watching Sub-Committee of the Aberdeen Town Council recommend that a new fire station should be erected on the site of the existing establishment in Frederick-street. It is also proposed to have a permanent staff of firemen. The estimated cost of the building, including apartments for the lighting and weights and measures department, is £9,000.

The town council of Grimsby have received a report from the highways committee recommending that the salary of Mr. M. Petree, the borough surveyor, be increased at once from £350 to £400 a year, with an annual increase of £50 for the next two years, making the ultimate salary £500 per annum; and also that the salary of the assistant surveyor, Mr. Heap, be raised from £130 to £150, and then by annual instalments of £25 till it reaches £200.

Mr. Wolfe Brennan, C.E., Oban, has been engaged to survey and make up a probable estimate of the cost of constructing the proposed railway line connecting Loch Fyne with the West Highland Railway. This new line will run up Glenkinglas, striking across to Loch Sloy, joining the West Highland line at Inveruglas.

After having undergone extensive alterations and improvements, the parish church of Ledbury has been reopened. Amongst the more noticeable innovations are an oak altar and five stained-glass windows. The cost of the restoration has been nearly £5,000. Mr. J. L. Pearson, R.A., was the architect, and Messrs. Bunning, Camberwell, were the contractors.

The first school erected by the Birkenhead School Board, that in the Woodlands, off Borough-road, was formally opened on Tuesday. The school will accommodate 979 children, but additional rooms, which may be utilised for special purposes, provide further accommodation for 228 more children. It is built in two blocks, and consists of one story only throughout. The buildings externally are faced with pressed bricks, and internally the various school and classrooms have wood-block floors on concrete. Mr. John Shaw, of Birkenhead, was the general contractor, and he has carried out the work from the designs and under the superintendence of Mr. Charles Wise, architect, Liverpool.

The Vestry of St. Mary the Virgin, Aldermanbury, E.C., have decided to accept the offer of Mr. C. C. Walker, of Lilleshall Old Hall, near Newport, Salop, to erect a granite memorial in the church to John Hemming and Henry Condell, both of whom were fellow actors of Shakespeare and parishioners of Aldermanbury.

The efforts of the British Archæological and Antiquarian Associations to better preserve Stonehenge have been attended with considerable success. They found in Sir E. Autrobus, the owner of the soil, a man who was eager to aid them. As a result of the negotiations between the societies and Sir Edmund, a responsible person is placed at the stones who has practical charge of them, and whose business it is to prevent any iconoclastic stupidity on the part of visitors.

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXIX.—No. 2119.
FRIDAY, AUGUST 16, 1895.

"AS OTHERS SEE US."

WE gave last week an abstract of a very kindly and, as it seems to us, a very reasonable, criticism of London architecture from an American point of view. Mr. Barr Ferree, who contributes it to the *Architectural Record* of New York, deals with both the weaknesses and the successes of English architects; and it is interesting to see how far his estimate, in each case, agrees with our own.

We are still uncertain, he thinks, what style to follow. Our fashions change too rapidly—one wave of foreign influence succeeds another—and before we are fairly at home in any mode of design, we cast it aside and take up a different mode. This is perfectly true. We waste our strength in trying to pick up the last new way of expressing ourselves, when it would have been better to use it in finding something new to express. Most of us follow the new simply because it is new, not because we particularly like it. It is only one man here and there, probably, whose heart is really in the mongrel Renaissance of the hour. It gives no scope for doing anything that could not be done much better in some type or other of archless Gothic. It is in no way more convenient, or more flexible, or more in harmony with modern surroundings. But two or three clever men began it, and as the multitude do not like to be left behind, they all tried to use the same forms, without the same cleverness. This fancy will soon have had its day, and then some people threaten us with Renaissance of a still more dismal type. We are to have Wren's style without Wren's genius. There are to be more Royal Exchanges, more Regent-streets, more Marble Arches, probably, and we are adjured to put up with them because they are so "very English"! They strike Mr. Ferree as having been designed under French influence; but, in any case, he thinks the recent examples totally uninteresting. Does anyone—except, possibly, their designers—think otherwise?

The utterly ignorant architecture which characterises so much of the City appals our critic. Its death-like dulness, its negation of ideas, its complete subservience to commercialism, impress him as more than mortal; and as mere carelessness hardly accounts for them, he asks whether they are not intentional and studied. Mr. Ferree has evidently never heard of the speculative "architect," 90 per cent. of him speculation, and the rest surveying. He haunts the City, and adorns the Institute; for he is one of the inartistic who prosper in the world. He knows how to make his profession pay. He departs at last, universally respected, and it is only to be regretted that his works do not follow him. But turning from charlatans and pretenders to men who, more or less, deserve the title they bear, the general picturesqueness of their works is what strikes our visitor. This is one of the chief ends, he says, at which London architects are striving. No doubt this is so, and no doubt, also, they sometimes strive not wisely, but too well. But, of the two ways in which a town can be built—the regular and the picturesque, it is the latter alone which suits our conditions. It is in harmony with our independence and individualism. Every Englishman likes to do what is right in his own eyes. He wants all the freedom he can have without trespassing on the freedom of others; and sometimes, we fear, even more than that. He has not much faith in State interference, and State regulation. He may put up with it, after a good deal of grumbling, in what he recognises as important matters, such as light and air, and sanitation; but he is not going to be compelled, for the mere look of the thing, to make his floors and windows, and cornices, range with the floors and windows and cornices of his next-door neighbour. They may do that in Paris if they like; but "Britons never will be slaves." Perhaps, by chance, his decision is on the side of art as well as of liberty. London is not laid out for formality, and a London atmosphere is not the thing to make formality look well. Oftener than not, long horizontal lines of buildings, even if we had them, would be lost in the distance, and not seldom, they would be quite invisible. But we can generally see the skyline of the ten or twenty houses nearest to us; and the thing that answers best, therefore, is to get an effective skyline. Obviously it is much easier to attain this with a lot of independent and comparatively narrow fronts of varied height, than with one long façade; and so the Londoner's impatience of control may be all for the best.

We just said that London is not laid out for formality. That is true as to the older streets and the underlying scheme of the whole. We wish it was also true of the newer thoroughfares, and of those now projected. But as to these, there is a constant discordance between the streets and the architecture, which is only the outward and visible sign of a conflict between boards and vestries and councils on the one hand, and people of artistic tastes on the other. When a new line of traffic is proposed, the one idea of the average councillor, and of the average engineer who advises the council, is to make it a perfectly straight one. It looks so nice on the map, and if it costs some millions more than it would do if the board reserved the option, in negotiating with the owners of the ground they are buying, to curve it a few yards to the right or the left—well, so much the better for the owners. But it is not so much the better for London, any more than it is for London ratepayers. Picturesque architecture goes best with picturesque streets, which allow it to be seen from varied points of view; which let you come on it unexpectedly, and not always have it in prospect as far as the state of the air will admit. A very little curvature indeed will do this—a little break, here and there, in the soul-wearying straightness of the road. It would be too slight for inconvenience to be thought of in connection with it; the lengthening of the way would be imperceptible, but it offends a popular superstition. Bumble and Co. want to make London formal; cultivated persons generally want to make it picturesque; and though Bumble and Co. cannot possibly get their own way in this matter, they can partly hinder the cultivated persons from getting theirs. They have the satisfaction of keeping London from becoming beautiful in the only way in which beauty is possible to it, and they have the assurance to go about at the same time, saying, "See the wonderful improvements we are making." But perhaps this only describes what has been. We may have entered a new era. Let us keep a sharp eye on the "Council Broadway."

Some points of arrangement in English buildings, which we are so accustomed to that we never think twice about them, strike Mr. Ferree as peculiar; he deems them more defensible in houses than in business premises. Here we are inclined to differ from him. House basements, when occupied, as they generally are, by kitchens, sculleries, and the like, are objectionable in many ways. They are far from healthy for the servants employed there. They cause a great amount of needless labour, in running up and down stairs, and in carrying up dinners, luncheons, and everything that belongs to them, and they are an effectual means of diffusing the smell of the cooking all over the house. Most of these faults are not found in basements used for trade. They let at a high rent, and allow an extra story to be provided at the bottom of a structure, where our regulations as to the heights of buildings would not permit it at the top. Still, on sanitary grounds, basements are not to be greatly encouraged anywhere. If London had just been totally destroyed and were about to be rebuilt, it might be well to start again without them. But as it is, the architect who rebuilds, or who builds a new office or warehouse which adjoins an old one, generally finds that his neighbours have basements, and that he must take his party-walls down to their level so that the question is practically settled apart from his own preferences.

We turn to the criticisms on particular works. Many of them come in for very high though discriminating praise. The New Admiralty, however, is described as of commonplace design, and the new Record Office does not fare much better. The addition to the National Gallery is looked upon as rather excusable than admirable. The Law Courts produce in our critic the same feelings of mixed admiration and disappointment with which we are familiar here. But we think that Street was right in the principle he adopted of breaking up the front into a series of masses, to be seen one after another. The great external weakness of the work is in its central mass, in the recessing of the great hall behind the buildings which flank it. Very few façades with a recessed centre are really successful, and this is not one of the successes. On the other hand, there is great beauty in many of the subordinate masses, not merely in the Strand, but in the north elevation. The detail in general is admirable, both inside and out. Altogether it is the work of a man of genius battling with great difficulties; not only the difficulties of site and arrangement, but the much greater and quite unnecessary ones imposed by the perverseness of self-conceited officialism. No doubt there is plenty of this all over the world; but in England we seem to be endowed with a double portion. From the greatest national work down to the smallest chapel or school, everything here is marred by the interference of ignorant committees, without knowledge, without taste, and too often without fairness or honour or conscience.

If, as Mr. Ferree says, the Imperial Institute fails to accomplish the specific purpose for which it was erected, that is certainly not the fault of its architect. The fact is, that the promoters of the scheme did not know, from the first, what it was they wanted. Somebody who had been reading about the movement for a closer union of England with the colonies thought that a central building in London, where English and colonial men of business could meet and exchange ideas, would be a good thing. Then he, or someone else, hit on the name of "Imperial Institute" for it. Plans were invited, in a limited competition, for an Imperial Institute, whatever that might be. One of the competitors thought it was one thing, and another competitor another, and the vagueness of the whole affair was their trouble. The promoters aimed at nothing definite, and they have attained no definite success, except in adding to the South Kensington group of buildings another which is externally the most striking of them all. We do not agree with Mr. Ferree that the Imperial Institute errs on the side of too much picturesqueness; but we do agree with him that it has too much detail, considering how tame and unmeaning much of the detail is. As a whole, however, the exterior groups together very finely; but it is less satisfactory on a near approach than when seen from various points in Exhibition-road.

The Natural History Museum is the text for another lecture on the tendency of London architects to over-elaboration of detail—a lecture which is well deserved, and a text which is well selected. The Museum has much about it that is admirable; but partly, perhaps, from the nature of the material, its ornament often looks coarse, mechanical, and misplaced. The mouldings, perhaps, are not much larger than Romanesque ones in general; but the fact of their being in terracotta makes them hard and staring and aggressive. It may be questioned, too, whether the animal sculpture or modelling in the interior is not a mistake. It is too much in the vein of the popular designer, who, when he shapes a vase to hold flowers, thinks it the appropriate thing to paint flowers all over it. But painted flowers look poor beside real ones, and terracotta beasts besides stuffed ones. We can put up with reminiscences of nature when nature herself is away, and only then. To some of us the internal sculpture of the Natural History Museum is a very jarring element. It takes off the attention from what one has come to see, and it does not reward the attention it has attracted.

Domestic architecture and churches, in their best examples, find almost unmixed commendation. But here, as everywhere else, the multitude think that to copy an able man's style is to become his equal; and every successful house leads to a lot of unsuccessful imitations. It is the same in every art—at least, since the arts have become disorganised. It is the way of the modern world, and the price, perhaps not too high, which we pray for freedom.

PARTY-WALLS ABOVE ROOFS.

HOW a party-wall is to be measured above roofs is a point which has just been decided upon by the magistrate of the Lambeth Police-court, Mr. Denman. The question had been raised in connection with a summons taken out by the district surveyor for East Newington for non-complying with a notice of irregularity against a builder, defendant. According to section 59 (i) of the London Building Act, 1894, every party-wall shall be carried up 15in. above roof, measured at right angles to the slope of the roof, or 15in. above the highest part of any flat or gutter, as the case may be. Such height applies to buildings other than those of the warehouse class. The defendant appears to have carried up the party-walls of five dwelling-houses 13in. to 13½in. above the upper surface of the slates, instead of 15in., as required. Another irregularity referred to the corbelling out the party-walls 4in. beyond the eaves or cornices, as required by section 73. A wooden facia-board had been nailed to the rafters' feet, and projected beyond the face of brickwork, and the iron gutter was fixed to the facia. The Act required that the facia in such a case should be stopped by corbelling out the party-wall 4in. beyond the eaves. The defendant had practically roofed-in and finished the buildings since the irregularity had been pointed out. The district surveyor, in cross-examination, said he had measured the parapets. The height above the rafters was 14½in. to 15in., the slate battens measured ¾in., and the three thicknesses of slates ¾in., making 1½in. together. Defendant agreed to amend the eaves as required by the district surveyor, the facia was covered with metal, and the party-wall corbelled out as required; but the main contention remained as to the height of party-walls above roof. It was contended for the defendant that the district surveyor had not measured the parapet in the right manner; that he should have measured from the rafter, not from the slates, and sect. 61 was quoted in support of this view, which says the roof "shall be covered with slates, tiles, metal, or other incombustible material." From this he affirmed that the roof existed before it was covered. On the other side it was argued that the roof was not complete without the covering, and therefore the district surveyor was right in measuring the height of parapet from the slates. It was this little altercation between the contending counsel which formed the main argument. Are the words "of 15in. measured at right angles to the slope of the roof" to mean measured to the top of the rafters or to the slate surface? There is just a doubt about the question, which shows the need of revising the section by the addition of explicit words defining the actual surface. Reading between the lines, the meaning is, no doubt, that given by Mr. Denman—namely, that the measurement "must be taken from the *upper surface* of the roof." The latter part of the same clause, which reads "or 15in. above the highest part of any flat or gutter," seems to imply the meaning that the upper surface is intended; but this argument was overlooked. Mr. Denman's ruling is at least reasonable. He said the expression "above the roof" in this section must be taken to mean above the roof as a whole, and not above any particular part of the roof; the defendant was not entitled to dig down into the roof to find a point from which to measure. The measurement must, therefore, be taken above the surface of the slates; but the deficiency was small, and he therefore thought some arrangement might be made with the district surveyor. After another hearing of the case, the representative of the L.C.C. agreed to withdraw the summons as to the height of party-walls without prejudice to the other irregularities complained of, on the understanding that the magistrate would give for future guidance a definite ruling on the subject of the measurement of party walls. This Mr. Denman did, as we have seen.

We have here another instance of the need for clear definition. When certain measurements are enacted, the material or surface from which they are taken ought to be very plain, and avoid any risk of misapprehension. The word "slope" of roof in this connection is, for instance, unnecessary, as it only implies inclination, whereas surface has a more tangible and distinct meaning if used with a qualifying adjective. Other instances will occur to the reader, such as the dispute in terms "party structure", and "old" and "new" buildings. What, for example, is a "new" building or an addition to an "old" building has been a matter of disagreement. The late Lord Coleridge ruled it was a question of degree; if a building were nearly all taken away and then rebuilt, it would be a new building. On the other hand, it is quite clear that by a small addition of, say, a door, the building would not thereby become a new building, and between these extreme cases there may be thousands of others. It would not be possible to give a definition applicable to each particular case. Much is therefore left to the discretion of the judge, with somewhat doubtful results. But we think a "new" building ought to be defined to be one that has been reconstructed to a certain proportion of its former extent, and the definition in the London Building Act, "taken down for more than one-half of its cubical extent and re-erected after the commencement of this Act," appears to be reasonable. But there are other definitions, as that we have been discussing, which admit of no degrees: it is a matter of clear description, in which case every ambiguous word ought to be expunged. The height of a party-wall above the roof of a building is a point of vital importance, and it is essential that no diminution from the statutory height be permitted.

SPANNING SPACES.

IF we were asked what was the greatest and most momentous building problem that has been the motive of every great architectural style in the past, we should certainly answer it was the problem of spanning openings and covering spaces. Both these requirements, no doubt, arose contemporaneously, and both exercised a very marked influence on the architecture, for it was the development of the former which gave the varieties of facial expression to buildings, and that of the latter which exercised so potent an effect on the plans and contour of structures of all ages. From the early trabeated or Greek expression to the latest invention or fancy of the Renaissance architect we have an inexhaustible variety of types, each one of which has swayed the destinies of a style. No professional reader will want examples. They are to be seen in every national style in which there has been a genuine growth, and in every historic building. No less has the mode of covering areas exercised an influence on style. The change from the flat to the arched roof is of interest. From the square Hall of Xerxes, which, according to Fergusson, covered 105,000sq.ft., was larger than any Greek temple, and was covered with a flat, wooden roof, supported by numerous pillars, in seven bays, to the Pelasgian tomb houses at Mycenæ, which was circular, and 48ft. in diameter, and was covered by an equilateral pointed vault, with horizontal layers of stone, there is a decided step in advance. Not that the real principle of the arch was unknown, for there are, upon the authority of Layard, Hoskins, and others, chambers round the Egyptian pyramids roofed with stone and brick arches; but these constructions were of a limited kind, and the arch seems to have been confined to small tombs, or chambers, or vaulted drains. The Pelasgian or Etrurian treasuries or tombs had scarcely any direct influence on style, for they were covered by earth, and not visible, and it has been shown that the horizontal-course system of arch construction was not confined to the Pelasgic races, but were adopted in India and Asia Minor. They, at least, prove that the principle of arch construction was known long before it was applied boldly as an architectural feature. The horizontal arch was quite safe so long as it was equally weighted externally by earth or by masonry; but it was reserved for the radiating principle of construction to accomplish the great feats which developed into typical forms of architecture. Step by step we see the progress made. First the dome was made an external feature. From the round temple at Spalatro, or the Pantheon rotunda, whatever its age, to the beautiful temple of Minerva Medica at Rome, with its dome of 80ft. diameter resting upon a polygon made up of circular niches or alcoves, there is a decided advance. The pendentive system is adopted at the angles, the arch is built on the radiating principle with ribs of tiles between, which is filled by lighter material, and the plan of concentrating the material of the arch at certain points supported by external buttresses is recognised. Circular or polygonal structures were thus the earliest development of the arch, as we find in many of the Roman temples and in the Christian baptisteries of a later age. Next we have the more complex circular church of St. Vitale, Ravenna, an octagonal structure of 110ft. diameter, its inner dome of 50ft. forming the clerestory above the sloping roofs of the octagon aisles and galleries. The builders here attempted to vault a space with the least thrust by using earthen pots instead of stone masonry, and this vault is brought down to the octagon, the angles being cut off by squinches. Here the vault is lightened and covered externally by a low timber-framed roof, being one of the first examples of the later vaulted construction. The vault was internal. It is not so skilful an example of vault construction as its Roman prototype, which visibly exposed the vault. There are no ribs to concentrate the trust, no buttresses; but it shows that the problem was understood, and how economy of material and weight could be insured. The church of San Lorenzo, Milan, is a further step; the dome is octagonal, 70ft. in diameter, and externally the building is a square, with segmental recesses in its sides. From these and other Romanesque circular churches the development of the Byzantine style was easy. The problem was to obtain the largest area possible under the dome, and this was solved by the use of pendentives. To rest the dome on eight piers or an octagon had been accomplished, and it was next essayed to cover a square by a dome, or on four piers instead of eight. At Sta. Sophia this was done. A hemisphere, whose radius was half the diagonal of the square, the sides of which vertically cut the sphere, was the geometrical solution. The pendentives formed the four corners of the square, and descended to the springing of the vault. By this simple method a square space was roofed by a circular dome, the diameter of which was equal to the diagonal of the square, and great constructional advantages were secured at the same time, as the weight of the dome and its thrust were brought down by the four pendentives to the supporting piers. In the great church of Sta. Sophia, we observe a perfect development of the pendentive dome; the building, to its outer walls, which are rectangular, covers an area of about 70,000sq.ft., equal to many of our cathedrals. To give length to the domical area, two semi-domes are added east and west, of the same diameter, equal to the centre dome, and these latter in turn are extended by smaller semi-domes. By this assemblage of domes considerable apparent scale is given to the building. One large dome equal to the whole area covered by the central and semi-domes would have dwarfed everything by its great size and height. Thus it was reserved for the Byzantines to lift the dome bodily above the walls, and make it a dominating feature in the architecture. St. Mark's, Venice, is an important instance of this fact. The plan, a Greek cross, has five domes, one central over the crossing, and the others over each arm, and the whole area covered is 46,000ft. These domes are semicircular, and have considerably stilted external domes, which emphasise them. Altogether, St. Mark's is an excellent example of the domination of arched forms, and its front of five deeply recessed semicircular portals, and its arched windows above, show to what an extent the arch was carried as an element in external architecture. The well-known church of St. Front, Perigeux, a Greek cross with five domes, resembling St. Mark's, illustrates the same treatment, but the cupolas are pointed.

As Fergusson has shown, the pendentive dome system was thoroughly understood by the Indian builders, who managed to throw the weight of the dome internally, thus counteracting the thrust, and the Jaina architects adopted the Pelasgic or overlapping form of arch, and developed this principle in many ingenious ways. The Hindus rejected the arch constructed of radiating stones, and in every case, constructive as well as decorative, employed the horizontal form. Gateways had a succession of brackets, one overlapping the other, and this bracket arch was common. In covering their spaces, the Hindus first cut off the angles of the square by triangular stones, they next carried this a step farther for larger areas by using three tiers or courses of horizontal stones, the first tier cutting off the corners, the next similarly cutting off the corners of the diagonal square, and the last covering the opening. The area is thus quadrupled, as Fergusson shows. Again, the corner supporting pillars of the square are increased in number to twelve by placing pillars under the intersection of the diagonal with the outer square, and these are sometimes increased by adding external squares on each face of the octagon. By this means a large area was covered by a series of squares with domes making a lozenge-shaped space, and giving a pleasing and varied plan. Fergusson points to St. Stephen's, Walbrook, as a building where this method has been carried out on Classical lines. The dome is carried on eight columns, with four more at the outer angles of the square, and with outer compartments. The Indian plan of roofing has not been followed by Western architects: that it has many beauties and possible applications to modern wants cannot be doubted.

We have alluded to the dome first; but contemporary with it is the Western method of roofing founded on Basilican models, and which culminated in our great Mediæval churches, or as we see it in the cylindrical and pointed vaults of the South of France. The nave and side aisles were covered with round or pointed tunnel vaults, though in the same province the pointed dome-roofed style appears, as at St. Front and at Angoulême. The barrel-vaulted roof was not visible externally—a characteristic which generally prevailed in the vaulted buildings of the Middle Ages. It formed an internal ceiling covered by an outer roof: it had to be resisted by thick walls and buttresses at intervals. When we consider that all arch and vault building arose from the necessity of using small materials in the covering of space, it was economical; but when an outer timber covering became really the roof, its function became more decorative. The introduction of the cross-vault was, however, an important advance, as it enabled the weight and thrust of the vault to be concentrated at four points, and therefore a larger space could be covered. It became in this way a rival to the cupola, and assumed an external expression by the use of buttresses and pinnacles at the points where the diagonal ribs meet. Another architectural feature that seemed to grow with the cross-vault was the gable. But it is chiefly as a method of spanning space that we now refer to the intersecting vault. The triple vaulted aisles of our great cathedrals, and the greater widths spanned by five vaults on the Continent, show how this system adapted itself for the covering of large areas.

The lessons we draw from these older methods of covering space are twofold—constructional and architectural. With our improved facilities and materials we might employ domical construction more than we do. With the exception of the late Mr. Herbert Gribble's concrete cupolas and vault over the church of the Oratory, Brompton, and the introduction of concrete vaults by Mr. W. Emerson in a large Indian building, few instances are within our recollection. The advantage of being able to construct a dome of a thin crust of Portland cement concrete *in situ*, without any thrust, light and strong, does not appear to have encouraged architects. Concrete and iron have been used in flat roofs and floors for many years; but architects seem unwilling, or are too timid, to employ the same materials on a large scale in roofing. Why the domical system of covering space has so little attraction for modern architects, it is difficult to say. We are not subject to earthquakes like many Eastern countries, where domes have always been used, of the horizontal kind, at least; therefore we cannot plead as an excuse its want of stability. The arched forms of spanning space we have spoken of were often the precursors of plan and style—at least, they suggested them;—but it is not so now. Covering space has now become a matter of cheapness and convenience, and the modern invention of the truss and iron girder, the third great system of spanning a void—the other two being the beam and the arch—has superseded these older and more constructional forms. The solid beam or lintel was limited to moderate spans, as it was simply the natural cohesion or tensile strength of stone or marble which had to be depended on; but when the truss was invented, or the "tie," as we see in the ordinary kingpost roof, there was no limit to the covering power. It far excelled the arch or vault, which could only safely span 30 or 40ft. The iron girder or truss in its many forms has made its way in modern architecture, and any shaped plan or space can be spanned by it. It has no influence, like the former methods, on the architecture. This is why our modern "styles" are so characterless. Why insert an arch over a window, if an iron or concrete lintel will do as well? is the reasoning of the modern architect. The arch once influenced style, as we see in the noble Florentine example of Renaissance, the Riccardi Palace, in the Pitti, and in St. Mark's, Venice. Now, it is only introduced as an ornamental form to give variety, in the same manner that we see a domical ceiling of plaster cradled out from a tie-beam roof, a poor travesty of the constructed vault, or a dome serving an inner covering, like those of St. Vitale or St. Mark's or St. Paul's. Why not again make the vault an independent structure and construct it of concrete? The Indian method of overlapping stones we have noticed suggests the possibility of constructing vaults without thrust, and of giving variety to interiors. The modern flat ceiling, with its girders and pillars, has nothing to suggest plan; any shaped room can be covered by it, it does not occupy height; and hence it has superseded other more architectural methods of covering span. The subject is one which deserves more attention from architects. Constructive vault-building appears to be a thing of the past. It is now imitational except for a few churches and important buildings, or is superseded by flat roofs in which cheapness is the main consideration. Timber trusses, boarded or ceiled, are used almost entirely in our churches, because the walls need not be built so thick, and wider spans can be covered, requirements which appeal to the profession generally. There are, however, yet a few of our leading church architects who have revived the vault of masonry, and have, to their credit, done a little to preserve the traditions of vault-building, and to keep that scientific branch of masonry from extinction.

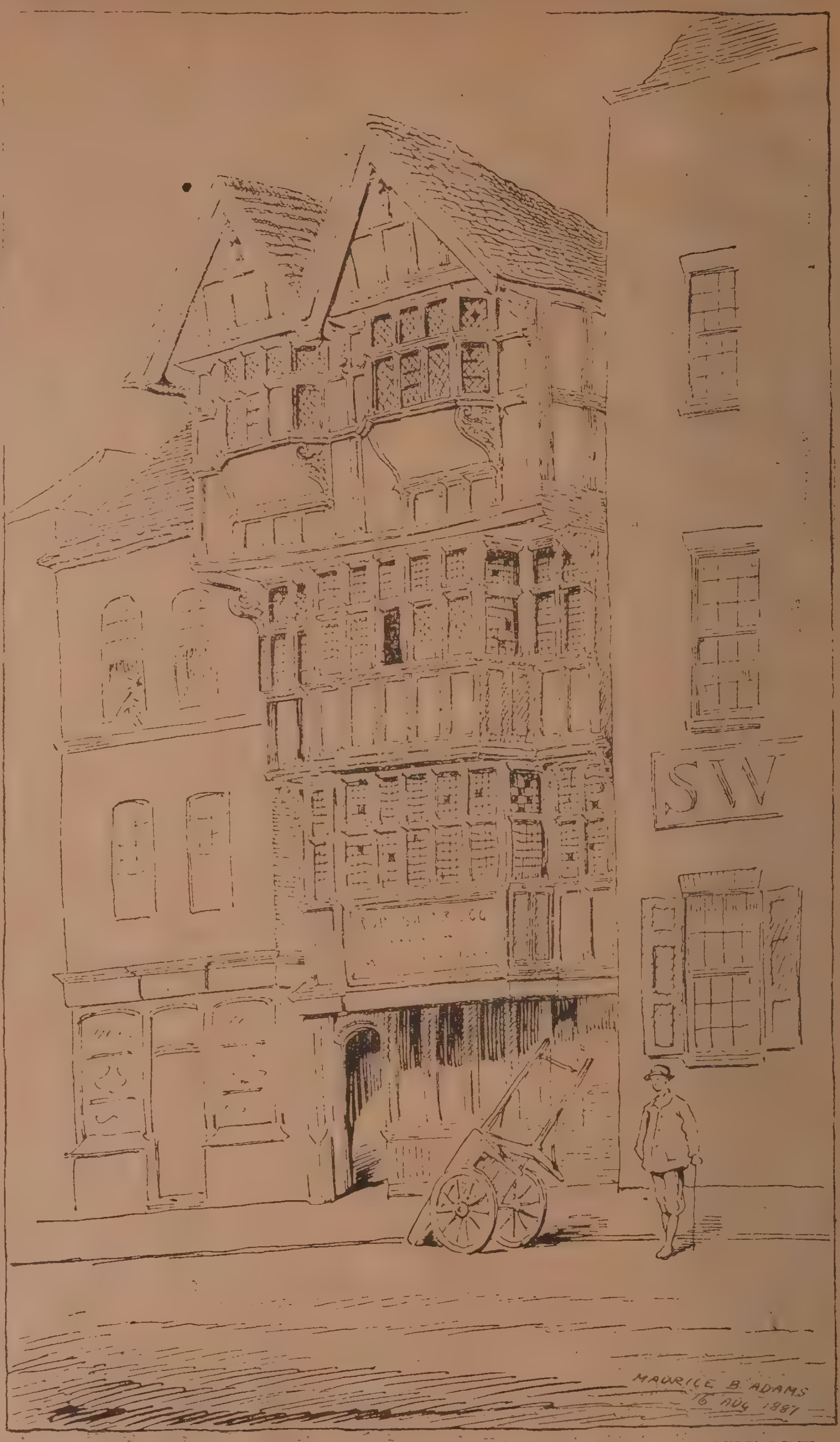
THE ARCHITECTURAL ASSOCIATION EXCURSION, 1895.—II.

[WITH PHOTO-LITHOGRAPHIC AND OTHER ILLUSTRATIONS.]

LAST week we printed several notes with drawings* in connection with this excursion. We now briefly continue our references. Sevenhampton Church, and House hard by, will be visited to-day (Friday), followed by Charlton Abbots and Winchcombe, after which Sudeley Castle is to finish the list for the day. To-morrow (Saturday) will be devoted to the City of Gloucester, which the excursionists will take on their return journey to London. There are two Sevenhamptons in the county of Gloucester, the second being near Swindon, where the Tudor home of the Warnefords, dating from the days of Henry VIII., is situated. The Sevenhampton near Cheltenham, the one to be visited, is best known by the relic of Anglo-Saxon work belonging to the 10th century preserved there, and supposed to have been used as a laver bowl for washing the hands after meals. It is inscribed with classical allusions, and enriched with figure-work in outline. In the village some good Mediæval Domestic work makes the place really interesting and suggestive to the architect. The church is, perhaps, most remarkable for the detached pier of the tower inside the building, necessitated by the fact that the Perpendicular tower is not the full width of the south transept. It was added, of course, long after the church, which was originally erected in the 13th century, and part of the Early English work is still standing in evidence of the antiquity of the fabric, even if, as Petit thought, it is not still older. Charlton Abbots and Whittington are both picturesque villages, chiefly on account of their typical unsophisticated stone-built mullioned dwellings, while at Winchcombe, an old-fashioned market town next seen, there are several picturesque bits, not to mention the more imposing old Jacobite house, of which a sketch figures this week among our lithographs. The church is a spacious specimen of Late Gothic, and has a central tower, erected by Abbot William in the time of Henry VI. The plan of the building is cruciform, and the elaborate groining of the south porch deserves naming. There are a carved oak screen to the chancel and a good Renaissance organ besides candelabra with refined detail. Sudeley Castle, illustrated by us to-day, is thus quaintly described by Leyland, who says:—"The Castle of Sudeley is about a mile from Winchcombe. . . . Boteler Lord Sudeley made this castle à fundamentis, and when it was made it had the price of all the buildinges in those dayes. . . . The Lord Sudeley who builded the castle was a famous man of warre in K. H. 5 and K. H. 6 dayes, and was a admirall (as I have heard) on sea: whereupon it was supposed and spoken, that it was partly builded ex spoliis Gallorum; and some speak of a towre in it called Potmare's Towers, that it should be made of a ransome of his. One thing was to be noted in this castle, that part of the windows of it were glazed with berall. There had been a manor-place at Sudeley before the building of the castle, and the plot is yet seen in Sudeley Parke where it stoode. K. E. IV. bore no good will to the Lord Sudeley, as a man suspected to be at heart K. H. 6 his man. Whereupon by complaints he was attached, and going up to London he looked from the hill to Sudeley, and sayd, *Sudeley Castle, thou art a traytor, not I.* . . . After he mayd an honest declaration, and sould his castle of Sudeley to K. H. 4. Afterwards K. H. 7 gave this castle to his uncle Jasper, Duke of Bedford, or permitted him to have the use of it. Now it goeth to ruine, more pittye." For many years it thus remained in a ruinous condition. Now, however, it has been restored, and it is entirely inhabited, save the banqueting hall, which somewhat resembles the famous one at Kenilworth. It forms three sides of a quadrangle, and is well worth seeing, containing, as it does, an extensive museum of furniture and historical works of art, besides a fine collection of paintings formed by the Dents. Catherine Parr resided at Sudeley with Sir Thomas Seymour, her fourth husband, and at that period part of the castle was altered and renovated. The buildings from 1644 till 1837 remained neglected and uncared for; but on its purchase by Messrs. J. and W. Dent the repairs now seen were put in hand, following somewhat the style of the original buildings. Sir Gilbert Scott restored the chapel, to which there is a curious bell-cot, with a bell dated 1660, and the late J. Berne-Philip, the sculptor, erected a canopied tomb in memory of Queen Katherine, who died here in childbirth.

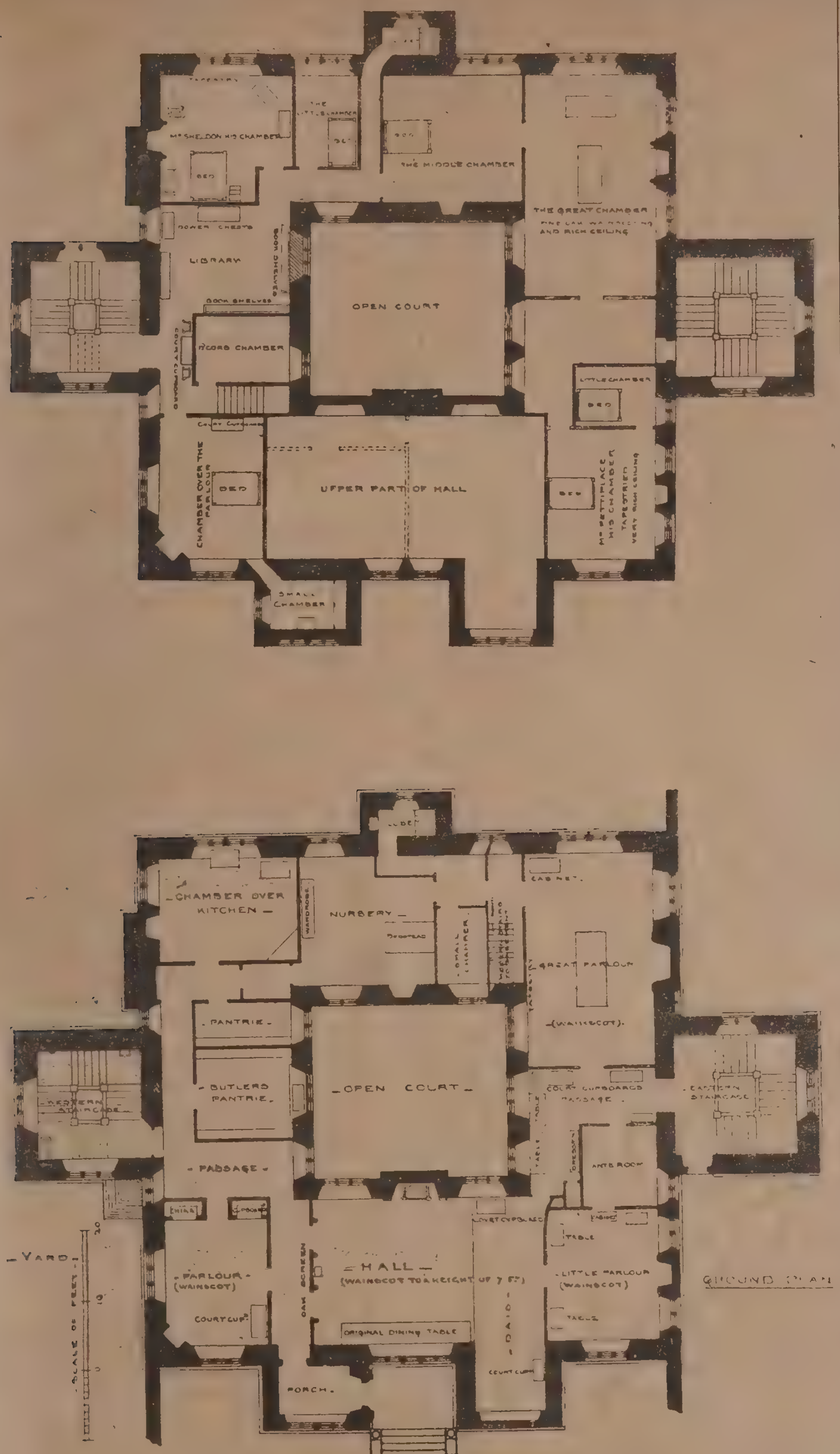
---

* The sketch from Evesham, given last week, and those of Broadway and Winchcombe, in our present issue, are from the pencil of Mr. E. C. Bewlay.



OLD TIMBER HOUSE TEWKESBURY HIGH STREET

To-morrow (Saturday) the excursionists will visit Gloucester, and will be conducted over the cathedral and its precincts by Mr. F. W. Waller, F.R.I.B.A., of Gloucester, from whose "notes" the following particulars are gathered. "The first thing," said Professor Willis, in his lecture read at Gloucester in 1882, "we do know of for certain is, that in the year 1089, thirty-one years only after the dedication of Ealdred's Church, Serlo, the first Norman abbot, began the building of a new church, which was itself dedicated in 1100." To this church of the Great Benedictine Abbey of Gloucester, with all its numerous additions and alterations, the following particulars have reference. The plan of the building is cruciform, and consists of a nave and south transepts, at the intersection of which with the choir rises the great tower; and at intervals round the choir aisles are four small apsidal chapels. At the east end is the Lady-chapel, prior to the erection of which, a fifth chapel, similar in form and dimensions to the other four, existed at the east end. There are also a large chapter-house, a very fine and perfect cloister, and a handsome south porch, with remains also of many of the monastic buildings. The east end of the old church is partly round and partly polygonal—round as regards the outer wall of the main building and the inside and outside of the small chapels in the crypt, but polygonal in the interior walls of the main building in the crypt; whereas on the ground floor of the main building and the chapels, all are polygonal. The whole of the edifice, with the exception of the Lady-chapel and the cloisters, remains, as regards general outline, as it stood in the early part of the 12th century. The nave, with its large circular columns, the slype adjoining the deanery, the N. and S. transepts, with their turrets at the west and east angles, the choir and its aisles and chapels, the chapter-house and Abbot's cloister, although more or less masked by later additions, are all parts of the original building. The crypt extends beneath the choir and the small projecting chapels. One of the chapels is groined and vaulted very beautifully in the style of the latter part of the 13th century with lead poured into the joints of the ribs from above." Mr. Waller asks if the use of lead for this purpose was not uncommon at this date? The crypt walls are 10ft. thick, and the aisle floor is on an average 8ft. below the level of the soil outside. The Norman work there is of two different dates. The entrances to the crypt are from the east side of the S. transept, and from a passage known as the "Abbot's Cloister" next the chapter-house. The vaulting of the nave is of a light porous kind of stone, and was put up during the abbacy of Foliot by the monks themselves (1242) after one of the fires which consumed the wooden roof. The piers still show traces of being more or less calcined. The vaulting shafts are of marble, and the capitals and other enriched parts were formerly painted. The nave floor was originally 10in. lower than at present, and the bases of the large piers stood on square blocks. The nave is 66ft. in height to the under side of the vaulting. The west end was built by Abbot Morwent, and it occupies probably the site of the western façade of the Norman cathedral. It is customary to condemn this work of Morwent's; but Mr. Waller thinks



PLAN OF CHASTLETON HALL.

it exceedingly good of its time (1421-37). The doorways leading to the cloisters in the north aisle are well worthy of observation, particularly that at the east end, which, like the great western doorway of the nave, has four vaulted recesses so constructed as to admit of the doors opening into them.

Thokey was the abbot who caused the body of the murdered King Edward II. to be brought from Berkeley Castle for interment in the cathedral at Gloucester, and the wisdom to secure advantages for the abbey afterwards by means of the offerings made at his tomb is manifest, for these gifts are said to have been so numerous that the costly additions to the buildings made in the 14th and 15th centuries were defrayed by them. Thokey's own particular specimen (if it be his and not Wigmore's), the south aisle façade, is an interesting and grand bit of work, especially the buttresses. The north transept and St. Paul's aisle, by Abbot Horten (1368-73), are cased with Perpendicular panelling on the old Norman walls, and finely vaulted, the entire undertaking being done at the cost of the abbot himself. The screen and stone reading-desk at the entrance to the choir aisle are worth noting. From this desk the monks are said to have discoursed to the pilgrims to Edward II.'s tomb. The south transept, or St. Andrew's aisle, is also the old Norman outline, cased with work—so early as the 14th century as to lead Professor Willis to the expression of an opinion, "that the Perpendicular style might have commenced in this district." If, also, the churches of the city be examined, plenty of Norman, Early English, and "Early Gloucester Perpendicular" can be easily found, but Decorated as it is usually seen, very sparingly; for "Decorated work" never fairly took root in Gloucester. The vaulting is lierne, and without bossess, which are, however, made use of in the later works of the choir and north transept. Mr. Waller directs attention to the "'prentice's bracket" and two doorways in the south wall. The entrance to the crypt is a singular bit of design, repeated to a certain extent in later work in the north transept, in a doorway at the deanery, and in the cloisters also. The choir was cased by Abbots Staunton and Horton (1337-77) in a very ingenious manner, and attention should be given to a feature resulting from the treatment of the ribs of the vaulting, which are very cleverly provided for in the centre of the tower arches. The vaulting is extremely elegant, and the whole of the east end is devoted to one large window filled with painted glass; this window is 72ft. high by 38ft. wide, and contains old glass, supposed to have been painted between 1347 and 1350, when it was put up. It was taken down and re-leaded under the supervision of Mr. Winstone in 1862, and he, fortunately, thus saved the window from restoration. The first cost of the glass, more than 2,000sq.ft., is stated to have been about £140 (!) It is remarked by Mr. Waller that the tracery heads and cusps, as seen from the inside of this window, are not repeated on the outside, a plain transom only crossing the lights; this peculiarity is repeated also in the great west window, and many other windows in this Cathedral. Immediately over the altar, in the groining at the intersection of the ribs, are angels playing on instruments;—this part, if not the whole, of the roof was probably painted and decorated. There are fine sedilia here, and the back part of the old reredos remains, in front of which the modern reredos, inclosing the Feretory, was erected by the Freemasons in 1873. The stalls and misereres remain nearly as of old. The organ screen was erected about 1820, and parts of the old screens were then incorporated. The organ was built by Renatus Harris in 1670; the case is of oak, a fine piece of Renaissance work, and the pipes are beautifully decorated. The choir is 80ft. in height to the underside of the vaulting.

Between the tower arches on the N. and S. sides are two chapels screened off from the transepts, the former by a stone, the latter by a wooden screen. On the back of the stalls of the choir, which forms one side of each chapel, there are traces of painting and monograms. The remains of reredoses are to be seen in both chapels. In the choir aisles the Norman arched windows are filled with Perpendicular tracery with good effect; but on the ground floor outside they are unsightly, the round arch having been cut away, and the soffit plastered. In the windows above they are well managed. The remains of the reredoses in all the chapels are very fine and interesting, especially the "unrestored" ones, and there are some nice specimens of niches and piscinas; also two quadrant-shaped cope chests.

The triforium occupies the space over the ground floor of the aisles, or ambulatory of the choir, and originally extended of a like width round the east end of the Norman church; but at the time when the 14th-century work of the present choir was executed the whole of the old Norman choir was removed to make way for the existing large window, the small east chapel being allowed to remain. This chapel was removed, however, when the present Lady-chapel was erected by Abbot Hanley; but the old Norman altar was preserved. The construction of the whole of the east end of the choir of the building requires much attention, and merits study by the modern architect because of the ingenious way in which the old work was made use of, the constructional difficulties overcome, and the various contrivances for avoiding any interference with the admission of light to the Great Window. The lower portion of the walls of the west end of the Lady-chapel nearest the east window of the choir are parts of the old Norman chapel previously mentioned, and the main walls of the building, erected by Abbots Hanley and Farley, are connected with these, as shown on the ground plan (which we print to-day with Mr. A. J. Dunn's Pugin Studentship drawings), so as to interfere as little as possible with the light of the east window. The plan of the chapel is cruciform, and it is entirely vaulted and beautifully decorated. Two staircases in the N. and S. walls lead to chantry chapels above. The sedilia are exceptionally fine, and there are two excellent old monuments here of Elizabethan and Renaissance work, besides some very good monumental slabs in the floor surrounded by old tiles of great interest.

The south porch is a very elaborate work, highly enriched with niches and canopies, with buttresses at the angles, and a fine doorway, the whole surmounted by a pierced parapet and pinnacles. There is an unfinished room over the vaulting. The side windows are of very peculiar construction, the internal arrangement of the panelling of the side walls being continued to the exterior, and made to form the mullions of the fenestration. The tower was erected during 1450-57 by Abbot Seabroke, who pulled down the old one. The following inscription appears over the western arch:—

> "Hoc quod digestum specularis opusque politum,
> Tullii hæc ex onere Seabroke Abbate jubente."

The tower is 225ft. high to the top of the pinnacles, and the effect is extremely fine. Viewed from the railway as it skirts the city, the tower makes an exceedingly noble pile. From the main cornice upwards, the whole of the stonework is open and composed of what, at a distance, looks like delicate tracery, and mullions, and crocketed pinnacles. There are nine bells in the tower, on one of which is inscribed "Me - fecit - fieri - conventus - Nomine - Petri." It weighs nearly three tons, and is inclosed in a very grand oak framing.

The Cloisters are some of the finest and most perfect in the kingdom. They form a quadrangle and are divided into ten compartments in "each walk." The construction of the outer walls of the E. walk is peculiar as to the arrangement of the buttresses and the projecting shelf of stone connected with the transoms of the windows, which was evidently intended as a protection from the weather, for the lower half of the windows at that time was not glazed. On the south side are the Carols for writing and study, 20 in number, and on the north side the lavatory, with recess for towels, &c. Abbot Horton built the cloisters as far as the chapter-house door, and Abbot Froucester completed them. There is an old well in the cloister garth, and also an old water-tank, not long since discovered. The construction of this tank is singular; it was probably supplied from the mill-stream (now covered up) which ran in old times through the gardens on the N. side of the cathedral.

The chapter-house is a fine Norman room, 72ft. long by 34ft. wide, covered by a plain vaulted roof with large ribs 15ft. apart. The east end is an addition of Perpendicular work. The tiled floor was restored by Minton, who imitated the old encaustic work. The stairs at the S.W. corner, with a stone handrail worked in the newel, led to the old library.

The monuments of leading interest are those to Osric, erected by Abbot Parker (to the founder of the first church in 729 A.D.) during the 16th century; Robert of Normandy, eldest son of the Conqueror, an effigy of oak, time of Henry III.; Foliot, 1243; John de Staunton, in the cloisters opposite chapter-house door; Edward II., Abbot Seabroke's Chapel, and Abbot Parker, the last abbot of Gloucester.

There are many and most interesting remains of the monastic buildings attached to the cathedral, such as the deanery, the infirmary, the little cloisters, and the gateways, and others within the abbey walls. In 1540, this old Benedictine establishment was broken up by Henry VIII. In 1541, a bishop, dean, and prebendaries were appointed, and the cathedral was re-dedicated to the Holy and Undivided Trinity.

COUNTY LUNATIC ASYLUMS.—XXV.

By George H. Bibby, F.R.I.B.A.

PATIENTS' WORKROOMS.

WORKSHOPS for occupation by the patients of asylums differ in several respects from those for the use of sane workpeople, both as regards construction and arrangement. One of the most important matters for consideration is the absolute necessity for means of thorough supervision by the attendants. For this reason the partitions between the various sections may be glazed so that the officials may inspect the patients when at work, and be prepared to interfere when quarrelsome or other patients show a disposition to interfere with their neighbours.

It is, of course, greatly to the interest of all that a large percentage of patients should be persuaded to employ themselves upon such work as they may be found capable of performing, even if the result of such occupation should be found (as is frequently the case) financially unremunerative. Therefore, the workrooms should be very cheerful, spacious, well lighted both by day or night, and the ventilation, warming, fittings, conveniences, and appliances should be fully sufficient for the comfort and well-being of the patients, a considerable number of whom are constantly employed, and spend a large portion of their time in the room, and whose prospects of recovery depend to no little extent upon the adequacy of the provision made for them in the above matters.

The carpenter's shop and any other workrooms where shavings, wood, oil, varnishes, or other combustible materials are used or kept should be placed in an isolated series of buildings, and if for any purpose petroleum or other dangerous oils or spirits are required to be kept in considerable quantities, a detached brick building or shed, &c., with iron doors, should be provided, similar to those generally found in connection with factories and workshops, the owners of which are compelled by the public authorities to adopt such precautions.

All the above named erections should be at least 60ft. or 70ft. from the main buildings, so that if any fire should arise it could easily be localised.

It is undesirable that there should be any coal or coke fire in the carpenter's shop; the glue should be heated either by a gas apparatus, or, better still, a steam pipe from the boiler department.

There should be observed every practicable precaution with the view to prevent dangerous patients from possessing themselves of the sharpened tools, &c., in the carpenter's or other workshops; therefore these should be kept in locked-up receptacles, and the workshop left fastened after working hours.

The upholsterer's shop of an asylum is often of considerable area, and for large institutions may be divided into two or more divisions for purposes of sub-classification, and with the view also of separating patients who may have antipathies and be liable to quarrel. This department is a most useful one, especially for large asylums where, indeed, it cannot be dispensed with; but here, again, there are dangers to be apprehended from the obviously necessary presence of hammers, chisels, and various cutting-tools which are liable to be used by would-be suicides; therefore great precautions are taken in the selection of patients, and care should also be observed that these dangerous tools are not stolen or hidden. Therefore it is desirable that the workrooms should be so constructed that the working patients shall stand, or be seated, according to the nature of their employment, in long lines parallel with the length of the rooms down which the workmasters or attendants can conveniently observe all that is going on. This plan is a far more satisfactory one than if the patients are placed in square, L-shaped, or irregularly-planned rooms, and the fittings and furnishings should be so disposed that there may not be obstacles to a clear view of the area in charge of the attendants, or of the head workmaster or attendant, who, in the larger asylums, goes from ward to ward, and from workroom to workroom, to see that the attendants are performing their duties, and also to ascertain whether or not the patients are fit to continue in the employment given to them, or to advise with and instruct the junior officials.

The number of persons employed upon painters' work is (comparatively) not very large in any asylum. In the year 1893, 43 persons following this trade were admitted to the five London asylums. Many of these, possibly, were quite incapable, by reason of their mental condition, to execute any work; but, on the other hand, no doubt many persons not brought up to the trade might be taught the work with advantage, care being observed not to allow certain classes of them to go up ladders or place themselves in a position where they could easily injure themselves purposely or by accident. The workshop for painters need not be a large apartment; but there might be a shed for stores, under which large articles to be painted could be placed. The work would appear to be sufficiently easy for a much large number of persons to be occupied upon, than is customary in most asylums, considering the enormous amount of painter's work required in connection with repairs and maintenance of the buildings. In many asylums, probably most, the attendants *work with* the patients instead of standing by and watching them (as formerly was usually the case). Nothing could be better calculated to improve the relations of patients to attendants than this plan, and for obvious reasons.

Bricklayers, plumbers, painters, carpenters, joiners, smiths, tinsmiths, gas-fitters, fitters, and other non-patient workmen are employed upon the staff of asylums, and more or less their engagements are of a permanent nature. The men so engaged work to some extent with the assistance of the patients, but certainly not in many asylums so much as could be desired, or as is the case with tailors, shoemakers, upholsterers, and others.

The plumbers', smiths', and engineers' workshops might very conveniently be situated near to the boilers and engineer's rooms and the asylum fire-engine station. In a large asylum there is necessarily always a certain amount of engine-work, repairs to ventilating and heating apparatus, to cisterns and tanks, machinery in the laundries and cooking apparatus, and to the water supply system, hydrants, gas and electric-light fittings, &c., and it is desirable that such works as these and of a kindred nature should be brought conveniently near to each other in the workshop arrangements; while the tailors', shoemakers', and upholsterers' work-rooms may be arranged for under a second division (connected with the main buildings by an inclosed corridor, or, at all events, a covered way).

In all large asylums there should be one room for use as a printer's office, and supplied with a printing-press. This will enable the asylum authorities to produce programmes for concerts and balls, asylum forms, stores orders, reports, and perhaps a small weekly or fortnightly asylum magazine, to which both attendants and patients in some asylums contribute; and in connection with the printing office there might well be provided a small room for repairing and binding library and other asylum books.

In conjunction with the before-mentioned work-rooms, there must be a few store-rooms, for the purpose of containing spare furniture and articles under repair, also for the storage of raw and manufactured materials. It would be preferable that these store-places should be formed in a series of moderately sized apartments rather than in large rooms, so that there may be favourable opportunities of temporarily increasing the number of work-rooms and the variety of work (should occasion require that special employment must be provided for patients who cannot successfully be occupied in the ordinary asylum work-rooms).

It is necessary that the previous occupation (if any) and the condition in life of patients in asylums be carefully considered, prior to settling the occupation they are best fitted for, and the employment most likely to conduce to their mental recovery. It does not necessarily follow that a patient should always work at the trade he was brought up to, especially if such business be not of a healthy character, and having in view also, possibly, that that occupation may have been one for which he was partially or wholly unfitted, mentally or physically.

Therefore, if the store and spare rooms included in the workshop buildings be divided, these could frequently, during pressure of space, be utilised for such work as may be contrived to occupy advantageously those patients who, although pauper inmates, have yet in happier times occupied a fairly good position as professional men, such as accountants, authors, bankers' clerks, medical men, draughtsmen, journalists, and surveyors, all of which classes, amongst others, are to be found occasionally in county lunatic asylums, and the employment of whom upon such work as the scrubbing of the ward floors, or upon the various rough trades for which they are physically unsuitable, would not be likely to promote any chances of mental recovery that they may possess.

The nature of the work to be provided for the patients necessarily differs very much in country and town asylums, and has some relation to the staple trades carried on in the district from which the patients are drawn. I have, in a former paper, referred to the overcrowding and other disadvantages of some of the asylums in Ireland; but in one asylum there, at least, the workshop department appears to be very well managed, and possibly this may be due in some degree to the convenience and sufficiency of the apartments provided for the purpose. The following table, giving the exact number of patients employed in an asylum of very moderate extent (and therefore unfavourably placed for comparison with many of our modern asylums as regards facilities for useful employment) shows that the Mullingar Asylum is a very busy centre of industry:—

Occupation.	Males.	Females.
Assisting attendants in the wards	37	49
As garden labourers	17	—
As farm servants	107	1
As storekeeper	1	—
As messengers	3	—
As stokers	2	—
As tailors	8	—
As shoemakers	8	—
As upholsterers	19 (average)	—
As painters	5	—
As joiners	5	—
As plumber	1	—
As masons	3	—
As slaters	2	—
In the kitchen	5	2
In the laundry	7	40
In officers' quarters	2	1
At needlework	—	73
At knitting	—	23
Stablemen	2	—
Other employments (slaughter-house, poultry yard, hair-picking, &c.)	94	16
Total employed	328	205

It therefore appears that, out of the 622 patients resident in Mullingar Asylum, no less than 328 men and 205 women are employed in one way or another. *Only ten refused to work*, while 54 were prevented by mental and 25 by bodily causes from useful occupation.

The large number of patients employed in this asylum has excited the surprise of a distinguished English superintendent, and, indeed, a return such as that above given compares favourably with the industrial work done in other asylums in the United Kingdom, and it does not appear probable that an asylum architect will be called upon in the near future to provide in his plans for a larger proportion of working patients.

In the summer months at this asylum a large number of the patients have been brought out of the wards or workrooms, and have sat or worked in two large tents pitched in front of the asylum, and a striking feature of this asylum is the very large proportion of usefully-employed patients, the good character of the staff, the excellent discipline, the absence of all appearance of restraint or unnecessary restriction, and the general contentment prevailing throughout the asylum—a condition of things which would be difficult of attainment in an indifferently-planned or inconveniently-arranged asylum.

The asylum architect in arranging his plans for an asylum of such moderate size as that at Mullingar, where out of 622 patients no less than 533 were employed, would do well to provide workrooms, &c., of much greater proportionate area than for asylums of the London County type, where the numbers of patients who can be induced to work is so much less in comparison, as appears from the following table which gives the numbers in the *five* asylums for the County of London at a recent period:—

MALES.	
Total employed	2,270
Unemployed	864
Sick, old, or infirm	916
Absent on trial	9
Total in asylums	4,059

FEMALES	
Total employed	3,113
Unemployed	1,889
Sick, old, or infirm	1,107
Absent on trial	12
Total in asylums	6,121

In these asylums the proportion of working patients is greatly below those who are employed at Mullingar, and this does not entirely arise from the fact that many of the patients at the latter asylums are engaged upon farm work, &c., for the proportion of land to the patients is said to be insufficient, so much so that the Mullingar Asylum is obliged to obtain contracts for milk, and the authorities are desirous of obtaining a further 100 acres for this reason, and also in the hope of obtaining for their patients increased healthy occupation, and more extended exercise and recreation.

There can be no doubt that a well-considered plan for the asylum workrooms (which are really schools as well) is of very great importance. The patients and attendants in asylums perform their work under vastly different circumstances to those found in ordinary factories and workshops, and when I find in the Mullingar Asylum that eight patients were employed as *shoemakers*, and could make 743 pairs of boots (an average of 93 pairs per man per annum), and do all the repairing for 622 patients (and for their attendants), I am led to compare these figures with those for the *four* London Asylums (excluding Claybury) when the total number of patients exceeded 8,000, and where 41 shoemaker-patients made 1,572 pairs of boots and shoes, or only about 38 pairs per man per annum.

These four London asylums, therefore, employ only one shoemaker-patient to each 195 patients, instead of one to 77 as at Mullingar, and as these patients do considerably less than half the work of the Mullingar shoemaker patients, there would appear to have been a loss at the rate of about 6,000 pairs of boots per annum to the London ratepayers. This must be attributed either to a worse mental or bodily condition of the London patients (as compared with those at Mullingar), an inferior system of management of all the London asylums, which appears to be highly improbable, or to defective arrangements or overcrowding of the workshops of the London asylums, and probably other trades would show similar results.

Therefore, while it is most advisable that the amusements of the patients, on the one hand, should receive the utmost attention by the asylum officials, and that suitable buildings for recreative purposes should be provided for by the asylum architect, on the other hand it is most necessary that the workshop buildings should be fully adequate to the purpose of giving the patients that employment and instruction in technical matters so likely to conduce to their well-being, not only while they are in the asylum, but when those that are cured are returned to their homes and families. Therefore, the workshops should be well lighted, both naturally and artificially, and be well fitted, warmed, and ventilated, and be treated by all concerned as schools as well as workshops.

(*To be continued.*)

◆

THE CANARY ISLES: STRAY NOTES DURING A RECENT VISIT.

THE archipelago consists of seven islands, the nearest of which (Fuerteventura) is about 74 miles from St. Juby, on the West African Coast. Fuerteventura is the largest of the group, and somewhere about 62 miles long by 19 miles wide. Like Morocco, on the main land, almost within sight, it has no roads, and one has to get about as best he may, on camels or donkey back. It is a barren, sandy, uninteresting place, the highest hill, known as Orejas de Asno (Ass's Ears), being about 3,000ft. high. In the rather curious old church at Maria de Betancuria, the standard carried by the Spanish conquerors in the 15th century is shown, still in fairly good condition.

Next in size is Teneriffe, which is 52 miles, or thereabouts, by 31 miles. Upon it towers the well-known peak, 12,192ft. high (Mont Blanc is 3,592ft. higher), its top, even when we saw it (in July of this year), clothed with a mantle of snow. It has a small crater on its summit 100ft. deep by three times that size in diameter. Out of this a slight sulphurous vapour almost continuously arises. From the top of this mountain, on a clear day, a bird's-eye view of the whole of the islands may be obtained. Grand Canary is 34 miles by 30 miles, and Lanzarote 36 miles by 14. La Palma, the most beautiful of all, is 29 miles long by 17 wide; and Hierro, the most western one, is 18 miles by 13. Gomera is slightly smaller (15 miles by 13). Before the discovery of America, Hierro was supposed to be the end of the world. Its coast is steep and dangerous. Near it, another and eighth island, known as Antilla, was supposed to exist in ancient times. So strong was this belief, that, in the early part of the 16th century, Portugal ceded it, by treaty, to Spain, making reference to it in the said document as the Isla non trubada (*i.e.*, the Island not found).

The Canaries are six days distant from England. We went out by the Castle line *Harlech Castle*, and came home by a Union steamer, *Guelph*. It is easier to get there than to come away again. This is especially the experience of those who hold a return ticket issued by any one line. All the steamers that call come from long distances, and hence the time of their arrival is somewhat indefinite. For instance, when we got to Las Palmas (the name is pronounced as spelt, and the town is the capital of Grand Canary), we found the homeward-bound steamer for England, that was due two days after our arrival, had in reality sailed for Southampton the day before we got there!

Las Palmas is an Eastern-looking town, its white, flat-roofed houses picturesquely situated on a slope, backed by sharply-defined hills. The general grouping, however, is rather spoilt by the towers and upper portions of the 16th-century cathedral, which are in every way as incongruous to the surroundings as is Brigham Young's flat-domed tabernacle at Salt Lake City, in Utah, U.S.A. Las Palmas has a population of about 21,000, and is connected with the port (Puerto de la Lux) by steam trams (2d. all the way). This distance between the two places, around the sandy bay, is about four miles. The tramcars, which, like those at Chicago, run three together, were made at the Falcon Engine and Car Works, Loughborough. The engines are German. There is also a small engine at Santa Crux in Teneriffe (53 miles away), which pulls the freight-laden waggons from the mole into the town. The islands have no other aids to locomotion by steam.

Las Palmas is now one of the principal coaling stations of the world. Passengers are landed on the unfinished mole, which already runs out to sea 1,450 yards. Commencing at a depth of six fathoms, the divers (who are Spanish) are now working at quite double this depth, and the pier will extend 200 yards further out. A counter-mole also is already started. The work has been in hand fully eight years, and it is expected to be completed in about 1897. Messrs. Swanston and Co., of London, are the contractors for the work with the Spanish Government, and Mr. Bigglestone, of Hayle, Cornwall, is the resident and directing engineer. The entire cost is estimated at upwards of £300,000. The whole of the work is in concrete, made of lava, hydraulic lime, Marseilles cement, and picon (volcanic cinder), ground fine. The breakwater is not built up perpendicularly, but leans at an angle of 35° in towards the shore. The blocks used weigh 35, 22, 17, and 12 tons each respectively, and are lifted by a 50-ton Titan crane, built by Appleby, of London.

A remarkable feature in Islata (Las Palmas' port) are the lava flows, of which there are distinctly four—one over the other. The lower one is some 40ft. thick. On this is 3ft. of scoriæ, and above a slight depth of soil; then comes a second lava flow of 25ft., a third of 10ft., and yet another of 4ft., above and between each of which is about the same quantity of soil and scoriæ. Geologists consider there must have been at least a thousand years between each of these four eruptions.

About half-way between the port and Las Palmas, and close by the sea, is the Hotel Metropole—an excellent English hotel, built, in the main, of red brick brought from England. This building is now being considerably enlarged. Hard by is the English church, erected two years or so ago from the designs of Mr. Somers Clarke, F.S.A., architect, of Westminster. It is to be presumed that Mr. Clarke adapted his design to the requirements of the country. It is not quite what we should call an ideal English church at home. The Santa Catalina Hotel, a large Oriental-American-looking caravansary, situated between the church and the town, was also, we believe, designed by Mr. Clarke. There is a fair amount of building going on at, and about, Las Palmas, principally of rough stone and bricks (the latter are very bad), plastered over. Excellent limestone, however, is obtainable, and used on the island. The best quarries we saw appeared to be at Jinamar, a village on the main road from Las Palmas to Telde, lying in a valley below the now extinct volcano known as the Gran Caldera. This road, by the way, winds around the bay, which is even more lovely, one is inclined to think, than that of Naples, and passes (near Jinamar) through a tunnel several hundred yards long. Its borings are roughly, very roughly, quarried through the solid rock, just as the Box tunnel on the G.W.R. near Bath, as well as some other English tunnels, are. Outside Las Palmas, on this road, perched upon the steep rock side, is the English cemetery. It is surrounded, as most Southern cemeteries are, by a high wall, and the difficulty of slope is got over by steps, thus making the burying-place into a series of terraces. The flower-grown burial-ground contains some marble and other memorials of the usual monumental kind, by Gawen, of Regent-street, W., and other English statuaries. When we were there the body of a young Englishman, who had died the previous day on board an African West Coast steamer, stood on trestles at the lych-gate awaiting the result of the Vice-Consul's search to find an English-speaking clergyman to perform the last rites. The coffin was wedge-shaped, tapering, both on plan and elevation, towards the feet. The line of the lid was that of three sides of an octagon. All the coffins we saw on the island were of similar construction.

Not very far off, and on a plateau just above the sea, is the general cemetery for Las Palmas. It also is walled around, and its smallness at once strikes the visitor. There are a few good monuments; two (one of them has just been erected by a Carrara firm) must have had many thousands of pounds expended upon them. We have seldom seen more costly modern sepulchral erections, not even in the United States, where more money is spent upon such work than it is the general custom to do amongst ourselves. The large majority of the "well-to-do" are buried in catacombs—shelves that go around two sides of this tiny God's Acre. A very dreadful custom exists here of not allowing the remains of any of the humbler class to stay in the ground more than two years. Further, those remains incased in the catacombs are also as unceremoniously turned out after the same time, if their surviving relatives do not annually pay a goodly rental. The bones or bodies, as the case may be, are thrown into a heap in one secluded corner, and there, uncared-for and unrecognisable, we saw what remained of the comparatively recent population of the place, now nought but a ghastly heap of skulls, limb-bones, ribs, and vertebræ, as well as a few only semi-decomposed bodies. It was a sight, once seen, never to be forgotten!

On the sea-shore, in front of the Triana, the main street at Las Palmas, some half-a-dozen schooners are on the stocks. They are about the size of Brixham fishing-boats. An octagonal tower is being erected to one of the churches, and workmen are engaged on the south-west tower of the cathedral. In the latter we were shown a splendid *porta-paz* in silver-gilt, by Benvenuto Cellini (about A.D. 1550). Whilst speaking of metal-work, it may be remarked that especially interesting features in many churches on these islands are the ancient shrines and altars of embossed silver. The latter consist of a framework of pierced wood, cut to the outline of the ornamentation it is intended to put upon it. This is afterwards covered with hammered and raised silver repoussé work, a treatment that has at once an excellent and most ornate effect.

All the churches we saw on the islands were, as a rule, small, most of them consisting simply of a single nave. Instead of an east window, the altars generally go up to the roof, and are of richly-carved wood, their unquestioned dignity helped by colour and gold. The oldest church on the island of Grand Canary is that of San Antonio Abad, situated quite near to the cathedral, and in certainly the lowest part of the city. It was here that Columbus, in the latter part of the 15th century, heard Mass on the morning he finally sailed away on that eventful voyage which led to the discovery of America. It is a small, thick-walled edifice, lit only by a wee west window high aloft, and by a north and a south one, also high up above the sanctuary. These two latter windows have balconies projecting from their interior bases. The altar-rails are high, and of rudely-wrought iron, and look as old as the church itself. The east end is one mass of carved and gilded woodwork, a trifle too loud in decoration for English eyes, perhaps. The floor is of dark grey limestone; there are north and south altars; the walls generally are hung with warm-coloured drapery. It has an open-timbered roof, and here, as in many other churches, the beams are uniquely treated by the introduction of inlaid or painted (the edifices were generally too dark to be quite sure which) ornament of an Arabesque character upon their lower face. On the northern side of the west end is the inscription: EN ESTO SANTO LUGAR ORO COLON, 1492—1892. Colon is the Spanish rendering of the name Columbus.

Later on, in our visit at San Sebastian, in the Isle of Gomera, situated about a score miles from Teneriffe, we were shown a church containing an interesting oil-painting representing the repulse of the Dutch from that harbour in 1599. Here, too, Columbus attended Mass whilst his three ships, the *Santa Maria*, *Nina*, and *Pinta*, took in water and provisions. An old house, in which, tradition says, he slept, was also shown us. No one walks in the Grand Canary; visitors are driven rapidly and economically about in light covered dogcarts, known locally as tantaras. These are drawn by one, two, or three little horses, who seem to delight in taking the steepest hill at a hard gallop. The splendid tropical foliage, perhaps, strikes the visitor the most in the many beautiful drives that may be taken at every hand. The thousands of acres of fruitful bananas, the tall date palms, the vineyards, and fields of sugar-cane are very impressive. The hedgerows of red geraniums and of the cruel prickly pear and the tall and graceful aloe are seen almost everywhere, whilst many of the roads are continuously planted with the eucalyptus tree, affording a most refreshing shade.

A large number of the inhabitants live in caves, natural formations in the sides of the mountains, which are probably air-holes, when the crust cooled down, in the long-ago days. These dwellings seem fairly comfortable inside, and many of their occupants continue to make pottery just as the Canarios made it a thousand years ago. No potter's wheel is used, and the designs are much as are those we have seen in Morocco. The jars in general use for holding water are of good outline, and as the women carry everything on their heads (save their babies, who straddle on their hips), the bare-footed damsels, wearing white Moorish-looking headdresses, and deftly balancing these pitchers upon their crowns, look very pretty indeed. Water is obtained from metal hydrants in Las Palmas, and the women and girls, with accompanying barely-dressed children—some of the little ones we saw were altogether nude—bearing their cave-made pots and pans, and crowding together around the taps, make the most charming groups imaginable. It is much to be feared, however, that in the near future these interesting locally-made ewers will become almost a thing of the past. All the oil for lighting purposes used upon the islands seems to come from the United States. It arrives in tins, 1ft. 6in. by 1ft. by 1ft., or thereabouts. These tins, when emptied of their contents, being lighter and holding more water than the earthen vessels, are rapidly finding favour with the water fetchers, and are steadily and surely outing out the crocks. Atalaya, in Grand Canary, is perhaps the largest collection of troglodyte dwellings in the islands. The clay for pottery, which their inhabitants fashion on a round stone, is dug in the immediate neighbourhood. These cave-dwellers seem quite distinct from the Spanish-like inhabitants of the towns, and rarely, if ever, intermarry with them.

In driving to Telde, some fine examples of the *Euphorbia Canariensis* are passed. This is a wonderful tree, indigenous to the Canaries, having leaves (if they may be so called) like New York policemen's clubs, and strong caustic for sap. Curiously, it grows nowhere save where its roots can be in actual contact with the solid lava Telde itself is a Syriac-looking city, of something like 10,000 inhabitants. The church in the main square has a south-west tower, in the midst of whose parapets are hung four large bells. On climbing the tumble-down steps, and reaching the summit of this campanile, we found two of the bells old, and the others bearing the names of Messrs. John Warner and Sons, of London. The western doors were painted a dark red—a common practice on the island—and studded with bronze nobs, 3in. in diameter. They have a couple of very curious knockers, and a quaintly conceived escutcheon to the keyhole, all in the same metal. Artistic bronzework upon the outsides of the church doors is not at all unfrequent. The church contains, amongst other things worth examining, nine handsome Venetian glass chandeliers and a curious revolving choir-lectern, having a grand old music-book upon it. We remember seeing just such another volume as this in the summer of 1889 in an old church at Ceuta, a Spanish penal settlement on the north coast of Africa. This lectern is in the north-east chapel, which has an exquisite octagonal roof of carved wood, which looked like teak. The baptistry at the south-west end is divided off from the south aisle by an effective screen of painted wood. It consists simply of parallel transoms running pretty close over each other, filled in between with turned mullions. The effect is striking, considering the simplicity of the design.

HARRY HEMS.

(*To be continued.*)

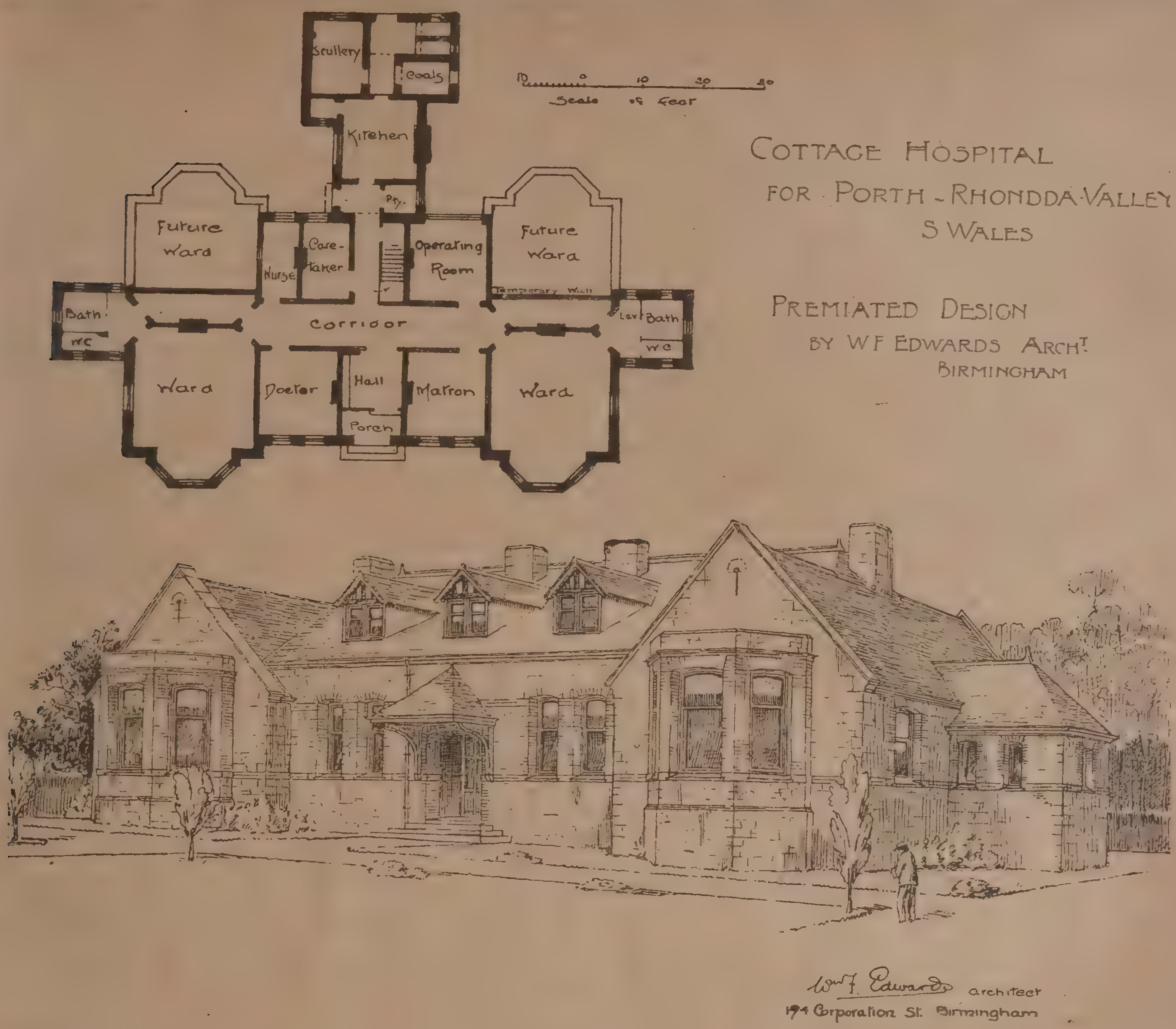
◆

LONDON BOARD SCHOOL BUILDINGS.

THE annual report of the Works Committee of the School Board for London, just issued, describes the work done in the matter of purchasing sites for schools, erecting school buildings, and preparing generally for the reception of children of school age.

During the year ended March 25 last the Board were engaged in the purchase of interests in 55 sites. The cost of these interests was £82,265, the surveyors' fees being £980. The value of all the sites purchased or agreed to be purchased previous to March, 1894, was £2,903,207, and the costs £406,601. Thus the total cost of the sites purchased up to the end of the financial year under review was £2,985,472, and the fees £407,581. The cost of the sites for 294 schools up to September, 1894, was £6 15s. 3d. per child. The total number of permanent schools which had been erected and opened up to Lady-day, 1894, was 397. During the year under review nine additional schools and 28 enlargements were opened. The total amount of loans which the Education Departments authorised the Board to incur on account of the nine new schools and sites was £170,417, and on account of the 28 enlargements and sites £301,555. The average cost per head of the 294 school buildings was £12 2s. 3d., and furniture and fittings 10s. 6d. Tenders have been accepted during the year for erecting eight new schools, providing accommodation for 7,447 children, and 22 enlargements of schools, including two new junior mixed schools and one senior mixed, providing accommodation for 7,102 children. Each of the eight schools will be provided with halls, and the tenders include the provision of centres for cookery, laundry, or manual training centres, and in many cases a drawing-class room. With regard to the enlargements, opportunity is taken to improve the existing schools so as to make them thoroughly efficient. Tenders have also been accepted for erecting 19 cookery centres, 29 laundry centres, 30 manual training centres, adapting two houses for housewifery centres, erecting three schools for special instruction, and adapting a house for the same purpose, erecting a deaf centre, providing the necessary rooms for the teaching of the upper standards at four existing schools, erecting divisional offices for two divisions, adapting the Drury-lane school for the purposes of a day industrial school, inclosing, levelling, draining, and tarpaving additional land acquired in connection with 15 existing schools, carrying out drainage and sanitary works to 34 schools, providing hot-water apparatus at many schools where the heating by open fireplaces was insufficient, and carrying out various structural alterations and improvements to schools. In addition to those schools and enlargements for which tenders have been accepted, finished plans of the enlargements of ten other schools have been approved. Further progress has been made in the improvement of drains and sanitary arrangements generally in the schools.

General Moberly, as the chairman of the committee, adds, that the standard of education and accommodation during the past five years has been greatly raised, and the committee have endeavoured to arrange the schools in accordance with it. Great difficulties have been met with in carrying out much-needed improvements to a very large number of old schools to bring them up to modern requirements; and this work has, as a rule, been done in connection with the enlargement of the schools. During the last three years 34 new schools have been opened, accommodating 32,887 children, and 60 enlargements of previously existing schools have added further accommodation for 19,479 children. General Moberly points out that far more time and labour are spent both in preparing plans and in carrying out the work of enlarging an old school than in designing or building a new school. On the subject of sanitary arrangements, the chairman of the committee observes that some years ago there was a suspicion that the drainage works in connection with some of the schools had been very inefficiently executed; but glaring defects came to light, and action was taken to set things right. In deference to modern requirements the system of drainage of 15 or 20 years ago has been removed in 79 schools, and newer methods have



been introduced; and a similar improvement is being carried out in 36 other schools.

The committee's report further states that the system of carrying out repairs to school buildings by workmen employed direct by the Board is being continued in nine of the eighteen districts, and at the date of the report 79 workmen were so employed. The wages paid to these workmen are the same as are required by the Board to be paid by contractors to the workmen employed by them. On March 25 last the following was the amount of school accommodation in course of provision: Ten schools were in course of erection, providing accommodation for 9,622 children, and 24 enlargements, providing accommodation for 7,562 children; 26 additional sites for new schools had been or were being purchased, the schools to be erected on which would provide 22,202 places; 25 sites had been scheduled, the schools on which would provide 21,800 places; 34 enlargements had been sanctioned, providing 11,919 additional places; and the Education Department had also sanctioned the provision of sites in six districts, the schools upon which would provide for 4,000 children.

COTTAGE HOSPITAL, PORTH.

WE give above an illustration of this hospital, for which Mr. W. F. Edwards, of Birmingham, was awarded the first premium. On the right-hand side of the entrance are the matron's room and ward for four beds; on the left-hand side, doctor's room and a similar ward. Both these wards are connected by a central corridor, on the other side of which are rooms for the nurses, caretaker, and for operations, and also the entrance to the kitchens, which form a projecting central block at the rear. It was proposed to build the walls of local stone with brick dressings, and plaster internally with adamant plaster. The estimated cost was £2,000.

THE BRITISH INSTITUTE OF PUBLIC HEALTH.

THE annual congress of the British Institute of Public Health was held on Friday, Saturday, Monday, and Tuesday at Hymer's College, Hull. About 300 delegates were present. At the opening meeting the Mayor and the Sheriff of Hull welcomed the members of the congress, and Professor W. R. Smith, President of the Institute, acknowledged the reception. The meetings were then divided into four sections. In the municipal and Parliamentary section Sir Albert Rollit, M.P., presided, and in his opening address spoke favourably of the advance of municipalisation. The local institutions should be jealously guarded against the present tendency downwards in its limitations, and every effort made to relieve the congestion of Parliament. He pleaded for a devolution to local authorities of all local affairs, subject only to a minimum of central control for general purposes, a control which should be judicial rather than executive. Public water supplies for rural districts, and public washhouses in relation to the sanitary condition of the homes of the working classes, were among the subjects discussed in this section, and in that of chemistry the bacteriology of waters was discussed. The sanitary engineering and building construction section was presided over by Mr. W. Spinks, lecturer on sanitary engineering, Yorkshire College, Leeds. A paper was read by Mr. G. J. ~~G.~~ Broom, borough surveyor of St. Helen's, dealing with sanitary arrangements. A long discussion followed, and a resolution was ultimately adopted expressing the opinion that it was very desirable that a water-carrying system should be adopted in towns where a water service was laid on, also that there should be a *minimum* flush of three gallons, and that all water for sanitary purposes should be free of charge. "Dust and Refuse Disposal" was the subject of a paper read by Mr. S. J. Beaman, Warrington, in which he advocated the burning of refuse. He believed that it would not long be tolerated that refuse should be destroyed without its being requisitioned to serve some public and beneficial purpose —such as the generation of steam for a variety of purposes. Another question considered was the provision of cremation by urban authorities. This question was opened by Sir H. D. Littlejohn, who said the question was one of the utmost importance, for it would be for the public good that the disposal of the dead should be under the control of urban authorities, just as much as the control of gas and water. The present method of burial was injurious, polluting as it did the soil, and frequently contaminating the water supply. Dr. Holder, of Hull, strongly supported the establishment of crematoria, and stated that, as a member of the Hull Town Council, he had carried a motion to provide a crematorium, and a plot of land had already been provided on which to erect the building. On the motion of Sir H. D. Littlejohn, it was unanimously resolved: "First, that in the opinion of this congress it is essential, in the interest of the public health, that all municipal and local authorities should be empowered to provide crematoria, and that a copy of this resolution be sent to the Local Government Board. Secondly, that a petition be presented to Parliament, signed by the president on behalf of the congress, in support of the Bill about to be presented to Parliament to confer power upon municipal authorities to provide crematoria." In the preventive medicine section, Professor W. R. Smith opened a discussion on the influence of schools upon diphtheria. During the subsequent discussion, one member said there was more danger from "jerry" built houses than from schools. The question of the housing of the working classes was introduced by Mr. J. C. Wood, of Sunderland, who spoke of the wholesale manner in which insanitary houses had been closed in Sunderland by the sanitary authority. This, he said, was all back-to-back property, and all refuse had to be brought through the houses, in some cases the bedrooms having to be passed through, and occasionally the bed had to be removed before the refuse could be got through the room. The subject of the definition of a sewer was discussed in the engineering section, and the following resolution was adopted:—"That this section is of opinion that the definition of a sewer given in the Public Health Act should be amended, and that a public sewer should be defined as that laid down by a sanitary authority in a public thoroughfare, or taken in charge by a sanitary authority." A further resolution was carried in this section to the effect that it was desirable that every house in a watering-place where lodgers were accommodated should undergo a survey by the sanitary authority, and that a certificate of fitness should be compulsory. It was also resolved: "That all plans and specifications for new schools, or for alteration or enlargement of existing schools, should be submitted to the medical officer of health for the district in which the school is to be erected or altered, for his approval and criticism, especially with reference to the provision for drainage and sanitary accommodation, and that the Education Department should require a certificate from the medical officer of health that he approves of the drainage and sanitary accommodation of the said schools before passing the same; and also that the annual education grants should be made dependent on a certificate from the medical officer of health that Article 85 (a) of the Code is satisfactorily complied with as regards each school in his district."

BIRMINGHAM ARCHITECTURAL ASSOCIATION.

SHOWERY weather somewhat interfered with the members of this association, who went sketching into Shropshire on Friday, Aug. 2, until the following Tuesday, but a good deal of work was done. The party made the Feathers Hotel, which is so well known to visitors to this interesting town, their headquarters, and drove, on the first day, to Whitton Court, a delightful Elizabethan house, which has been very carefully repaired during the last few years by Mr. J. A. Cossins, of Birmingham. The house abounds in panelled rooms and old furniture, and is situated in a charming garden full of flowers. Miss Mills, the owner, kindly entertained the visitors with luncheon, and gave free run of the house. The small church adjoining has lately undergone repair at the hands of Mr. Aston Webb, who rebuilt the chancel; and the church of Burford, some three miles distant, contains a great deal of the same architect's work, which is of considerable interest and taste, but to a great extent has wiped out the character of the old church. On the north wall of the chancel is the noted triptych. Sunday morning was devoted to Ludlow Church and Castle; the afternoon to Mr. Norman Shaw's new church at Richards Castle, about four miles away. The site falls to the south, and advantage has been taken of this to arrange the parts so as to form a most charming group, the tower at the south-west being detached but for a small connecting lobby, and is the principal entrance. Many characteristics have been adopted of the old church, which stands about a mile away. One of its features is the detached tower at the east end, and it is a subject for congratulation that care is being taken of the old structure, so as to preserve it from untimely decay and destruction.

Stokesay Castle, gateway, and church, so full of interest and delight to all students of architecture, occupied practically the whole of Monday, and well repaid the time spent there, Bromfield being taken late in the afternoon on the return drive to Ludlow. Here is a stone-and-timber gateway to the churchyard, the upper part of which, until the present vacation, has been used as the village school, only lately being condemned by the Education Department. This church has undergone restoration by Mr. Fowler, of Durham, but still retains much of its interest.

On Tuesday the programme was altered, the day being spent in Ludlow itself, and the evening brought to a close one of those excursions which not only inspires reverence for the past art of our native land, but instils into the student's mind that good feeling towards our professional brethren which is happily on the increase, through the agency of the various architectural associations.

Chas. E. Bateman.

OBITUARY.

Mr. Richard Morris Hunt, of New York, one of the best known of American architects, died at New York on July 31st in his 67th year. He was the son of the late Jonathan Hunt, Member of Congress, and was born at Brattleborough, Vermont, Oct. 31, 1828. In 1843, at the age of 15, he was brought by his mother to Switzerland, and entered a school at Geneva, commencing the study of architecture with Samuel Darier. From Geneva he went to Paris, and studied under Hector Lefuel, entering the Ecole des Beaux-Arts in 1845. On leaving the Ecole he travelled through Europe, Asia Minor, and Egypt, and on his return to Paris in 1854 he received from the French Government the appointment of Inspecteur aux Travaux on the new buildings uniting the Tuileries to the Louvre. His master, Lefuel, having, during his absence, succeeded Visconti as architect, he was put in charge of the Pavillon de Bibliothèque, opposite the Palais Royal, and made, under Lefuel, all the studies and full-size drawings for that Pavilion. Hunt returned to America in 1855—at the age of 27—and spent about six months in assisting the late Thomas U. Walter at the Capitol of Washington. He then, at New York, commenced the practice of his profession, and obtained a large and lucrative connection, one of his chief works being the Vanderbilt mansion on Fifth-avenue, New York. Other of his executed designs are the pedestal to Bartholdi's colossal Statue of Liberty in New York Harbour, the hospital in Third-avenue, the Marquand residence, and the *Tribune* building, all in New York; Mr. W. K. Vanderbilt's "Marble Palace," and the Goelet House, at Newport, R.I.; mansions in Beacon-street, Boston, the Vanderbilt Mausoleum on Staten Island, and a mansion, as yet unfinished, for Mr. Vanderbilt, at Ashville, North Carolina. Soon after his return to the United States Hunt took an active and a prominent part in founding the American Institute of Architects, a body which now has chapters in various parts of the United States. He succeeded R. M. Upjohn and Thomas U. Walter as president, and subsequently was elected president of the institute under its reorganised constitution. He was also for several years president of the New York Chapter of the American Institute. Soon after commencing his career in New York Mr. Hunt opened an architectural atelier for students on the French system. Many of the younger leading architects in America, including Professor William R. Ware, George B. Post, Frank Furniss, Henry van Brunt, and Charles Gambrill were students in this atelier. In 1867 Mr. Hunt served as a member of the fine arts jury at the International Exposition in Paris; in 1876 he held the same office at the Centennial Exhibition in Philadelphia; and in 1893 he served as a member of the fine arts jury of selection, and as president of the Board of Architects, at the Exhibition at Chicago, and the Administrative Building at that World's Fair was built from his designs. In 1882 Mr. Hunt received from the French Government the decoration of the Legion of Honour, and was elected a Corresponding Member of the Institut de France in the following year. He was an honorary member of the Société Centrale des Architectes Français, and of the Architects' and Engineers' Society of Vienna; and an Academician of St. Luke at Rome. Harvard University conferred on him the degree of LL.D., the first ever bestowed by that learned body on an architect. In 1893 the Royal Gold Medal of the Royal Institute of British Architects was awarded to Mr. Hunt, who had been an Honorary Correspondent of the Institute since 1886. Mr. Hunt, who, therefore, has been the only American recipient of the medal since its establishment 48 years ago, crossed the Atlantic to receive the medal at the hands of Mr. MacVicar Anderson, and acknowledged the honour in a bright and cheery speech, giving many personal reminiscences of his studies under Lefuel and his work at the Chicago Exhibition.

The death of Mr. G. R. Cobham, architect and surveyor, of Edwin-street, Gravesend, took place on Thursday afternoon in last week, the deceased passing away in his sleep. Mr. Cobham was well known and highly respected. He was secretary and surveyor to the Kent and Essex House, Land, and General Investment Company, secretary to the Gravesend and Rochester Equitable Permanent Building Society, a member of the Kent Archæological Society, and a member of the Education Committee of the Town Council.

The death is also announced, after a short illness, of Mr. Walter Lawrence Paul, architect and surveyor, at the age of 40 years. Deceased, who was the son of the late Dr. Andrew Paul, died at his residence in Furlong-road, Holloway, on Friday last.

The death is announced, at the age of sixty-seven, of M. Gabriel Auguste Ancelet, a well-known French architect, who, born in Paris, gained the Prix de Rome in 1851, a Médaille d'Honneur in 1867, and a gold medal in 1869, and was elected Membre de l'Institut in 1892. He entered the Legion of Honour in 1867. In 1873 he was appointed a professor in the Ecole des Beaux-Arts, and continued to act in that capacity until of late. His most important building in Paris is the new Musée des Arts et Métiers.

CHIPS.

Various improvements have lately been carried out at the Convalescent Hospital, Southport, from funds supplied by the Cotton Districts Convalescent Fund. The alterations include new dormitories for nurses and servants, and improved ventilation, and have been executed from plans by Mr. Charles Heathcote, of Manchester.

The new church at Sledmere, which Sir Tatton Sykes is building at his sole cost, is progressing in the hands of Mr. John Thompson, contractor, of Peterborough, who has already got in all the windows, including one of five lights in the east wall. The tower of the old church is to be preserved, and the nave of the new one is built into it. The older masonry will, however, be restored where necessary.

At Friday's meeting of the Perth Gas Commission, Mr. Foulis, engineer, Glasgow, reporting on the condition of the city gasworks, stated that the crowded state of the present works interfered prejudicially with the economy of manufacture. He approved of their proposed removal to the Sand Island.

The new Central Board School at Millbrook, near Southampton, will be publicly opened on Monday, September 2nd. Mr. A. F. Gutteridge, of Southampton, has been the architect, Mr. H. Cawte, of Shirley, the contractor, and Mr. H. M. Randall, the clerk of works.

The urban district council of Felixstowe and Walton accepted at their last meeting an offer from landowners of several strips of land forming cliff frontages to be laid out and maintained as pleasure grounds. The estimated value of the land is at least £500.

An alabaster tablet with black marble inscription panel, erected to the memory of the late William Watson Pattinson, J.P., of Felling House, was formally unveiled in Felling Church on the 8th inst. The tablet was furnished by Mr. Robert Beall, of Newcastle-on-Tyne, from designs by Messrs. Hicks snd Charlewood, architects, of the same city.

The city council of Coventry adopted on Tuesday plans by Messrs. G. and I. Steane, of that city, for a ward of 16 beds, a discharging block, and a porter's lodge to be added to the city fever hospital. The estimated cost is £4,850.

At the Town-hall, Colchester, on Wednesday week, a Local Government inquiry was held by Col. J. Ord Hasted into the application by the town council for a loan of £6,250 for water supply purposes. Mr. James Paxman, the chairman of the waterworks committee, after stating that the new machinery cost £16,000, said that the engineer, Mr. Wood, had inspected the water tower and found it incapable of bearing the strain which would be put upon it in order to support an adequate supply of water at a sufficient elevation. To do all that was necessary to secure absolute safety, including underpinning foundations and new flooring, would involve an expenditure of £12,000 or £13,000.

A Central Higher Grade School is being erected at Bolton. Messrs. E. and D. Maginnis are the contractors, the amount being about £20,000.

CONTENTS.

"As Others See Us" ... 215
Party-Walls above Roofs ... 216
Spanning Spaces ... 216
The Architectural Association Excursion, 1895.—II... 217
County Lunatic Asylums.—XXV.... 220
The Canary Isles: Stray Notes during a Recent Visit. 221
London Board School Buildings ... 222
Cottage Hospital, Porth ... 223
The British Institute of Public Health ... 223
Birmingham Architectural Association ... 224
Obituary ... 224
The Building News Directory ... xi.
Our Illustrations ... 225
Tynemouth Priory, Northumberland ... 243
Building Intelligence ... 244
University College ... 245
Engineering Notes... 245
Competitions ... 245
Architectural and Archæological Societies ... 246
Correspondence... 246
Intercommunication ... 247
Legal ... 247
Legal Intelligence ... 248
Water Supply and Sanitary Matters ... 249
Our Office Table ... 249
Meetings for the Ensuing Week ... 250
Trade News ... 250
Tenders ... 251

ILLUSTRATIONS.

DURHAM COUNTY COUNCIL BUILDINGS.—ARCHITECTURAL ASSOCIATION EXCURSION SKETCHES OF GLOUCESTER, TEWKESBURY, ETC.—TYNEMOUTH PRIORY.—COTTAGE HOSPITAL, PORTH.

Our Illustrations.

DURHAM COUNTY COUNCIL OFFICES: SELECTED DESIGN.

The following particulars are from the report furnished us by the architects, Messrs. Harry Barnes and Frederick E. Coates, AA.R.I.B.A., of Sunderland. In this design the boundary lines of the site have been rigidly adhered to. The buildings do not occupy the entire site, but leave a strip of land 70ft. deep and 100ft. long at back of proposed building, which would be available for any future extension. The level of the ground floor is 8ft. above the footpath in Old Elvet, whilst at the rear of the building it is only 1ft. above the ground. The site having only one street façade renders a central entrance from that street imperative. On the east and south fronts, side entrances are planned, and at the south-east corner is placed the special public entrance to the council chamber gallery. The entrance to the office of weights and measures is at the north-west corner. The polling booth and caretaker's rooms have distinct entrances; that of the caretaker controls the cart entrance on the east side. An entrance for lift may be made on the west side of the site. The basement contains the weights and measures' offices and lavatory block, the county clerk's strong rooms and the county surveyor's plans and sample rooms, the caretaker, with the heating chamber, coals, &c. Upon the ground floor are provided the council chamber and committee-rooms, and the offices of the county clerk. Accommodation for the county surveyor, medical officer, accountant, and technical education officer are provided on this floor. The second floor has been devoted to the photographing rooms of the county surveyor, the laboratory of the medical officer, and the technical education library. The weights and measures offices have a direct separate entrance from the street. These offices are perfectly self-contained and upon one floor, and are well lit. The county clerk's strong rooms are easy of access from the clerks' office. They are well lighted, ventilated, and secure. The surveyor's plans-and-samples room is also well lighted, and is of easy access for both clerks and for the lift. The polling booth is well lighted. A separate entrance from the street carries the turmoil of election away from the administrative department. The caretaker's rooms, whilst being isolated and private, are in proximity to the lift and the heating chamber. The entrance is from the east side. A serving lift will be made from the kitchen to the waiting-room above. This waiting-room is intended to be used as a serving-room if at any time a luncheon is given in the large committee-room. On either side of the central entrance are placed the council department and that of the county clerk. These departments are self-contained, while the entrance to the upper floor is independent of the corridor of either department, both of which are absolutely private. Special attention is directed to the council chamber. This block, situated on the axial line of the plan, is two stories in height, and whilst of most easy access from all parts of the building, is yet completely isolated. Upon each side of the council chamber are grouped the committee, chairman, and waiting-rooms. This department is furnished with two spacious lavatory blocks. The council chamber is of horseshoe shape. An expert in acoustics gives it as his opinion that "this chamber will be possessed of the most perfect acoustical properties, and admirably adapted for the purpose of debate." The chamber has been kept as small as conveniently possible, according to request in schedule, and all useless corners which confuse sound are dispensed with. Consideration is asked to the means by which members may leave the chamber, and retire to the ante, committee, and retiring rooms, or public gallery, without crossing the central floor space; also to the fact that the side entrances would allow of the most rapid exit from council chambers in case of emergency. The chairman's seat is placed on a daïs, with the county clerk's and vice-chairman's seats on either side. This daïs will be so constructed as to prevent draughts, and also act as a sounding-board. The officials are placed together in front of the chairman, and the reporters' press-boxes are in a good position for both seeing and hearing members. The side entrances will be very convenient for sending out messages. It is not necessary for any official or deputation to pass through the ante-room, and the public gallery is under the control of the chairman, quite distinct, and entered from a special entrance. The entrances to the council chamber are so placed that they may be used in conjunction with the ante-room as division lobbies. The table in the centre of the chamber is useful for the display of maps, &c. The councillors' retiring-room is on the first floor, in a private position; one side of the room is pierced with glazed openings, by means of which members may see the progress of business; it may also be used as a members' private gallery on special occasions. Attention is drawn to the manner in which the portions of the council chamber block on the first floor are kept private from the offices on that floor. The committee-rooms are arranged round the council chamber and ante-rooms, which latter are so placed as to be equally available as cloakrooms for both council chamber and committee-rooms. The chairman's room overlooks Old Elvet, and is placed between the departments of county clerk and council chamber. The waiting-rooms are conveniently placed for deputations to both council and committee-room. The remaining portion of ground floor is devoted to the county clerk; these offices are under perfect superintendence of one head, whilst the corridor need only be used by officials. A door may be placed leading from the vestibule to the clerks' inquiry office. A separate staircase gives access both to basement strong-rooms and the offices above, and the hoist is in a central position. A good large strong-room is entered from the clerk's office. Excellent large areas are lined with glazed bricks, for continuous lighting of corridor, light on both sides of hall, and on three sides of the grand staircase, which is also lit by a cupola light. Attention is drawn to the means of access to the upper floors. Persons desirous of reaching any of the offices on the first floor do not touch the corridor of the ground floor. There is only one corridor from which all offices may be entered, and there are no narrow, inefficiently-lighted, dead, minor corridors, whilst the arrangements of stairs and exits are such as to furnish an exit at each end of corridor on every floor. Considerable attention has been given to the position of the central staircase. It has been placed in the centre of the building, from which all parts of the building may be reached with equal ease. The porter and switch-room, which is placed under part of this stair, commands the entire building. The drawing-office is well lighted from two sides, and is directly accessible to both surveyor and assistant surveyor. The plan-room shown on front may be used either as an inquiry office or thrown into the private office of the county surveyor. In these offices full accommodation has been provided. They have good light and access from side stair and entrance. The clerks' office is centrally placed between the medical officer and inspector. The second floor is devoted to a technical library, well-lighted, and conveniently placed for the lift. The walls of every strong-room are carried up from the ground level. The tower is built of masonry from top to bottom. No iron beams are to be used in its construction. The lavatories and w.c. blocks are placed against external walls, and the drains are clear of the building altogether. All lavatories and w.c.'s are disconnected by a lobby, and a special ventilating shaft is provided for each floor. The elevation towards Old Elvet will be built with buff terracotta. As the site lies in a hollow and is overlooked from many parts of the city, a copper-domed tower has been designed to give the building prominence and dignity. The roof will be covered with green Westmoreland slates. The flats over lavatory block will be of concrete and asphalte. The floors over corridor and staircases will be fireproof and laid with wood-block flooring. All the principal offices have open fires, and the building throughout is to be heated by low-pressure steam. The council chamber and ante-room are to be heated and ventilated on the Plenum system. The lighting to the chamber will be by a large ventilating sun-burner. The cubical contents have been carefully worked out, and amount to 550,800c.ft. In the opinion of the authors of this design, who have had experience in the district of this class of building, the works could be carried out for the sum of £18,000, including heating, furnishing, &c. The contract tender actually received amounted to £18,051.

THE A.A. EXCURSION TO GLOUCESTERSHIRE.

(See description and other illustrations on p. 217, *ante.*)

CHIPS.

The 13th-century parish church at Carlton Miniott is about to be pulled down and a new one built on the site. The contract for the work has been let to Mr. H. Harwood, of Mansfield, Darlington, for the sum of £1,020.

A marble bust of Mr. W. T. Best, late city organist of Liverpool, is to be placed on a bracket in front of the organ gallery in St. George's Hall, in that city.

An organ, built by Messrs. P. Conacher and Co., Huddersfield, has been opened in Haxley parish church, near York. The case is of pitch pine, with pipes decorated in gold and colours.

The parish church of St. Peter, at St. Alban's, which has been rebuilt at the sole cost of Lord Grimthorpe, will be rededicated on Tuesday, October 1st.

The Memorial Cottage Hospital at Crewe was opened on Wednesday evening by the Earl of Crewe. The style of the architecture is Elizabethan. There are three wards, each of six beds, and a smaller ward for two beds, also a matron's room, an operation-room, nurses' room, kitchen, and the usual other offices. The builder has been Mr. Gelhen, of Shrewsbury, and the architect Mr. Brooks, Manchester. The hospital is situated in the Victoria-avenue, facing the Queen's Park. The cost of the building has been about £3,000.

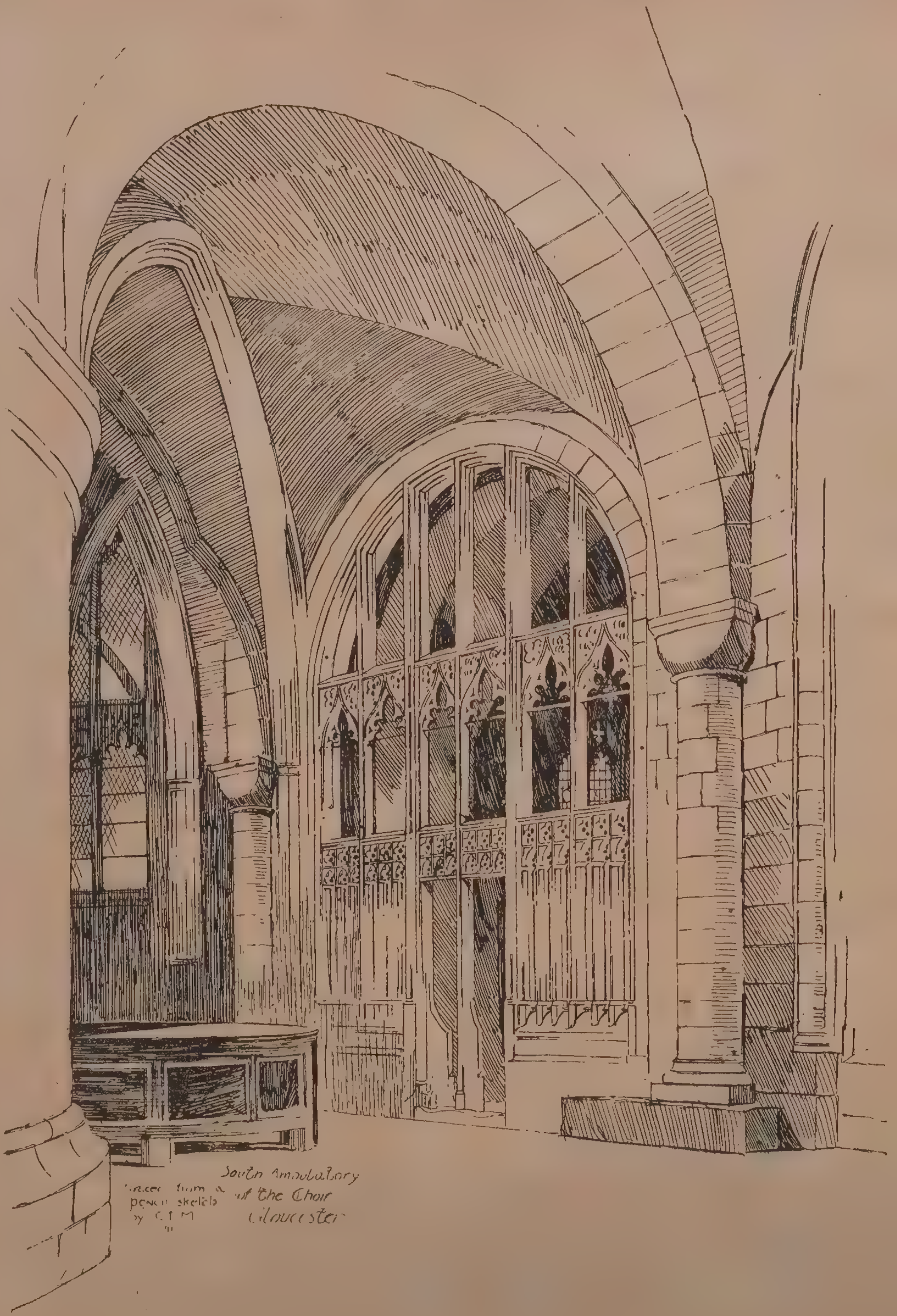
Western Australia is evidently determined to advance. In presenting the Budget to the Legislature of the colony on Friday, the Premier announced that it is proposed in the ensuing year to establish a mint, an observatory, a museum, and a library, to continue the Fremantle Harbour works, to erect a telegraph line across the Continent to Adelaide, and to construct gold-fields and other railways to the extent of 400 miles.

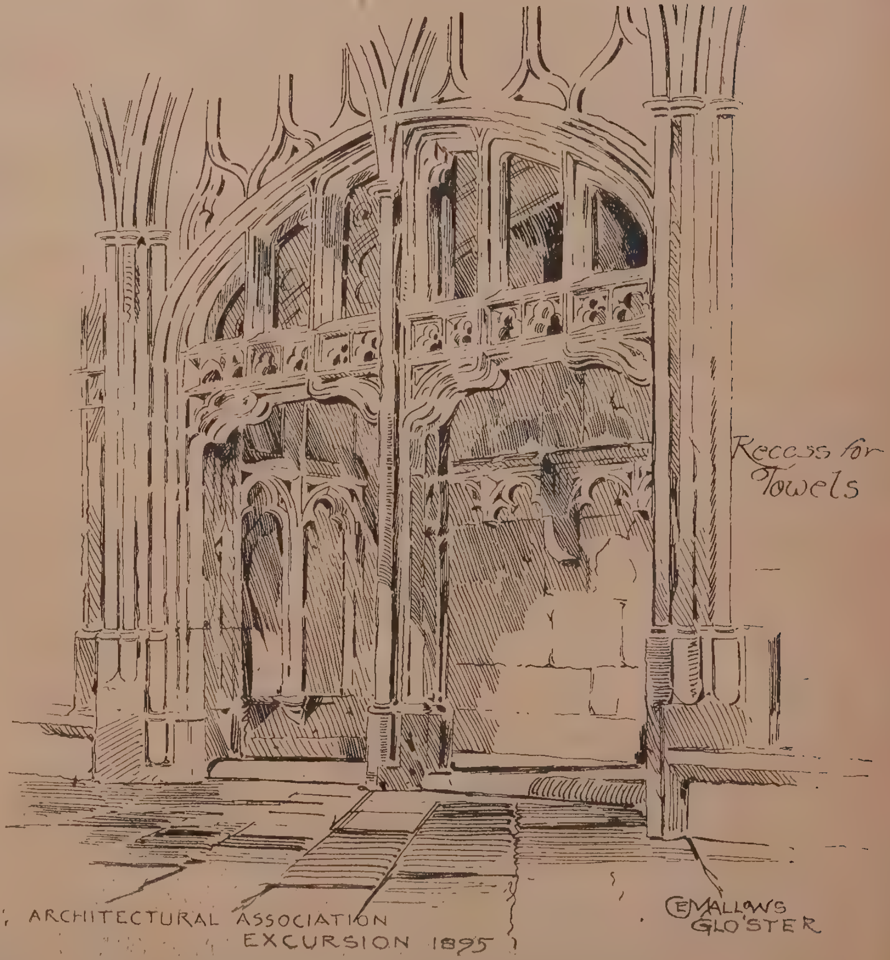
The restoration of the 14th-century church at Smallholm, near Earlston, is about to be carried out from plans prepared by Messrs. Hardy and Wight, architects, Edinburgh. With the exception of the restoration of the chancel arch and gables, and the nave, the expenditure will be limited to providing for the better accommodation of the worshippers. The work to be now done includes a new roof and floor, new seating, the addition of a north transept and vestry, and new ventilating and heating apparatus, at a cost of about £500.

Subject to Parliamentary sanction, an agreement has been entered into by the Wolverhampton Town Council with the Urban District Council of Bilston for the sale to the latter authority of (*a*) the water rights and water mains of the Wolverhampton Corporation in the Coseley area, and (*b*) the water main from Goldthorn Hill to the boundary of the township of Bilston, at the sum of £7,750.

The members and congregation of the new Baptist church, Padiham, have resolved to erect a new school-chapel in Shakespeare-street. When completed the building will seat about 700 persons.

The new line of electric railway to the summit of Snaefell, the monarch of Manx mountains, will be opened for traffic to-morrow (Saturday). The Board of Trade inspection by Colonel Rich and Major Cardew takes place to-day (Friday).


South Ambulatory
of the Choir
Gloucester
Traced from a
pencil sketch
by C.E.M.


Recess for
Towels
ARCHITECTURAL ASSOCIATION
EXCURSION 1895
CE MALLOWS
GLO'STER

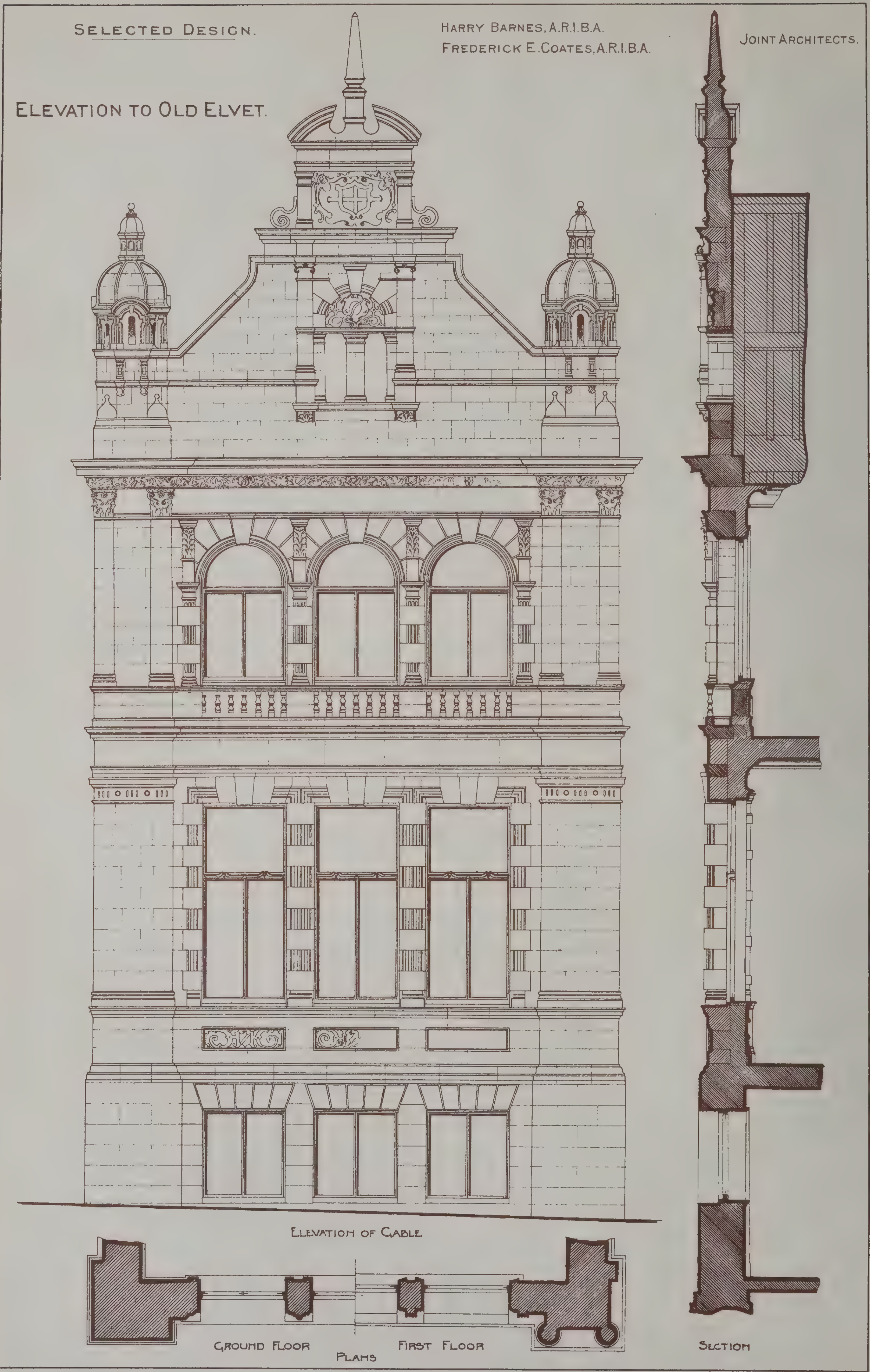
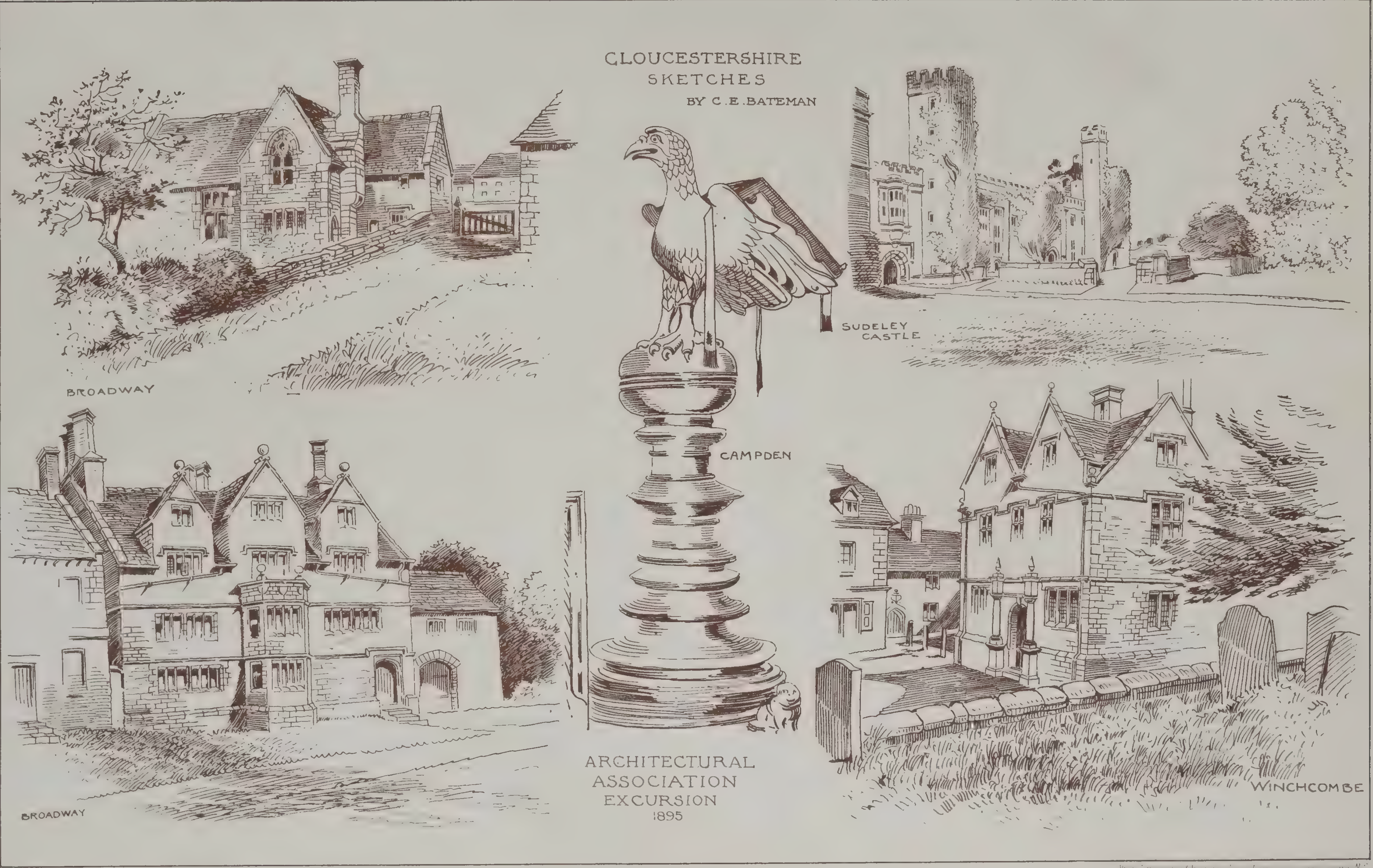


Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C.

COUNTY COUNCIL BUILDINGS, DURHAM.

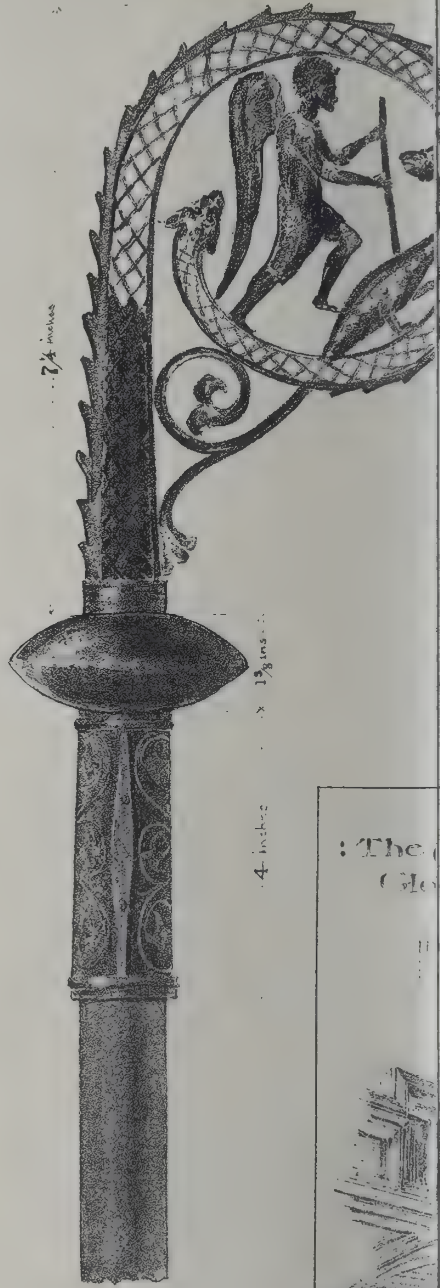


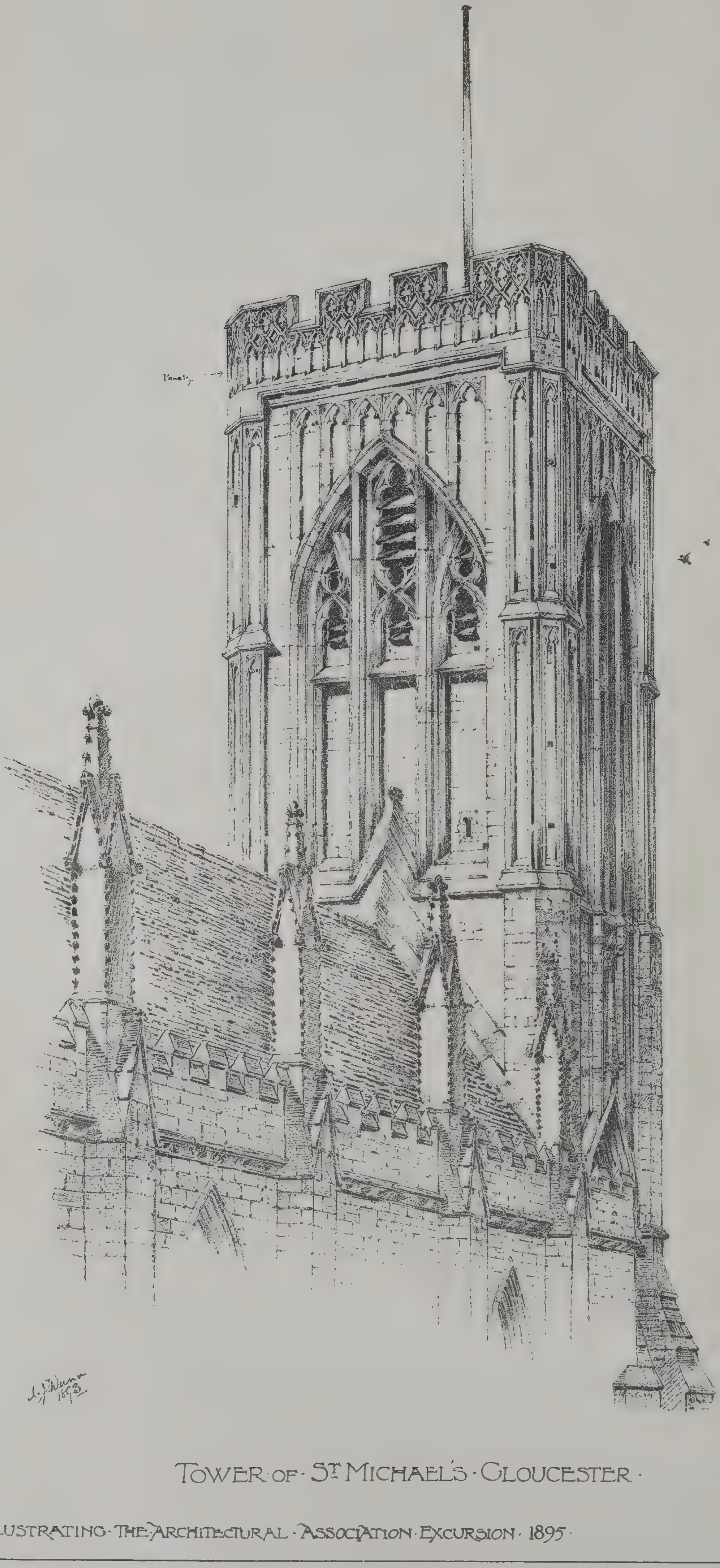
GLOUCESTERSHIRE SKETCHES

BY C. E. BATEMAN

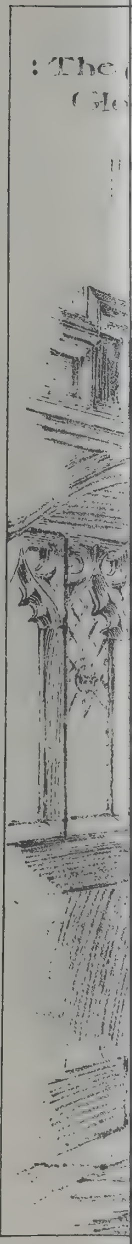
ARCHITECTURAL ASSOCIATION EXCURSION 1895

HEAD·OF·PASTORAL·STAFF· FROM·THE·GLOUCESTER·MUSEUM·



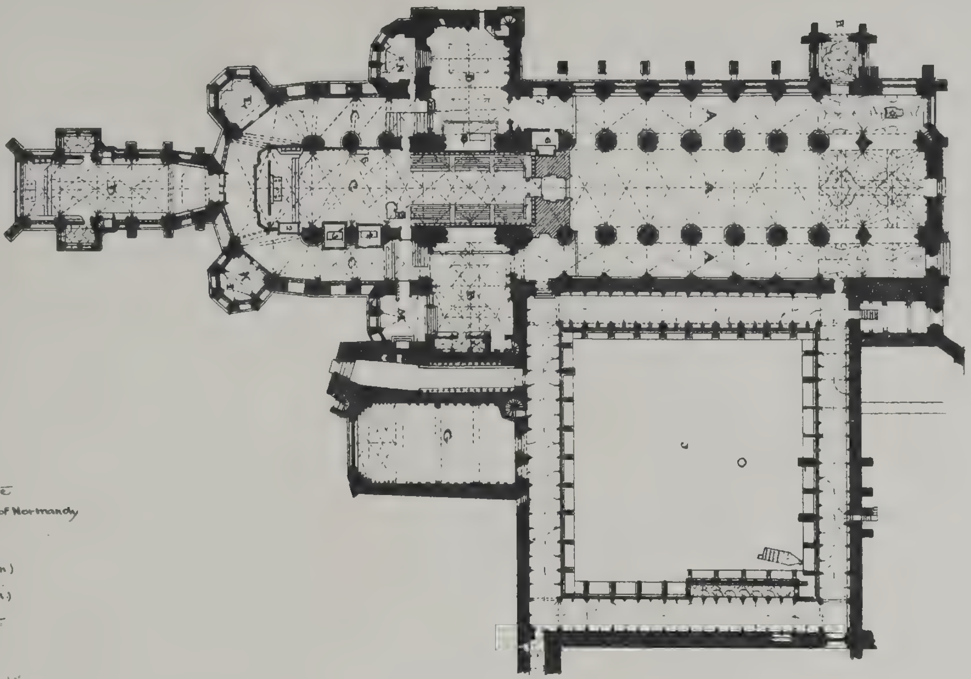


TOWER·OF·ST MICHAEL'S·GLOUCESTER·



ILLUSTRATING·THE·ARCHITECTURAL·ASSOCIATION·EXCURSION·1895·

GLOUCESTER · CATHEDRAL ·



Reference to the Plan

A. Nave and Aisles
B Transepts.
C Chair and Aisles
D Lady Chapel
G. Chapter House
H. South Porch
J. Cloister Court

Chapels, etc.

K. Abt Boteler's Chapel
L. Chapel of St Philip
M. Chapel of St Paul
N. Chapel of St Andrew.
O. Chapel.

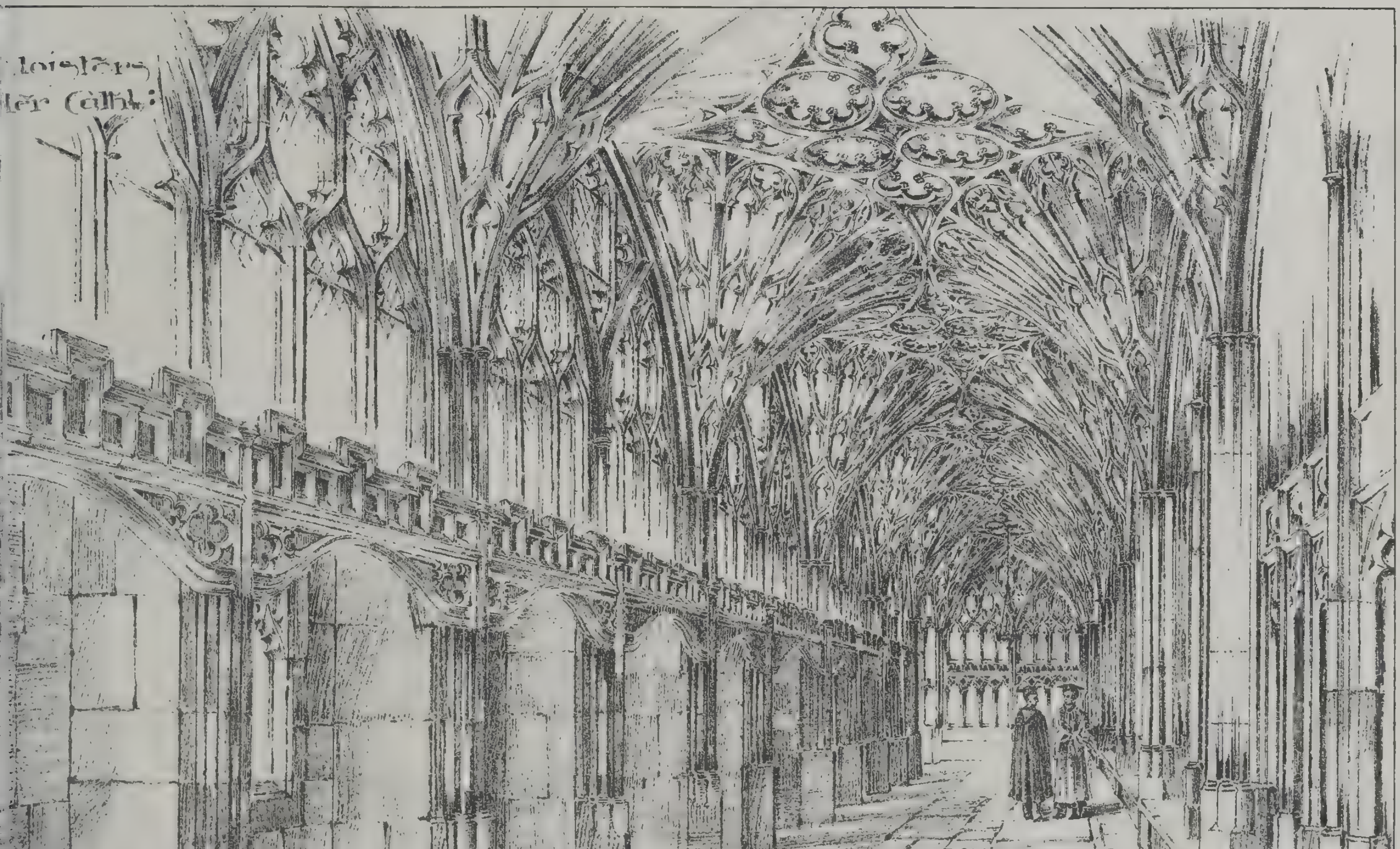
Monuments, etc

1 Rbt. Curthose, Duke of Normandy
2 King Osric
3. Edward II
4 Abbot Parker
5. Monument (unknown)
6. Abbot Seabroke.
7. Monument (unknown.)

cale of 10 5 0 10 20 30 40 50 60 70 80 90 100 Feet.

e The parapets to Tower, Choir, Transepts, etc are of open panel work

THE · CLOISTERS ·



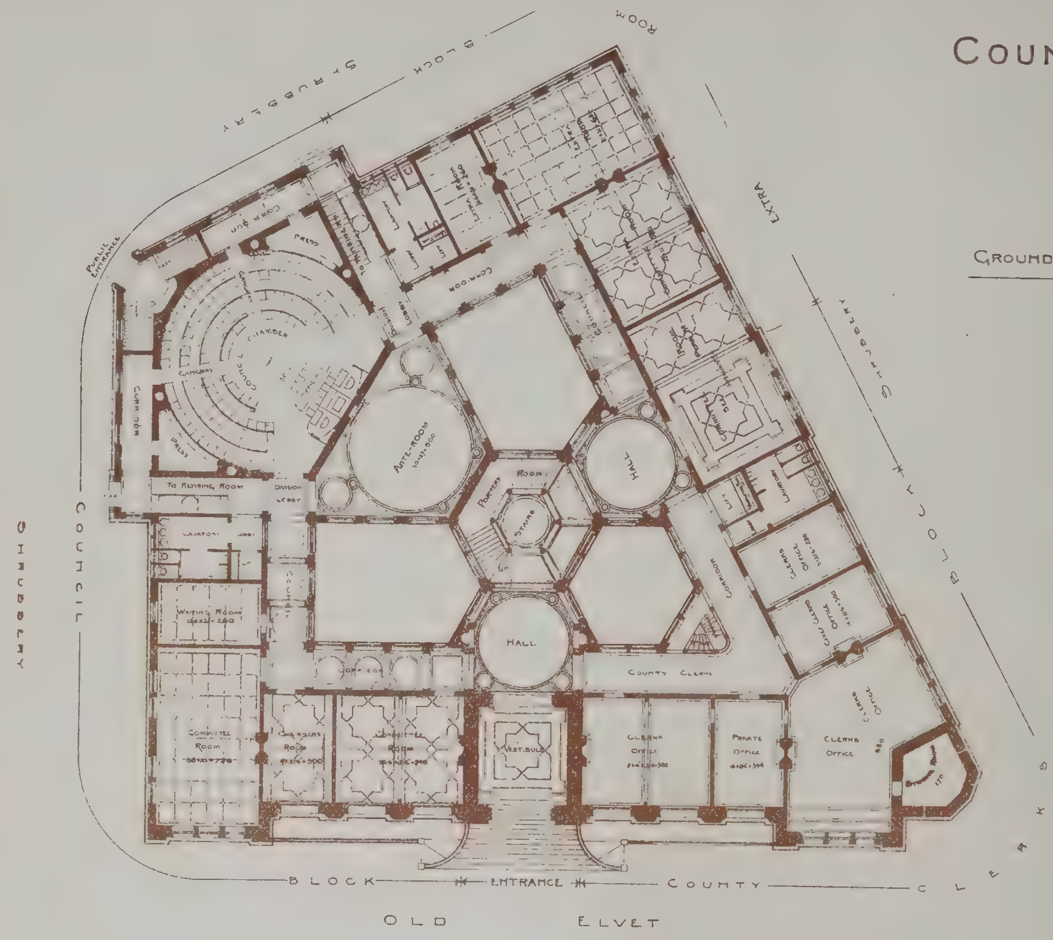
"PHOTO-TINT," by James Akerman, 6, Queen Square, London, W.C.

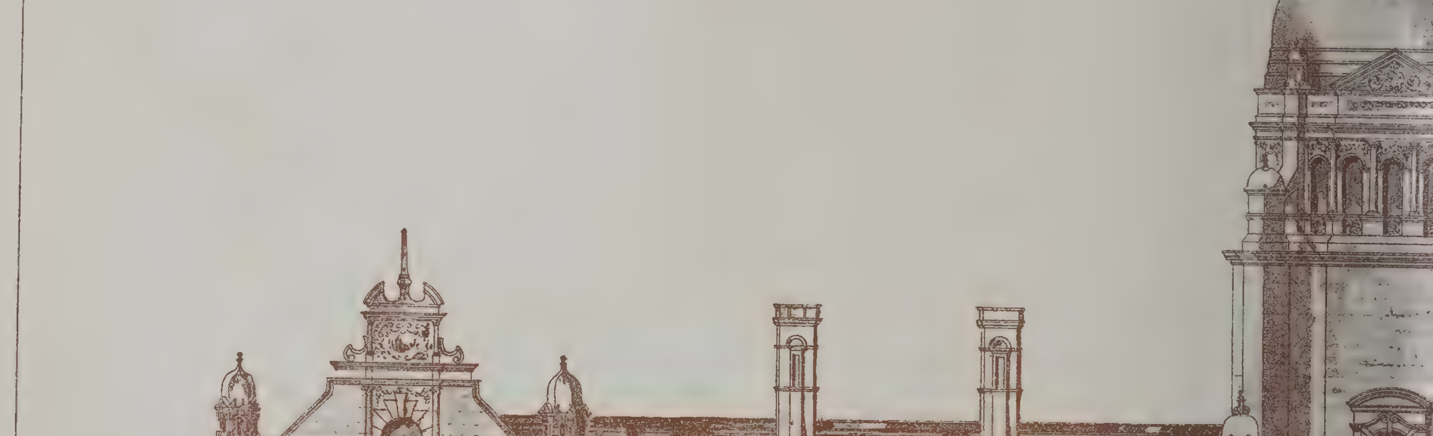
COUNTY COUNCIL B

SELECTED

HARRY BARNES, A.R.I.B.A.
FREDERICK E. COATES, A.R.I.B

GROUND PLAN



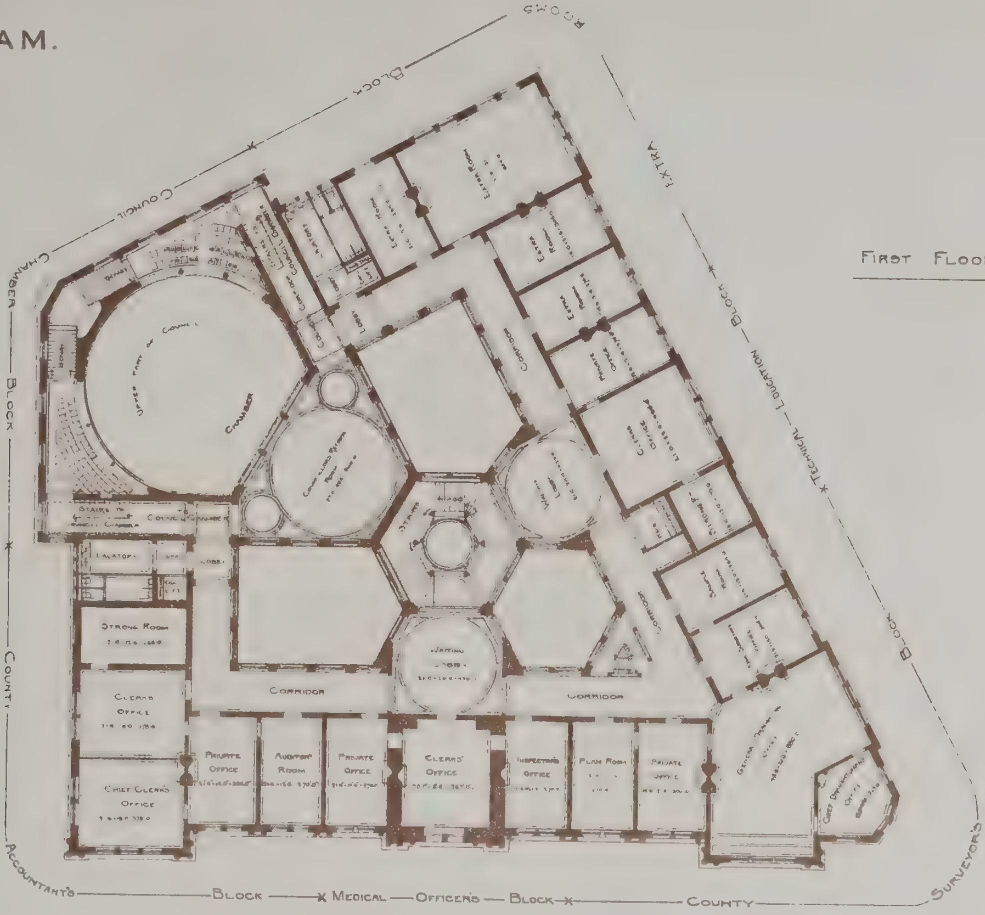


ELEVATION TO O

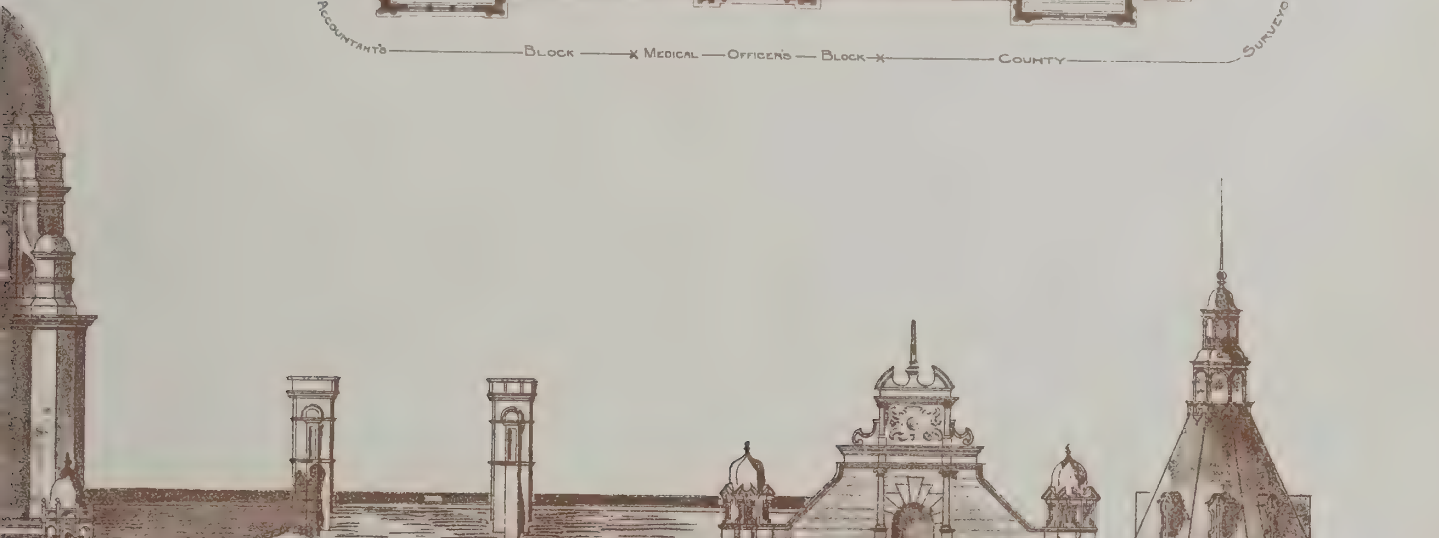
ILDINGS, DURHAM.

ESIGN.

JOINT ARCHITECTS

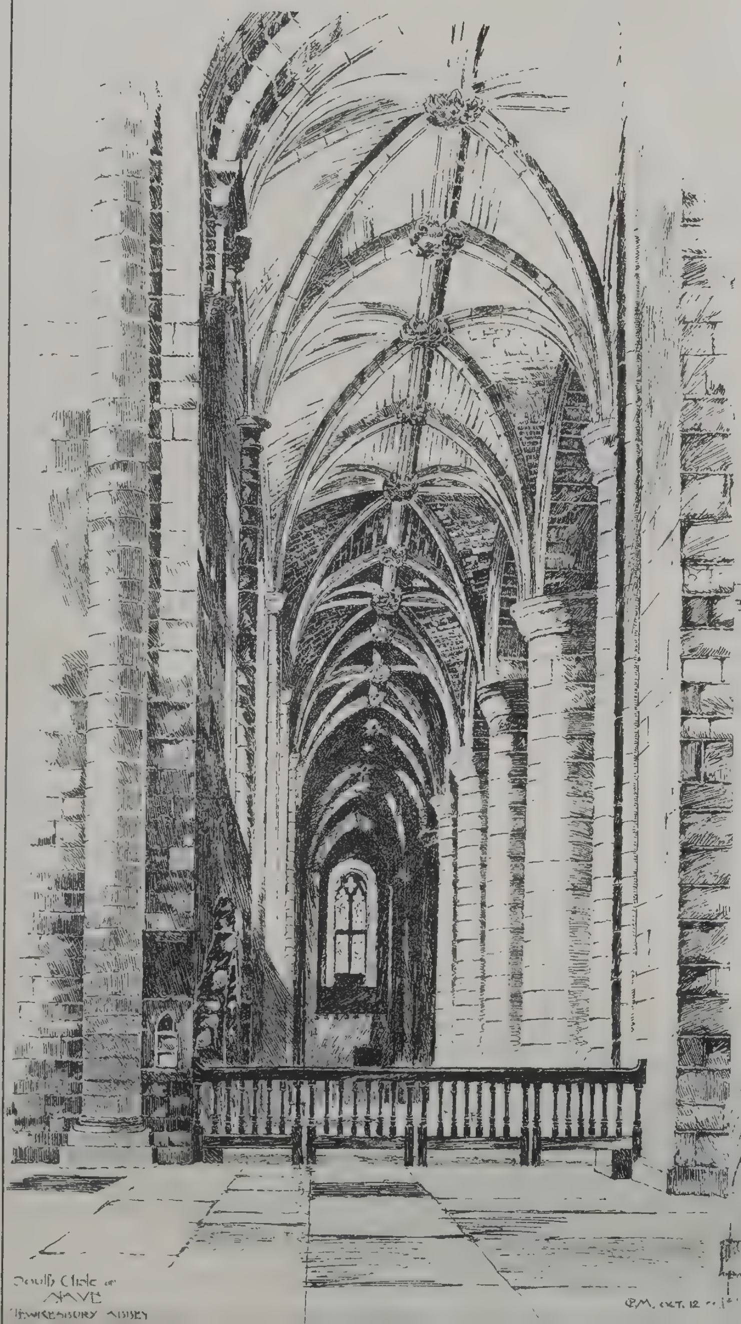


FIRST FLOOR PLAN

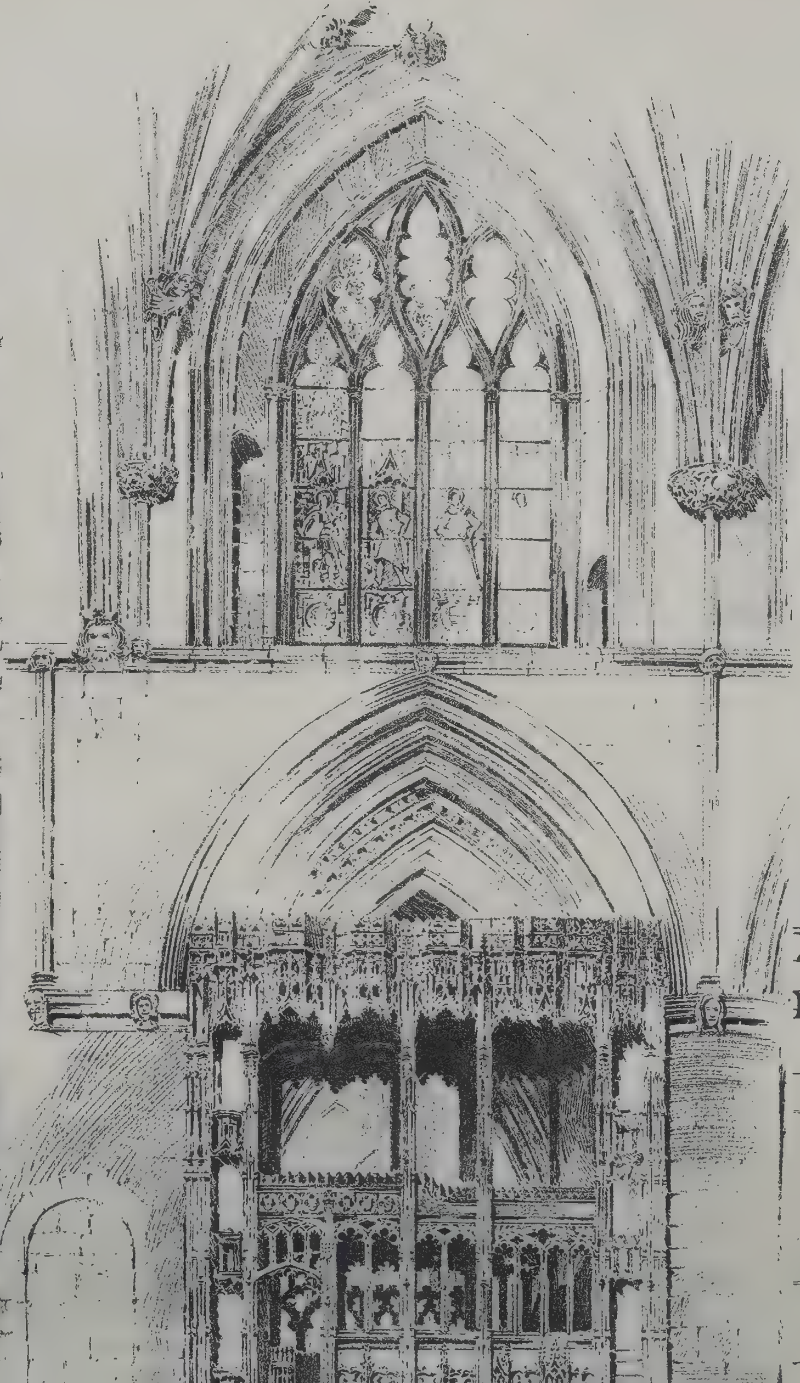


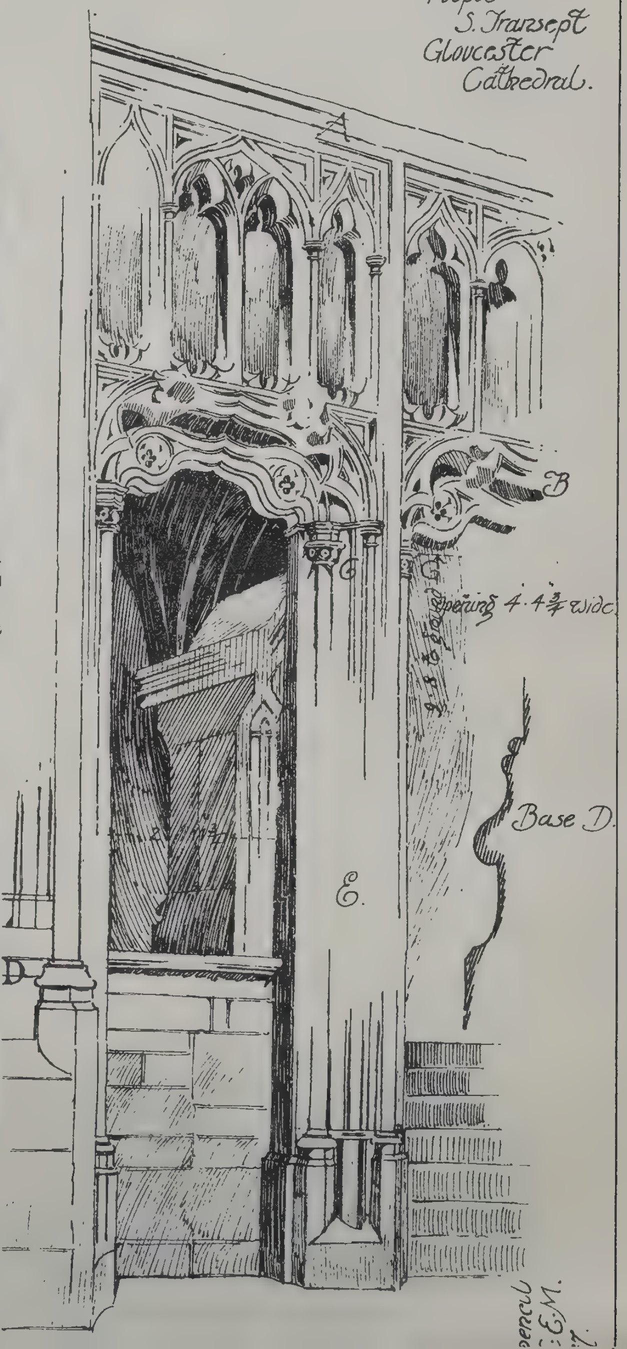
ELVET.

"PHOTO-TINT," by James Akerman, 6, Queen Square, London, W.C.



South Aisle of NAVE
Tewkesbury Abbey



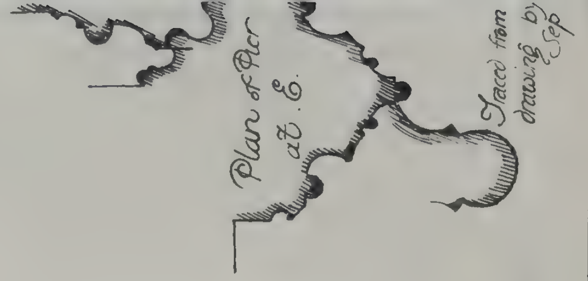


Screen & Pulpit
S. Transept
Gloucester
Cathedral.

TEWKESBURY & GLOUCESTER SKETCHES.

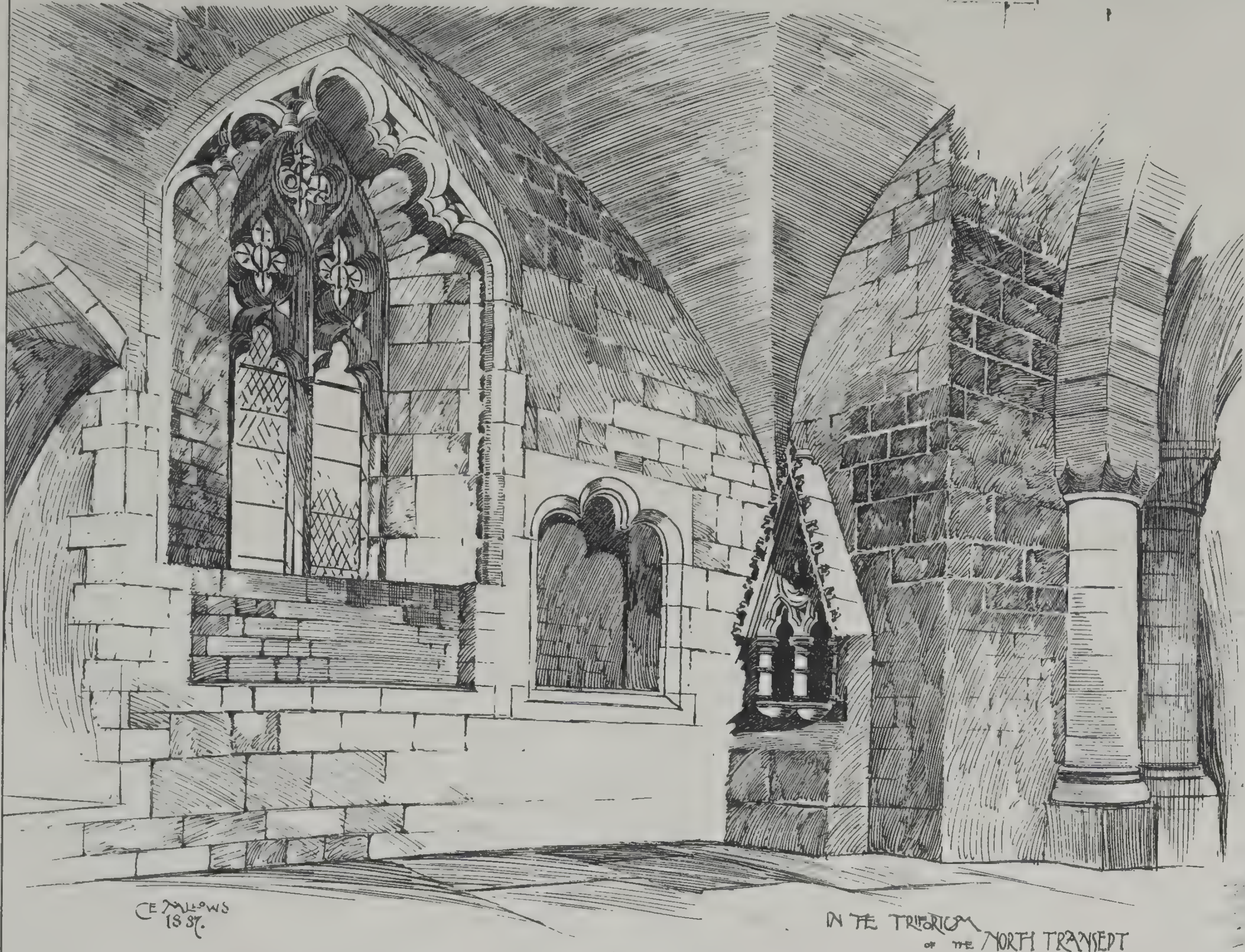
BY C. E. MALLOWS.

A BAY OF THE CHOIR AND THE WARWICK CHAPEL
TEWKESBURY ABBEY.



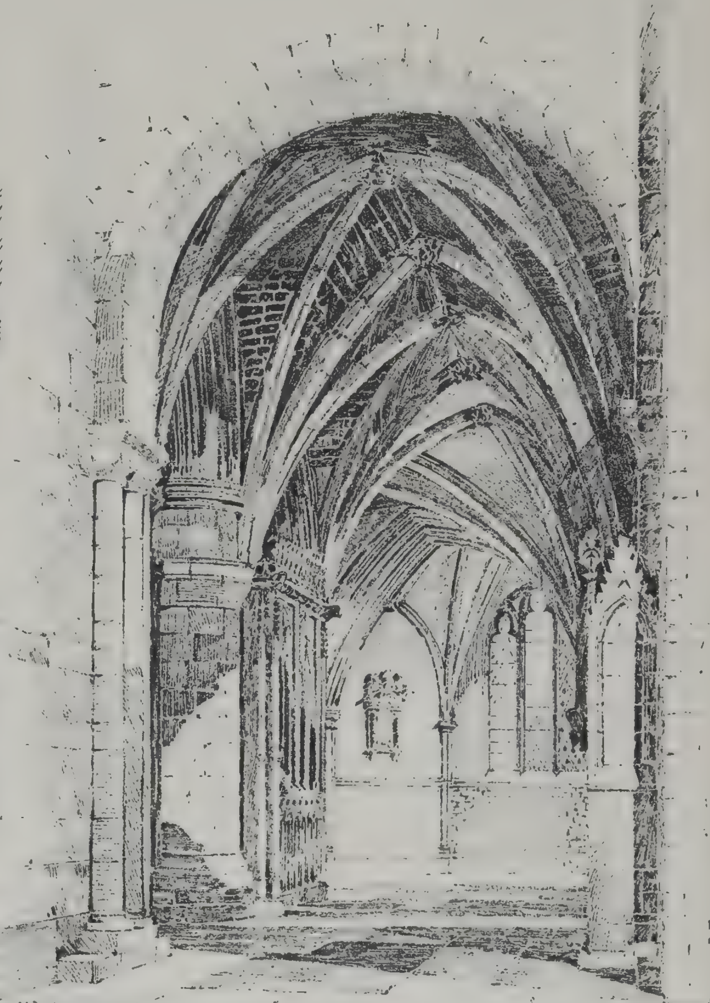
Plan of Pier at C.

Traced from drawing by Sep



C E Mallows 1887.

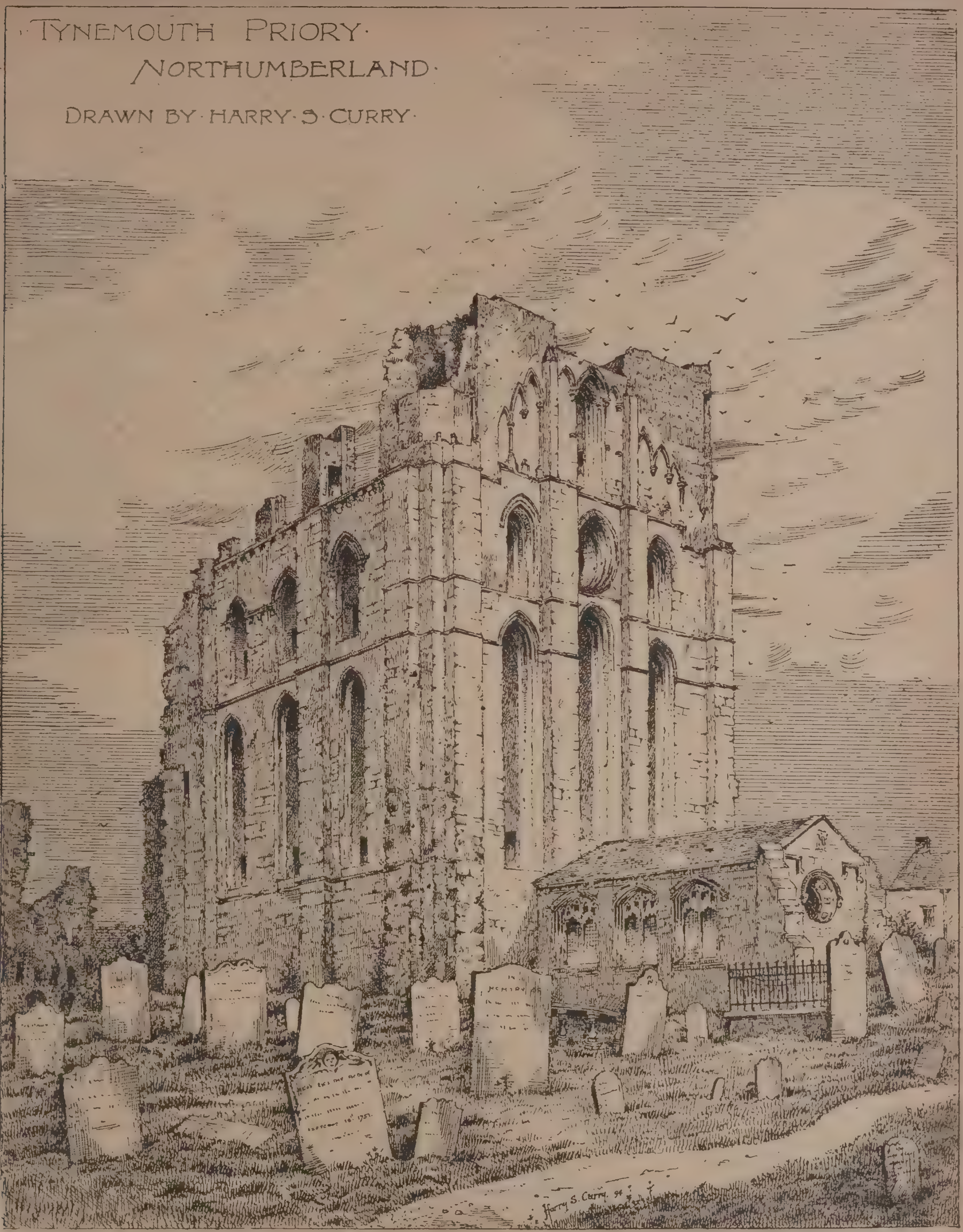
IN THE TRIFORIUM OF THE NORTH TRANSEPT GLOUCESTER



TEWKESBURY ABBEY
South Ambulatory of Choir

ILLUSTRATING · THE · ARCHITECTURAL · ASSOCIATION · EXCURSION · 1895 ·

"PHOTO-TINT," by James Akerman, 6, Queen Square, London, W.



TYNEMOUTH PRIORY, NORTHUMBERLAND.

THE drawing of Tynemouth Priory published above is by Mr. H. S. Curry, who says:—"The church is Benedictine, and the east end, shown on drawing, was built in 1220, and the Lady-chapel added in 1400. It was in all probability used as a place of interment for the Percy family of Northumberland. The Priory was dissolved in 1539."

◆

The French Archæological School in Athens will celebrate its Jubilee in March, 1896.

On Saturday a new Wesleyan chapel was opened at Stocksfield. The building was built of Bearl stone, and was erected from designs by Mr. T. L. Anderson, of Newcastle-on-Tyne. It will accommodate 150 adults, and cost £650.

The church of St. James, Barton-under-Needwood, is about to be restored, at a cost of about £600. The upper part of the tower will be rebuilt, and the aisle and nave roofs, the mullions of clerestories and the buttresses restored, the work to be carried out by Mr. Bridgeman, of Lichfield. A new clock, striking the Cambridge quarter chimes, is to be placed in the tower by Mr. John Smith, of Derby, whose contract price is £158.

A Baptist chapel is about to be built in Crown lane, Maldon, Essex, from plans by Mr. P. M Beaumont, of that town.

The Government of New South Wales have been prompt in commencing the railways and other public works recently sanctioned by Parliament, and the result will be to find work for a large number of recently unemployed labourers. The works in question include the construction of a light railway, 63 miles long, from Narrabri to Moree; a similar line from Berrigan to Jerilderie; another from Parkes to Condobolin; a hospital for the insane at Kenmore, and the works in connection with the Newcastle harbour scheme.

Building Intelligence.

Edinburgh.—The plans for the first of the Thomas Nelson Hall and Branch Public Libraries are now before the Dean of Guild Court. The site chosen is at the corner of Dundee-street and Murdoch-terrace, immediately opposite the new subway to Dalry. The building will have a frontage to Dundee-street of two stories and one story to Murdoch-terrace. There is a large vestibule and entrance-hall, on the right of which is the Nelson Hall 75ft. by 33ft. 6in. In the centre is the lending library, with open counter to the inner entrance-hall for general borrowers, and on the left the reading-room, 75ft. by 18ft., with boys' room behind. The Nelson Hall will be fitted up as a news and recreation room, and will be provided with newspapers and games. It will be separated from the library by a glass partition in five arches. The library will contain accommodation for from 11,000 to 12,000 volumes, with light from the roof, and divided from the reading-room by a counter with a row of double columns and arches. The librarian can see into all these rooms from his desk. The upper floor contains staff and committee-rooms, stores, and caretaker's house. All the halls have open-timbered roofs, and the lighting is principally from large roof-lights. The elevations have large mullioned windows and doorway, supported by double pilasters on either side, with carved frieze and cornice. The architect is Mr. Harry Ramsay Taylor (of Lessels and Taylor), George-street, Edinburgh.

Lichfield Cathedral.—The completion of the adornment of the interior of the Lady-chapel and of the general restoration of the east end was celebrated on the 31st July, when there were also dedicated a new window in the end of the south transept and other special gifts for the enrichment of the cathedral, representing an outlay of £4,000, a sum raised entirely independent of the Reparation Fund. The new work included a new altar-piece, alabaster altar-rails, two windows of ancient glass, and ten statues in Staffordshire alabaster of the virgin saints and martyrs—the black-letter saints of the Calendar, together with two windows at the east end of the south choir aisle, one at the east end of the north choir aisle, one in the Chapter House, and a great Lonsdale memorial window in the south transept. The subject of this window is the spread of the Catholic Church under the figure of the true vine, which bears as its fruits the leading saints or bishops of the most important Early Christian sees. The names in the different lights are 22, and include six bishops of the Anglican Church and two bishops of Gaul. The window is a splendid work, and replaces a poor window put in by the canons of the cathedral in the early part of the century, the glass of which will be utilised in the higher windows of the choir. Another new window, the last but one on the east end of the south aisle, is given in memory of John Toke Godfrey Faussett, the subject being the defence of St. Stephen before the Sanhedrim. Next to it is a new window in similar style, given in memory of Dr. Halford Wotton Hewitt, Mayor of Lichfield in 1842. It depicts SS. Peter and John at the Beautiful Gate healing the cripple. These two windows harmonise with the older glass in the Brooke-Boothby window over Chantrey's Sleeping Children, and, like all the work, have been executed under the superintendence of Mr. C. E. Kempe. This latter window has been renovated, and the tracery exactly preserved. Opposite these windows, in the north aisle of the choir, is the new Patterson Memorial Window; this represents King David teaching the music of the Sanctuary to one of the chief musicians of the Sanctuary and the sons of Korah. In the Chapter-house another new window has been placed in memory of William Gresley, prebendary of the Cathedral. It is the fourth of an historical series in the Chapter-house in memory of Cathedral worthies that was begun under the care of the late Dean. Two windows, having a unique history, have been placed in the Lady-chapel. The glass of these two bears the arms of the kingdom of Aragon, and is believed to have been brought from the Low Countries after the violence of the French Revolution, between 1840-50; it was deposited in the cellars of Messrs. Christie, in London, where, unknown and forgotton, it rested many years. Through the instrumentality of Mr. C. E. Kempe, by whom it has been renovated, it was purchased from the executors of the late Marquis of Ely; it is of the Renaissance school, and is nearly the same date as the Herckenrode windows which Sir Brooke Boothby procured for the Cathedral in 1803. The new altar-piece is a richly-gilt triptych, in which the Incarnation is depicted, the Annunciation, the Salutation of Elizabeth, the Nativity, the Presentation in the Temple, and the Adoration of the Magi. All these are carved in relief. In the doors, which may be closed, are painted figures of Isaiah, David, John the Baptist, and St. Chad. The altar-rails are of carved alabaster, with pierced panels in designs of lilies, the work being by Mr. Bridgman, of Lichfield, and designed by Mr. Kempe. The ten pedestals and canopies in the window spaces have been filled with alabaster figures of the Virgin Saints, all depicted with their special emblems. These are the work of Messrs. Farmer and Brindley, of Westminster, the list being St. Werburga, St. Cecilia, St. Prisca, St. Faith, St. Catherine, St. Margaret, St. Lucy, St. Agnes, St. Agatha, and St. Ethelreda.

Newfoundland.—*The Evening Herald*, Newfoundland, gives a description of the reopening of the choir and transepts of the cathedral, dedicated to St. John the Baptist, on June 29. It will be remembered the building was almost entirely destroyed by fire in 1892. Triumphal arches were erected, on the occasion of the reconsecration, in the thoroughfares leading to the sacred edifice. The work generally has been carried out under the personal direction of Mr. Wills, who acted as clerk of works of the original building, and from the designs of Messrs. George Gilbert Scott, M.A., F.S.A., and John Oldrid Scott, F.S.A., architects, of Spring-gardens, London. Most of the internal fittings are special gifts. The oak eagle lectern is a reproduction of the burnt one. The carved oak bishop's throne, sedilia, and stalls, which, like the lectern, are intrusted to Messrs. Harry Hems and Sons, of Exeter, to carry out, have not yet arrived. There is a handsome new pulpit and altar.

Norton-sub-Hamdon.—The ceremony of reopening the tower of St. Mary's Church, Norton-sub-Hamdon, and dedicating the new font and peal of six bells, took place last week. The tower was struck by lightning on Sunday, 29th July, 1894, and the woodwork in the tower was completely destroyed—the bells falling to the bottom. Much damage was also done to the roof, the seating, organ, font cover, screen, and other furniture of the nave. These have all now been made good. The church was rebuilt in the early part of the 16th century, and is all of Ham Hill stone, and in one uniform style, with the exception of the porch, which is quite a century earlier in date. A general restoration of the interior took place about 30 years ago, at a cost of over £1,000. The whole of the inside work of the tower is now reinstated in the best materials of all kinds. Six bells, cast by Messrs. Warner and Co., of London, are now provided in place of the melted and broken peal of five. A clock, playing the Westminster chimes, has been obtained from Messrs. John Smith and Co., of Derby. The whole of the stonework has been repaired as needed, and four new additional detached pinnacles have been added, as originally provided for, but not put up, in the centre of each face of the tower, standing on the old gargoyles. These pinnacles are a gift of the Ham Hill Stone Company, and give a crowning effect to the beautiful tower. The upper tower windows are now filled with new tracery panelling, in place of the old boarding, affording richness and strength to each face of the tower at this stage. The inside face of the walls is as red as brickwork from the effects of the fire, but the strength of the building is not reduced. On the east and west corners of the battlements of the south side of the church new pinnacles have been placed of the same form as the intermediate existing old ones. These have been given by Mr. W. Micklewright, of Norton, foreman to Messrs. C. Trask and Sons. The fine west window has been re-glazed to patterns designed by the architect, by Mr. Drake, of Exeter. Under the west window is the fine doorway, for which new oak doors have been given. All the carving, both wood and stone, has been executed by workmen of the parish, who have shown great interest in it all through. The new screen to replace the old one in the tower arch, and forming the vestry, is not yet finished. A baptistery has been formed at the west end of the south aisle. The floor of this part is now of black and white marble, and the new font is of Derbyshire alabaster; the square vase is moulded, and carved fishes at the angles bring the square to the circular shape of the font itself, the outline of which is a tapering drum-shape with spiral mouldings, carved with foliage at the upper terminations of the flutes. The cover is not yet provided, but it will be of oak, with a projecting moulding. The ceiling has been coloured throughout under the directions of the architect by Mr. Howe, of Crewkerne. The architect has been Mr. H. Wilson, of Oxford-street, London, the successor to the late Mr. J. D. Sedding, by whom every detail of the new work has been designed. The organ has been restored and improved by Messrs. Griffen and Stroud, of Bath. The leadwork for the tower has been done by Mr. Joseph Dunn, of Crewkerne. The cost of the work has been upwards of £1,600.

Upton, Cheshire.—A special meeting of the Cheshire County Council was held on Friday at Chester Castle to consider the question of extending Upton Asylum. Some time ago the Council engaged Messrs. Grayson and Ould, architects, Liverpool, to prepare specifications for the proposed work. The architects estimated the cost at £80,000, and this amount was granted by the council and tenders asked for. When, however, these came in, it was found that the lowest tender was £15,300 in excess of the architects' estimate. Mr. Thompson, chairman of the committee of visitors to Upton Asylum, said the architects' explanation was that since they furnished their estimate a rise had taken place in the price of labour of from 10 to 12½ per cent., and there had also been an increase in the price of materials. To invite discussion, he moved: "That the sum of £25,000 be granted in addition to the sum of £80,000 already granted for the purpose of carrying out the enlargement of Upton Asylum." Mr. Chetham moved the following amendment: "That the report be referred back to the Visiting Committee for further consideration, and with a view to their submitting reliable estimates of the cost of carrying out plans already approved." The amendment was carried by a large majority.

CHIPS.

The foundation-stone of the Verdin Technical Schools for Northwich will be laid early in September. Mr. Joseph Cawley, of Northwich, is the architect.

A stained-glass west window, the latest gift to St. Stephen's Church, Bournemouth, is now completed. The lower part contains twelve scenes from the history of St. Stephen.

The Sheffield Smoke Abatement Association have adopted a practical scheme for modifying the pollution of the atmosphere by smoke. It is now generally recognised that the amount of black smoke emitted from the chimneys is dependent upon the amount of care exercised in firing. The association have decided, on condition that the manufacturers co-operate with them, to award money prizes to engine-drivers and stokers for the lowest records of black smoke emission from boiler chimneys in proportion to the weight of coal consumed.

At Southwark, on Wednesday week, the Pomplet Torbay Paint Company were summoned by the Torbay Paint Company under the Merchandise Marks Act for having applied a false trade description to certaint paints sold by them. It was alleged that they used the word "Torbay" for their paints, conveying the idea that they were manufacturers of Torbay paint, which was exclusively produced by the prosecutors. The magistrate thought the case had been made out, and fined the defendant company £10, with 20 guineas costs.

The directors of the North British Railway have decided to double the line between Arbroath and Montrose, a distance of about 14 miles, authority for which was obtained from Parliament some time ago. The work will be begun immediately.

For ventilation of the Stoneyholmne new board schools, Burnley, Mr. William A. Quarmby, architect, Messrs. Cousland and Mackay's patent improved "Climax" direct-acting invisible roof ventilators are used, and a large number have been supplied by that firm.

The committee of management of the Certified Efficient Voluntary Elementary School at Pyrton, near Watlington, Oxfordshire, have accepted the drawings for a new school prepared by Mr. R. Spyer, architect, Watlington, which have since been approved by the education department. The style of architecture may be somewhat paradoxically described as modernised Old English with some Elizabethan features, and in keeping with the rural surroundings. The works are being executed by Mr. G. Glanville, of Pyrton, and Mr. J. Rockley, of Shirburn, is clerk of works.

UNIVERSITY COLLEGE.

THE following are the prize lists in Architecture, Civil Engineering, and Surveying at University College:—

Architecture (Professor T. Roger Smith, F.R.I.B.A.).—Fine Art.—Donaldson Medal: V. A. Flower, of London. Prize: A. M. Watson, of London. Third Class: A. S. R. Ley, of Brackley. Construction.—Donaldson Medal: A. T. Coode, of London. Prize: J. S. Heath, of Blackheath. Certificates (3): J. N. Snell, of Bromley; (4) A. E. Nicks, of London. Second Class: F. Moore, of Bickley. Third Class: J. M. R. Alves, of Brazil; F. J. Freeman, of Blackheath; H. T. Nation, of Bedford. Classes maintained by the Carpenters' Company: Architectural Drawing.—First Prize: H. L. Bunn, of London. Second Prize: L. Cabuche, of London. Third Prize: G. Jacob, of London. Construction Drawing.—Prize: O. J. Potter, of London. Measuring and Quantities.—First Prize: F. Stacey, of London. Second Prizes (eq.): S. Green, of London, S. Porter, of London. Third Class: F. B. Chester, of London; Sidney Ebbs, of London; E. A. V. Garnham, of London; A. S. Seaman, of London.

Civil Engineering and Surveying (Professor L. F. Vernon-Harcourt, M.A., M.I.C.E.)—Civil Engineering—Prize: J. G. Mathieson, of London. Second Class: J. E. Petavel, of London. Third Class: J. M. R. Alves, of Brazil; F. D. do Prado, of Brazil. Surveying—Prize: W. Cooper, of London. Second Class: W. M. Park, of London; J. H. Trenerry, of Gibraltar. Third Class: W. N. Withers, of Shrewsbury.

CHIPS.

The route of the projected new line of railway from Stert to Westbury was inspected on Saturday by Lord Emlyn, chairman of the Great Western Railway Company; Mr. H. Lambert, general manager; Mr. Inglis, chief engineer; and Mr. Allen, superintendent of the line.

Mr. J. Passmore Edwards has offered, provided the ratepayers will find a suitable site and adopt the Free Libraries Act, to erect in the parish of St. George the Martyr, Southwark, a free library similar in capacity to that in course of erection in Hammersmith.

Some very desirable alterations have been made at the Royal Sailors' Home, Duke-street, Devonport, by the erection of a new Portland cement front, in place of the wooden structure. Messrs. Healy and Sons were the contractors for the work, which has been carried out according to designs prepared by, and under the superintendence of, Mr. H. G. Luff, A.R.I.B.A., of Devonport.

Mr. Jasper J. Kelf, of Walthamstow, has taken into partnership Mr. Arthur Mullings, who for the past nine years has been with first-class City firms, the last three years of which he was with Mr. Fred Chancellor, F.R.I.B.A. The business will in future be carried on under the style of Kelf and Mullings.

The new infirmary at Isleworth, for the Brentford Union, is nearing completion. The building is three stories high, and consists of four pavilions, of three wards in each pavilion. It has been erected from the designs, and under the superintendence, of Mr. W. H. Ward, architect, of Birmingham. Mr. T. J. Messom, of Twickenham, is the builder. The whole of the wards are warmed and ventilated by means of Shorland's patent ventilating Manchester stoves, with descending smoke-flues, two stoves being fixed in each ward, the same being supplied by Messrs. E. H. Shorland and Brother, of Manchester.

At the meeting of the urban district council of Morecambe on Monday, recommendations by the roads, sewers, and improvement committee that a shelter and convenience be erected at the West End on a new bay projecting from the Promenade at a point central between the new West End Pier and the Battery Pier were unanimously approved. The committee were also authorised to prepare a scheme for extending the sea-wall and promenade from East View to Bare White House, on the lines submitted by the surveyor.

The trade in wood blocks for paving purposes is expanding in New South Wales, the demand being principally on English account. Messrs. Burns, Philip, and Co., Sydney, had, on the despatch of the mail, received an order by cable for 600,000ft., for immediate delivery.

The large statue of the Queen, which is being executed for Rangoon by Mr. F. J. Williamson, sculptor to her Majesty, is approaching completion, and, when erected, will, it is stated, be the first piece of sculpture in marble in the Burmese city.

A special committee of Aberdeen Harbour Board reported on Tuesday to the commissioners that they had under consideration the subject of the vacancy in the office of harbour engineer. The committee recommended that the salary of the engineer be fixed at £500 per annum, and applications for the post invited by advertisement, the proposal of the minority being that Mr. Robert G. Nicol, the present assistant engineer, should be appointed as interim engineer at a salary of £350 per annum. After the commissioners had deliberated in private, it was unanimously resolved that Mr. Nicol be appointed interim engineer on the terms mentioned.

Engineering Notes.

The Daventry and Marton Railway.—The new loop-line which the London and North-Western Railway Company have constructed between Daventry and Marton, near Leamington, was opened for passenger traffic on the 1st inst. The new stations are at Long Itchington (for Southam), Napton (for Stockton), Flecknor, and Braunston. It is not proposed to use the line for the Birmingham express service to and from London until the embankments have settled. The line has been constructed by Messrs. Walter Scott and Co., of Newcastle, at a cost of over £250,000. The gradients are variable, and in some places steep, and the principal engineering feats are viaducts over Daventry and Braunston reservoirs and a deep cutting through the lias formation at Stockton. The line is nearly fourteen miles long.

The Waterloo and City Railway Company.—At the half-yearly meeting of this company the chairman read a report signed by the engineers, Mr. W. R. Galbraith and Mr. J. H. Greathead. It stated that, commencing in the river, and driving in each direction, the tunnels had passed entirely beneath the bed of the Thames, and towards the City had been carried under the Thames Embankment wall, the Metropolitan District Railway, and the complication of sewers and subways which were concentrated at that point. Towards Waterloo the tunnels had also made good progress, and had passed underneath the whole of the buildings situated between the south side of the Thames and Stamford-street, and they were now being driven under the roadway of the street. The total length of single tunnel driven during the past six months by the contractors, Messrs. Mowlem, Burt, and Co., was about 1,200 yards. There was nothing apparently to prevent the tunnels from being driven at full speed towards the Mansion House, the borings having disclosed an ample cover of solid London clay in that direction. Towards Waterloo both tunnels had cleared the buildings between Stamford-street and the river, and would be driven wholly under the street, without interference with private property, until they reached a point a little eastward of the Waterloo Bridge-road. The arrangements for the City terminus were under discussion with the Central Railway Company.

Insch and Gartly, N.B.—Operations were commenced on Monday with the doubling of the main line of the Great North of Scotland Railway between Insch and Gartly. At present the track is double from Aberdeen as far as Insch, a distance of 27 miles, and the additional line will extend about eight miles further. The company possess land which was secured under their original Act, for completing the doubling of the line all the way to Keith, and the present instalment will greatly facilitate the working of the trains. In the mean time, the line is single beyond Insch to Keith. There are no engineering difficulties to be encountered, and the extension will be accomplished by the company's own workmen. The only station affected will be Wardhouse, where it will be necessary to provide an additional platform for the down trains. The company are also just now pushing on improvements at other stations on their system, including Aboyne, Banchory, Buxburn, and Elgin.

◆

The parish church of Cleland, Lanarkshire, was reopened on Sunday, the 11th, after undergoing extensive renovations.

At a meeting of the corporation of Bury St. Edmund's on Tuesday a petition was read from a number of representative Jews in London and elsewhere, praying the corporation to reconsider a proposal to convert the old Jews' house, Meyses Hall, into a fire-engine station. The petition stated that the building dated back to the twelfth century, and that there are only two or three such buildings in England, that at Bury being the best-preserved. It was ultimately decided to refer the matter back to the committee.

Mr. George Armitstead, ex-M.P. for Dundee, has forwarded a letter to Lord Provost Sir James Low intimating his intention of presenting to the city his portrait by Mr. Arthur C. Cope hung at the recent exhibition of the Royal Academy. The letter was read at a meeting of the Town Council on Tuesday; when a remit was made to have arrangements made for the picture being formally presented to the community and placed in the Victoria Art Gallery.

COMPETITIONS.

Tendring.—At the last meeting of the Tendring board of guardians, the report was read of Professor T. Roger Smith, F.R.I.B.A., upon the plans of the proposed workhouse infirmary which had been submitted to him. This report stated: "After very careful consideration of the designs, I have no hesitation in recommending the design of Mr. Whitmore, of Chelmsford, for adoption. It is the most compact design; it is thoroughly well ventilated, and with ample light. It provides a good substitute for day-rooms. Those services which, if provided at all, should be isolated, are very completely isolated, and yet within reach of supervision. The arrangement of baths and closets is excellent; and though I do not find much to praise in the perspective view sent, I am of opinion that, if built, this infirmary would have a fairly satisfactory appearance. Last, but not least, this is the most economical design of those submitted, and it is to the architect's credit that a careful approximate estimate of cost appears to have been made by him." It was resolved that, before adopting any plan, Mr. Whitmore be asked to state, for the board's information, what his inclusive charges would be for preparing all necessary works, plans, and superintending the execution of the work.

◆

An effort is being made in Plymouth and Devonport, at the suggestion of Mr. E. M. Leest, to form a local architectural society, for the mutual benefit and education of the large number of architects, assistants, and pupils of the town.

At the Wolverhampton Police-court, on Friday, Henry Moore, builder, Walpole-street, was charged on two summonses, issued at the instance of the corporation, with using, in the erection of a building in Rugby-street, mortar which was not of the quality required by the by-laws. On the sample of mortar being analysed by the borough analyst, it was found to consist of only 13 per cent. of lime, the remainder being sandy loam and street sweepings. Defendant was fined £5 and costs, amounting together to £10 9s. 6d., and the stipendiary, expressed his regret that he could not make it ten times more.

The bronzed plaster model of Mr. Brock's statue of the late Sir Richard Owen, which has been exhibited at the Royal Academy during the summer, was moved on Saturday to the Natural History Museum to enable the Owen Memorial Committee to judge as to the general effect of the work and in order that the Trustees of the British Museum may determine as to the ultimate site of the statue. The model has been placed on the right of the great entrance-hall, against one of the terracotta piers. The question whether the statue is to be of marble or bronze yet remains to be determined by the committee.

A public meeting was held on Friday at the St. James's Hall, Derby, for the purpose of considering a scheme for the construction of an electric (light) railway from Derby to Ashbourne. The proposal is to build and work a railway on the overhead electric system. The line is to be connected with the existing Derby tramway, which terminates on the Ashbourne-road. Thence it will run through Mackworth, Kirk, Langley, and Brailsford into the town of Ashbourne. The line will be laid on the western side of the road, through nearly the whole length, but through the villages it would run in the centre of the road. The present railway journey from Derby is by a circuitous route, occupying about 1¾ hour, whereas by the new line the distance would be covered in 75 minutes. A rough estimate of the expenditure, including the cost of permanent way, materials, and laying, together with lands, buildings, and rolling stock, works out at £62,300.

A chemical and science wing is about to be added to the Stepney and Bow Foundation School. The architect is Mr. Howard Chatfeild Clarke, of 63, Bishopsgate-street Within, whose design was selected in competition. The new building, which is to be two stories high, is now being proceeded with on the vacant land between the present school premises and the churchyard of Holy Trinity Church. The plan embraces on the ground floor a physical laboratory for 25 boys, and a room for mechanical instruction for 25 boys. On the upper floor there will be provided a chemical laboratory also for 25 boys, and a lecture-hall to accommodate 50 boys. The elevation corresponds with the school buildings, and will be constructed with Suffolk bricks, with stone dressings to the windows and doorways. The interior walls will be faced with Ruabon bricks, with glazed brick dados, no plastering work being used. The floors of the new wing are to be wood-blocks. Messrs. J. and H. Cocks are the contractors, the amount being just over £2,000. Mr. J. P. King is the clerk of works.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Cambrian Archæological Association.—The forty-ninth annual meeting of this association is being held this week at Launceston. On Monday the committee met at the White Hart Hotel to receive the reports of the officers, and for the transaction of other business. On Tuesday there was an excursion to Tintagel, followed by a public meeting in the Guildhall, Launceston, at which the President delivered his inaugural address. Warbstow Barrow was visited on Wednesday, and in the evening the annual general meeting of the association was held. Tavistock and Dartmoor were the object of the excursion of Thursday, the rendezvous to-day (Friday) being the Cheesewring. This evening another public meeting will be held in the Town Hall, when several papers will be read. To-morrow (Saturday) the various objects of antiquarian interest at Launceston will be inspected, including the Castle, the South Gate, the ruins of the Priory, and the churches of St. Mary Magdalen, St. Thomas the Apostle, and St. Stephen's. The arrangements were made by Mr. Otho B. Peter, F.R.I.B.A., the local secretary.

CHIPS.

The Manchester corporation have decided to hang the portrait of the late Dr. Fraser, by Sir John E. Millais, bequeathed to them by the widow of the bishop, in the town hall.

The Bromsgrove board of guardians have instructed Mr. G. H. Gadd to prepare plans and specification and superintend the carrying out of proposed alterations at the workhouse, at 5 per cent. on the outlay.

The Divisional Court of the Queen's Bench have dismissed an appeal by the London County Council against the rating of Brockwell Park. The Judges were of opinion that the Council had a beneficial, if not a profitable, occupation of the park, and was, therefore, liable to be rated. The case was remitted to the magistrates in order that the proper rate of assessment might be ascertained.

At the last meeting of the Manchester town council, Mr. J. Holme Lewis was appointed as engineer and manager of the hydraulic pumping station and supply at the salary of £300 a year, Mr. T. G. Edge as an engineering assistant in the city surveyor's department at the salary of £200 per year, and Mr. J. J. M'Kie as an assistant engineer on the main drainage works at the salary of £250 a year.

At the meeting on Thursday of the Warwick Town Council, the Highways Committee reported in favour of extending the water adits at Haseley by 183 yards, at a cost of about £1,700, to augment the water supply of the town. It being urged that the work was absolutely necessary to insure a continuous supply, the recommendation was adopted by a large majority.

An organ has just been placed in the chancel recess of the Presbyterian Church recently rebuilt in Fisher-street, Carlisle. Messrs. Alexander Young and Son, Eldon-street, Manchester, were the builders, and also made the case, which is of pitch pine and St. John's pine. The work was designed and the decoration arranged by Mr. T. Taylor Scott, F.R.I.B.A., of Carlisle, the architect of the new church.

The district council of Handsworth have decided to erect a technical school, at a cost of £11,500, on a site at the corner of Goldshill-road and Stafford-road, in that town.

The Duke and Duchess of Westminster opened, on Friday, the new Technical Schools and Gymnasium, presented to Winsford, in the salt district of Cheshire, by Mr. Joseph Verdin, of the Brockhurst, Northwich, at a cost of £8,000, contributed from money originally intended to compensate property owners suffering from the subsidence. Messrs. Woodhouse and Willoughby, of Manchester, were the architects.

The Winchester rural district council met on Saturday last to appoint a surveyor for their district. There were 68 candidates, six of whom were interviewed by the council, when Mr. W. F. Y. Molineux, surveyor to the Shifnal rural district council, was appointed with a good majority. Mr. Molineux served his articles with the borough surveyor of Shrewsbury (Mr. W. C. Eddowes). In 1887 he was appointed as surveyor to the Shifnal highway board, and in 1889 he was also appointed surveyor to the Albrighton highway board, the adjoining district. These appointments he held till March last, when the two boards were dissolved and merged into the Shifnal rural district council, Mr. Molineux being appointed as surveyor. His new district comprises 24 parishes, with 220 miles of roads. The salary is £200 per annum.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to The Strand Newspaper Company, Limited.

TERMS OF SUBSCRIPTION.

One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India, £1 6s. 0d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front-page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No Front-page or Paragraph Advertisement inserted for less than 5s.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page Advertisements and alterations in serial advertisements must reach the office by Tuesday morning to secure insertion.

Situations.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., LI., LIII., LIV., LVIII., LIX., LX., LXI., LXII., LXIII., LXIV., and LXV. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Received.—E. J. S.—C. R. and Co.—W. F. Hartley.—Semper Fidelis.—G. S. and W. S. Co.—B. M.

E. R. D. (The Session 1894-95 of the "B. N." Designing Club closed with "A Riverside Bungalow," illustrated in our pages on July 12th last. The next session opens in the autumn, when the List of Awards will be published, and particulars of the new session will be given.)

Correspondence.

TOXTETH INFIRMARY LIGHTNING CONDUCTOR.

To the Editor of the Building News.

Sir,—The Liverpool Press of the 8th inst. contained a short account of a trial at the Liverpool Assizes which, if left unexplained, might add professional injury to serious monetary loss. May I give, on behalf of my firm, the following simple facts, without comment of any kind?

In 1891 the Toxteth guardians appointed my firm architects for their proposed hospital in Smithdown-road, and the buildings were completed a few months ago to the entire satisfaction of the board, and without any extras upon the contract, although the outlay was about £30,000.

The buildings include a chimney 200ft. high, and a sum of £25 was included in the quantities for a lightning conductor, to be made by some special contractor the architects might approve. This sum was deducted in the final certificate given to Kelly Brothers, the builders, leaving the guardians to pay direct for the conductor. Although this certificate was in the hands of the guardians some weeks distinctly showing the £25 deduction for the lightning conductor, no exception whatever was taken thereto until after they had received an account of £163 19s. 6d. for such lightning conductor, when on Kelly Brothers' clerk going for payment of the balance certified as per contract, he was persuaded to take £25 more than was certified, which on being handed to Kelly Brothers they returned by cheque, protesting against what had been done; but the guardians' clerk refused to receive the cheque, which ever since has been in the contractors' hands, waiting the disposal of the guardians.

The last account sent in was from Mr. Joseph Ball, steeple jack, Oldham, for lightning conductor, which he sent direct to the guardians, and was by them sent to the architects for report, the amount charged being £163 19s. 6d., 1,872ft. of copper being charged for on a chimney 200ft. high, owing to a most novel method of measurement being adopted, which brings the work up to £163 19s. 6d., instead of about £38, if measured by lineal length in the ordinary way.

A special meeting of the building committee of the guardians was called to consider the account, at which, instead of giving any version of my own as to the meaning of the somewhat peculiar wording of the accepted estimate, the committee read it for themselves, unanimously took the same view that had been taken and acted upon by the architects on their behalf, saying they would themselves have accepted the estimate had it been before them, endorsed their architects' action, and told me their clerk would now take up the matter direct, of which my firm at once officially informed Mr. Ball, and yet within a few days my firm received a writ for the amount claimed.

On the following day the clerk wrote my firm, officially giving them the decision of the meeting, and saying, "The guardians repudiate the claim of Mr. Ball, beyond that established by the copy of the correspondence between him and the architects, and submitted to the building committee."

After receipt of the writ I attended a board meeting and requested the ratification of the above decision, and the following resolution was passed at a subsequent meeting: "The advice of the solicitor be adopted, to refuse the ratification asked for, and leave the parties to their respective remedies."

The next step was an effort to bring about a settlement by arbitration, to which the plaintiff Ball agreed, but the guardians refused. My firm then offered to abide the result of a reference, which he then declined; then the action went on, the architects being absolutely powerless to do more than defend themselves.

Now as to the case itself. The whole question was one of the meaning of the letter or estimate referred to, which the building committee and architects alike understood to mean the measuring of the lightning conductor from end to end at the price quoted of 1s. 9d. per foot, but which Ball read as meaning the reduction of all the work to a standard of a tape, and by which the cost was increased eight or nine times.

Alike in the architects' request for a price for the lightning conductor, and in the estimate given in reply, the conductor required and estimated for was to be "similar in every way to that on the destructor chimney in Liverpoool," which the plaintiff Ball had himself fixed, and for which (exclusive only of extra work ordered by the city engineer) he charged £16 7s., which at 1s. 6d. per foot, as per his estimate for same, shows his own method of measurement to be per foot lineal for the chimney agreed upon as the model; for if taken the other way his bill would, of necessity, have been several pounds above what he himself had charged.

Instead of doing the work as on the chimney agreed, an entirely different method was adopted, five rods of copper of enormous length and weight being brought on the job without our knowledge—four for the angles of the iron cap, and a fifth of greater height, which it was found impossible to fix properly, and was finally removed, although included in the account sent in. These rods were neither ordered, approved, nor certified for by the architects, who suggested another method of equal reliability and ordinary cost; but Ball insisted that the only safe conductor for this chimney head was the method he was using. No further objection was raised thereto by the architects, who—considering the estimate one of lineal length only—felt that, at most, it could but mean a few extra lineal feet of measurement, at 1s. 9d. per foot; and the work as done, if so measured, would have amounted only to about £38, instead of the £163 19s. 6d. claimed on a method of measurement of which, until the trial, I never heard of, or ever met with any one who had.

Estimates have been received from several of the best firms in the country (upon actual detail drawings of the chimney), and all of them show upon the tracings sent with their estimates the usual method of fixing with collar at the chimney mouth, conductor, rod, and points; and their price, including everything, ranges from 1s. 6d. to 2s. 7d. per foot of chimney height, and a list of 23 conductors, taken indiscriminately from the books of one of my firm's expert witnesses, showed the actual cost thereof to average 1s. 6d. per foot of chimney height.

RESULT.

The verdict has the following effect:—

(1) The architects have to pay £140 for the lightning conductor fixed to the guardians' property, notwithstanding their action, and correspondence in the matter, being unanimously endorsed by the building committee, the architect's only interest in or benefit by it being their 25s. commission on the £25, included in the quantities for this work.

(2) By the ridiculous and unreasonable method of measuring in this case, work which, if done like the Liverpool destructor chimney, as agreed, and by ordinary measurements, would have come within the £25 allowed, has been made to cost £140, and in consequence of the amount being thus made in excess of the £25 to which the architects were entitled to bind the guardians, they have been brought in as personally responsible.

(3) That whilst ample evidence by experts was produced showing the work done to be absolutely wasteful, extravagant, and unnecessary, the architects have been made to pay for all, as the reduction of £23 19s. 6d. made by the judge would not on Ball's prices more than cover the fifth rod charged for but not used. Hence, whilst they had the several estimates beforenamed to complete the work in all respects for 1s. 6d. per foot of chimney height, they have been ordered to pay at the rate of 14s. per foot for what is, in their opinion and that of experts of the highest authority, not so good for the purpose.

The board of guardians, for whom the work was done, alone derive any benefit therefrom, and even had they paid the claim in full they would have got out of a £30,000 outlay, with the almost unique extra bill of only £140.—I am, &c.,

22, Sir Thomas-street, C. O. Ellison, J.P.
Liverpool.

DURHAM COUNTY COUNCIL BUILDINGS.

Sir,—Will other competitors be so good as to give us formal permission to attach their signatures to a protest (a copy of which we inclose) that we purpose sending the County Council of Durham by mutual consent of those competitors who have been approached on the matter? Intense indignation has been justly aroused at the council's action in setting aside the spirit of the assessor's award and giving the work to local men. Your earliest attention to this will greatly oblige and facilitate our action.—We are, &c.,

Philip Tree and Ivor Price
("Development").
Architects to the New Municipal
Buildings, King's Lynn.
4, Ludgate-circus, E.C., and St. Leonard's-on-Sea, August, 1895.

To the Chairman and Members of the Durham County Council.

Gentlemen,—We, the undersigned, with very great pleasure and considerable hard work, responded to your invitation to submit designs in open competition for the new Council House and Offices in Old Elvet, Durham, under conditions, which we humbly submit have certainly not been fulfilled in the spirit in which they commended themselves to us all. The result is that a gross injustice has been done to honourable and brilliant professional gentlemen, by their being set aside, without any valid reason, as if incompetent and unworthy, and local men, more or less unknown, substituted; who by your Assessor's award had not earned the honour of being intrusted with so important a public work. We therefore humbly and respectfully pray you to remove this most unmerited slur and bitter disappointment, by intrusting Messrs. Cooksey and Cox with the work they fought for and so gallantly won, and thus not only earn the esteem of the competitors and profession generally, but, we earnestly believe, act in the best interest you represent.

Philip Tree and Ivor Price.
Hon. Secs. for the Competitors.

[Here will follow the List of Names.]

* * *

At the annual meeting of the Amateur Photographic Association held on Tuesday at 58, Pall-mall, a large number of portraits of eminent men, taken for the National Collection of photographic portraits now being formed at South Kensington Museum, were highly eulogised by the Council, and passed, to be added to the collection.

At Tuesday's meeting of the Stratford-on-Avon Town Council, the completion was announced of an important work—the provision of an independent water supply from the canal for street watering and flushing purposes. The borough surveyor submitted specifications and quantities for the new service reservoir at Snitterfield, and instructions were given him to advertise for tenders.

Intercommunication.

QUESTIONS.

[11395.]—**Concrete Arching.**—Will any reader give results of experiments on strength of Portland cement concrete in the form of arching, or say where well-authenticated information may be found. Where possible, the following should be stated:—1. Span, rise, and thickness at crown. 2. Composition, and age of concrete. 3. Precise conditions of loading. 4. Rigidity or otherwise of abutments. 5. If a single arch, or one of a series. Can a formula for ordinary cases be stated?—Sigma.

[11396.]—**Thickness of Arches.**—Is there a simple, practical rule for determining what thickness the crown of an arch in masonry should be? I shall be glad of any information.—A Builder.

[11397.]—**Ventilation of Rooms.**—Authorities vary much as to the quantity of air required per head per hour. What is thought to be an average allowance for health, and how often should it be changed?—Student.

[11398.]—**House Drains.**—Will a practical reader inform me what inclination a house drain should have, and the minimum rate of fall for the necessary velocity; also the most effective jointing for the pipes under the house, and if any of the patented joints are found to give better results than the ordinary cement jointing?—A. B. M.

[11399.]—**Rolled Joist.**—I want a formula for giving the strength and safe load of rolled joists?—K.

[11400.]—**Shelving.**—Will someone kindly inform me of the usual number of books allowed per foot of shelving for a public lending library, and also for a reference library? Authorities seem to differ.—Edward B. Wetenhall.

REPLIES.

[11391.]—**Workmen's Houses.**—The Building News has published many plans and elevations of houses of this class. Consult the old volumes. As to cost, "A. A." had better find out the average cost per foot cube of such buildings in the neighbourhood of Glasgow. Near London, the cost of such dwellings varies from 4d. to 6d. per foot cube.—G.

[11393.]—**Ice Chambers.**—"Colonial" will find what he wants in the *English Mechanic*. See the vols. of that journal in any public library.—R.

[11394.]—**Cement Facing.**—In reply to "J. C.," why not leave the Portland cement? It is an ageeeable colour, if the sand is well selected. The rendering coat may be 1 of cement to 3 or 4 of sand, and for the "fining" or finishing coat 1 of cement to 2 of sand. This should be hand-floated. Keene's cement is only suitable for interior work. A white colour for the panels would not be so pleasing to the eye as the grey or stone colour of the cement.—G. H. G.

* * *

CHIPS.

Mr. W. J. Bird, C.E., one of the inspectors of the Local Government Board, held an inquiry at Colwyn Bay, on Tuesday, respecting the application of the district council for a loan of £1,200 to purchase the foreshore for the erection of a sea wall and promenade.

For a vacancy in the representation of St. Paul's ward in the town council of Wolverhampton, Mr. R. W. Berrington, who until recently held for a period of ten years the post of borough engineer, has issued his address as a candidate. It is expected Mr. Berrington will be returned without opposition.

Mr. James Rippoth Bonny, late surveyor to the Great Western Railway Company, died at his residence in Grove Park, Lee, on Thursday in last week, aged 68 years.

On Saturday the memorial-stone of the Volunteer Drill-hall, which is being erected in Market-road, Carluke, by D (Carluke) Company, 9th L R.V., was laid with Masonic honours. The contract is being carried out by Messrs. Martin and Symington, of Carluke.

The London and Provincial Builders' Foremen's Association intend holding their second annual dinner to-morrow (Saturday), the 17th inst., at "Ye Old Four Swans Hostelrie," Waltham Holy Cross. The president, Mr. W. Ebden, will take the chair. Dinner will be served at 4.15 p.m., and as there is a convenient train service from Liverpool-street, a large company is expected.

A new railway from Nottingham to Scarborough is in contemplation, the latter town being approached viâ the Wolds of the East Riding, which are not at present tapped by any system.

The Dundee Town Council decided on Monday to provide, at a cost of £8,000, filtration works for the purification of the supply of water from Monikie.

At the monthly meeting of the Worcester city council, on Tuesday, Mr. A. H. Hodder, of the Worcester School of Art, was appointed art master of the Victoria Institute, by a majority of nine votes over Mr. Roberts, of the Leicester Art School, who was recommended for appointment by the Library and Museum Committee.

The contractor for the new works of water supply now being constructed at Heckington for the Sleaford Rural Sanitary Authority is Mr. George Hay Williams, of Sleaford, not Williamson, as given in our issue of the 2nd inst, p. 151.

Legal.

STREET OR COURTYARD?

THE energy of the London County Council in the way of interfering with builders and building owners is as restless, and often as wrong-headed, as it is always costly to the unlucky ratepayers, upon whom fall the expenses of so much mistaken litigation. The latest instance of this is really striking in its complete unreasonableness, and we are glad to see that the Court of Queen's Bench in the case of "Wood v. London County Council" (*Times*, August 8) arrived at so plain and prompt a decision. The Council wanted to make out that, under section 7 of the New London Building Act 1894, an entirely private courtyard or quadrangle was a street within the meaning of that statute. The facts were simple enough. The appellant had pulled down an old brewhouse and stables called the Artillery Brewery in Victoria-street, Westminster, and he proposed to erect mansions to let in flats all round the sides of the square piece of ground. This quadrangle would be for the use of the tenants of the flats, their tradespeople, and visitors only. There would be no public right of way whatever. The entrance from Victoria-street was to be closed by lofty iron gates, and, in short, the courtyard was as private as if it had been the entrance to, say, Devonshire House.

However, somehow or other, the magistrate at Westminster decided as a fact that the place in question was a street, and he imposed a nominal fine, and stated a case. Of course, the point is of great practical importance, not only to this appellant, but to any other who may wish to make the most of so valuable a plot of land elsewhere. For if the London County Council were right, it would follow that the owner must give a 40ft. carriage drive and 20ft. footways for a courtyard, or quadrangle, for the private use of the tenants in the mansions round it, and so entirely spoil his place and render his scheme impossible. In truth, the main argument of counsel in support of the decision was that as the magistrate had found as a fact that this courtyard was a street, the Court could not go behind that finding, but must act accordingly. The Court, however, held that the magistrate was wrong, and that he was not entitled to find as a fact what the law did not allow to be a fact. The judges, again, declined to try and define what is a street; but they held that at all events this most private yard, shut in with gates, was not a street within the meaning of the Act.

Fred. Wetherfield, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

* * *

The trustees of the Leyton Wesleyan Church have accepted the estimate of Mr. C. F. Thompson, of the Burlington Joinery Works, Leyton, for the carrying out of certain alterations and additions. The work will be commenced at once. Mr. J. Williams Dunford, of 100c, Queen Victoria-street, E.C., is the architect.

An arbitration was opened on Tuesday at St. George's Hall, Liverpool, by Mr. J. Lawson Walton, Q.C., the arbitrator appointed by the Local Government Board, to determine the question of compensation between the corporation of that city and owners and other persons interested in insanitary property included in the 12th presentment under the Liverpool Sanitary Amendment Act, 1864. For the claimants, Messrs. Robert Wylie, Thomas Cook, and Mr. J. H. McGovern, architects and surveyors, of Liverpool, were called, and for the corporation Mr. William Wilson, of Manchester, Mr. Henry Hartley, of Liverpool, and Mr. H. P. Boulnois, the city engineer.

The new Post-office in Galashiels was recently opened. The Post-office has cost upwards of £5,000, and occupies a central position at the head of Channel-street. The building is of white sandstone, and the public room on the ground floor is 39ft. by 22ft., with the postmaster's room, telephone, silent room, and letter reception rooms at the side. In the back division, lighted from the roof, are the sorting-room, 49ft. by 34ft., the telegraph and telephone, male clerks, and message boys' rooms, telegraph stores, battery, and linesmen's rooms. The architect was Mr. W. W. Robertson, of Her Majesty's Board of Works, Edinburgh.

LEGAL INTELLIGENCE

Builder and Granite Merchant.—On Thursday, August 7, Mr. H. Harvey, of Falmouth, and Mr. Matthew Clemens, of Truro, with Mr. Stanley as umpire, acted as arbitrators, at Penryn Townhall, in the case of C. W. Andrews, granite merchant, Penryn, against J. G. Kelway, builder, Falmouth, about a dispute of a balance of account of £62 for granite supplied in the erection of a villa at Trefusis for Dr. Crossman. The case was referred from the High Court. It seemed that Mr. Kelway erected a villa at Trefusis in 1893 for Dr. Crossman. Mr. Andrew supplied the granite, and on the completion of the building defendant said he suffered damage owing to the irregular receipt of the stone, thereby causing extra work in shifting scaffolding. Plaintiff wrote to defendant that unless the balance was paid he could not send him further supplies for other work. For defendant it was contended that he complained to Mr. Andrew that the granite was sent in in an irregular manner, and not when required. Defendant was obliged to take £44 less than he was entitled to in building the residence, and felt justified in asking plaintiff to allow £9 in respect to time and labour lost in removing the scaffolding several times, the stone not coming in the right order. Evidence was given for defendants by N. Christopher and A. Rogers. The award will be made known in due course.

Bad Mortar.—At the Wolverhampton Police-court last week, John Pitt, Chetwynd-road, Villiers-street, Wolverhampton, was summoned, at the instance of the corporation, for having, contrary to the by-laws, used an unsuitable material as mortar in the erection of houses near to the Dudley-road. The town clerk stated that the corporation building inspector had taken a sample of what was being used as mortar by the defendant, and it had been analysed by the borough analyst, who certified that the stuff was not mortar, but mud, and totally unfit for use in building operations. As the alleged mortar contained vegetable matter, an unwholesome odour would be given off, and in time the dwelling would become uninhabitable. Evidence having been given of the sample of "mortar" having been taken, Eli Bird, bricklayer, Dudley-road, was called, and he stated that he did not believe any mortar was used on the date of the alleged offence. Defendant's solicitor put in the contract between Bird and Pitt, which showed that Bird was to be paid £198 to erect ten houses, and the defendant was to find the material. Bird expressed the opinion that the mortar was fairly good when it was ground again. The component parts were engine ashes, stone chippings, and a little soil. He described the mortar as good, and made with suitable materials. Mr. Jones, public analyst, said that the material submitted to him for analysis was mud, and not of the slightest value for building purposes. A fine of £5 and costs was imposed.

"Adamantine" Mortar—Messrs. Lawrence and Wildman, builders, of Prospect Cottage, High-road, Cricklewood, N.W., were summoned at Harlesden, on August 8, for erecting buildings at Church-road, Willesden, without causing the inclosure walls to be constructed with good mortar. The mortar used was said to have been made of mould and road-scrapings. For the defence a witness was called who said the mortar used by the defendants "set like adamant." The Bench thought the case thoroughly proved, and fined defendants £3 and costs.

Arbitration Appeal Judgment.—Cuninghame v. Richards.—This appeal was heard in the Court of Appeal of the Supreme Court of Judicature on July 22, before the Master of the Rolls, Lord Justice Kay, and Lord Justice A. L. Smith. Mr. T. D. S. Cuninghame, of Caldy Island, employed Mr. George Richards, builder, of Tenby, to execute alterations to his house upon the island, to build a landing-stage, and sundry other building works. When Mr. Richards's account was sent in, it was disputed by Mr. Cuninghame. After some negotiating it was decided by both parties to refer the matter to the arbitration of a London surveyor, and Mr. John B. Lofting, of 37, Old Queen-street, Westminster, was chosen as arbitrator. Upon his award being given, however, and it being higher than Mr. Richards's account by about £70, Mr. Cuninghame applied to have the award set aside. The application was heard in the Court of Queen's Bench, before Mr. Justice Wills and Mr. Justice Wright, and was granted, the award being set aside. Mr. George Richards, however, appealed against the decision of the learned judges when judgment was given. The Master of the Rolls: In this case a gentleman was altering his house, and also getting a jetty built, and there was the usual dispute between himself and the builder who did the work. It was agreed that the matter should be referred to a skilled architect and surveyor. To my mind he intended to intrust that man to do a great many things—perhaps almost the whole of what he had to do, according to his own knowledge and skill without any assistance at all. Mr. Cuninghame and his bailiff attended the arbitrator at times, and the builder also attended him, so that they both went before the arbitrator, individually, without all that assistance which they might have had if they had gone through the whole paraphernalia of the law. Then this skilled surveyor—who has all the prices before him, all the wages and works lists being laid before him—who can understand in ten minutes a great deal more than some legal arbitrator would understand at the end of a week's examination and long cross-examination, by puzzling questions, whether the prices are fair—he had not to decide in this case whether the prices were strictly accurate, but he had to say, trusting to his knowledge and experience, what was fair to be paid as between the building owner and the builder. The surveyor says he made some inquiries about the value of the work and what were the ordinary wages of such workmen as were employed in this locality. It seems to me that, so far from there being misconduct on the part of the arbitrator, he would have been doing a vast injury to both parties if he had done otherwise than he did. Then he sends his own clerk to measure and he takes his measurements, and his figures are produced in the presence of both parties and gone through by the surveyor. Then the surveyor takes away all the information he has obtained, and no one asks him to get more information and he makes his award, and then it is that Mr. Cuninghame is disgusted because he finds the amount of the award is so much larger than he thought it would be, and he could have settled for a very much lower sum. Then Mr. Cuninghame says this arbitration was not strictly or technically carried out, and he has persuaded two judges of the Divisional Court to say that it was not technically carried out, and that for an architect to ask what is the usual rate of wage for labour at a place like the one in question would be wrong, because it was done behind the backs of the parties. It was not done behind the backs of the parties—it was done as they agreed it should be done. The arbitrator heard what Mr. Cuninghame and Mr. Richards had to say, and I cannot see any misconduct on the part of the arbitrator at all. The astute lawyer says the arbitration was not technically carried out. What is fair is to say that there was no misconduct on the part of the arbitrator, and that Mr. Cuninghame is no worse off than anyone else who has a house built or altered. He finds that the bill is far larger than the estimate, and the next time he wants to build a house or a pier on his island he had better not trust to estimates, but have a firm contract. I cannot agree with the decision of the learned judges in the Divisional Court. I think they took far too technical and strict a view of the duties of this arbitrator, and that this appeal ought to be allowed; but the plaintiff has agreed to diminish the amount to be paid under the award to the amount which the builder sent in his bill for. I think, therefore, this bill should be allowed with costs. Lords Justices Kay and A. L. Smith concurring, an order was made that the appeal should be allowed, with costs, Mr. Richards undertaking not to enforce the award for more than £524, £800 having been paid.

In re H. Vulliamy.—Henry Vulliamy, architect, against whom a receiving order was made on the 4th ult., states that he first commenced business about the year 1870 in Abchurch-lane, City, with little or no capital. In April, 1879, when in business at 122, Newgate-street, E.C., he was adjudged bankrupt in the London Bankruptcy Court. The liabilities were £3,359, and the assets *nil*. A scheme of arrangement was accepted by the creditors, whereby the debtor paid to the trustee in the proceedings the sum of £350, and the bankruptcy was annulled. The Official Receiver states that it does not appear from the file of proceedings whether or not any dividend was paid to the creditors. The debtor asserts that this failure was caused through liabilities incurred by him for goods supplied to a builder, who disappeared, and he was called upon to pay. He further states that for three years immediately preceding the date of the present receiving order he carried on business at 32, Lawrence-lane, Cheapside, E.C. The accounts show liabilities £11,585, of which £1,714 are unsecured, with assets £325. The debtor attributes his present insolvency to liabilities on guarantees and acceptances for which he received no consideration.

A Bill of Exchange Case.—Price, Walker, and Co., Limited, v. Webb.—At the Birmingham Assizes, on the 8th inst., before Mr. Justice Charles, sitting without a jury, Messrs. Price, Walker, and Co., Limited, timber merchants, Gloucester, brought an action against Daniel Webb, a glass merchant, of Birmingham, respecting five bills of exchange endorsed by the defendant and dishonoured. The bills of exchange were one for £57 14s. 6d., one for £45, and three for £50. The plaintiffs had customers in Birmingham named Fairbank and Co., who were also timber merchants. Fairbanks had a customer named Austin, a builder and contractor, in Birmingham, to whom they declined to give further credit unless some arrangements were made for a guarantee. As a result of this refusal, it was arranged that the defendant Webb should countersign the orders. The bills were given in part-payment of a debt to Fairbanks by Austin. They were drawn by Webb, and accepted by Austin. Fairbanks were customers of the plaintiffs, and paid the bills over to them, credit being given for them. The bills were ultimately dishonoured. Evidence in support of this was given by Mr. Fairbank and his clerk, it being admitted concerning one of the notices of dishonour that the notice had not been sent until some days after it was due, although it bore the proper date. Fairbank also admitted making false statements in a letter to Mr. Webb respecting the bills, with the object of obtaining payment. Fairbank's clerk also admitted that he attempted on one occasion to carry off documents belonging to the estate of Austin. Commenting on the evidence, his Lordship remarked that on no fewer than three occasions Fairbank had admitted things in reference to the case which were not creditable to him. The defence was that the first bill had been satisfied and discharged, and that with respect to the others defendant did not receive notice of dishonour; further, that they were endorsed without consideration.—In giving judgment, his Lordship said a most reprehensible piece of trickery, it seemed to him, was practised by Fairbank with reference to the bills. He not only told falsehoods, but he positively manufactured a bogus notice of dishonour. With regard to the question of law, he was of opinion that there had not been a notice of dishonour; but the defendant's conduct, he thought, had been such as to become a waiver of the notice of dishonour. He must therefore give judgment for the plaintiff in respect of each of the bills, except the first one, which had been paid.—Mr. Lawrence stated that after allowing for the first bill the total claim was £195.

CHIPS.

M. Hanotaux, French Minister of Foreign Affairs, has taken the initiative in the organisation of a Diplomatic Museum in one of the salons of the Quai d'Orsay. It is proposed to exhibit commemorative medals, seals, original documents, and portraits of diplomatists who have played prominent parts in the settlement of important international questions. M. Hanotaux has already collected a considerable number of historical curiosities, and a few portraits of diplomatists.

Colonel Campbell Walker, Indian Staff Corps (retired), formerly Chief Conservator of Forests, Madras, has been offered and accepted the appointment of Inspector-General of Forests to the Government of Mysore, and will leave England shortly to take up the duties.

At a meeting of Glasgow Established Presbytery, on Friday, it was reported that of the £10,022 required for the erection of the church at Titwood, £8,728 had been subscribed.

The dedication and formal opening of the grand new organ presented to the parish church at Epping by Mr. and Mrs. E. J. Wythes, of Copped Hall, took place on Thursday in last week. The organ, said to be the largest in Essex, was constructed by Messrs. Wordsworth and Co., of Leeds. It consists of four manuals and separate pedal organ; there are four rows of keys besides the pedals. The bellows are driven by a gas-engine, placed in chambers built specially for the purpose by Messrs. Rudd and Son, of Grantham, below the church. There are 2,344 pipes in the instrument, and 51 draw stops. A carved oak case with silvered pipes, designed by Kemp, of London, will shortly be erected.

At the quarterly meeting of the Shrewsbury town council on Monday, the sanitary committee reported that they had had an interview with Mr. J. S. Phillips, the owner of the Monkmoor estate, with the view of purchasing it for a sewage farm. The estate consisted of 172½ acres, with a residence, farmhouse, buildings, and three cottages, and Mr. Phillips was willing to sell the whole for £22,500, including law costs. The committee asked authority to enter into a contract with Mr. Phillips for the purchase of the property. Several members thought the price, £125 per acre, too high, and after considering the matter in committee, the council decided to make a lower offer.

The permanent collection in the Walker Art Gallery, at Liverpool, has received the addition of a picture stated to be by Guido Reni (1575-1642), representing "The Death of Lucretia." The work is the gift of Mrs. Harriet Bostock, Onslow-gardens, London, and shows the Roman heroine about to terminate her life with a dagger.

Mr. G. Miners, of Marazion, has secured the contract for the erection of a Workmen's Institute at Gulval, near Penzance, which is being given by Mr. R. F. Bolitho, and also for the rebuilding of the Old Inn and cottages at the same place. Mr. W. H. Trounson, of Penzance, is the contractor for the workmen's cottages which Mr. Bolitho is also erecting at Gulval. Plans for the whole were drawn by Mr. Oliver Caldwell, F.R.I.B.A., of Penzance.

WATER SUPPLY AND SANITARY MATTERS.

Baildon, near Bradford.—On Saturday the members of the Baildon District Council officially inspected their new reservoir, the work of construction having been now completed, with the exception of trimming the embankment and other trifling features. The undertaking has been a costly one, and the actual operations were begun in June, 1891. The reservoir, in connection with the rest of the council's waterworks system, is calculated to meet the requirements of the district for the next thirty years. In 1854 there was only one reservoir of 500,000 gallons capacity, and two further reservoirs were added, placing the district in the possession of a total storage capacity of 9,000,000 gallons. These three basins, which are situated on Baildon Moor, entailed a cost of £6,000. The area of land, on the edge of Rombald's Moor, and at a place comprised in Hawksworth Moor, covered by the fourth reservoir now completed and margin land, is 21 acres, of which the basin itself, at the top water level, measures eight acres. The reservoir is some 800ft. to 1,130ft. above the sea-level. The reservoir embankment is about 50ft. at its highest part, and the greatest depth of water will be some 30ft. The cost has been about £30,000.

Ipswich.—Col. John Ord Hasted, R E., one of the Inspectors of the Local Government Board, held an inquiry in the Council Chamber, Town Hall, Ipswich, on Thursday in last week, in reference to an application by the Corporation of that borough for sanction to borrow £14,500 for works of sewerage at St. Mary Stoke, and £2,400 for a new street through Orwell-courts from Eagle-street to St. Helen's-street. Evidence was given by the borough surveyor, Mr. E. Buckham, and Mr. I. Shone, of Messrs. Shone and Ault, the engineers for the system of dealing with the sewage of Stoke. It was explained that the Stoke sewerage proposed is the second moiety of a scheme for draining at one and the same time the Marsh and Stoke districts. That portion which dealt with the Marsh district has already received the approval of the Local Government Board, and the compressed air required to work the ejectors in Stoke will be provided at the same station as that required for the ejectors in the Marsh district. The sewage of Stoke will be ejected into the present main intercepting sewer, and will also pass along it, and out at the existing outfall. Only sewage proper will go into the main sewer, as provision will be made for taking storm-water direct into the river. The sewage of the Stoke district will be led to a station at the end of the road known as New Cut West, and thence passed over Stoke Bridge and into the main intercepting sewer at St. Peter's Church corner. The drainage of the Marsh district is complete in itself; that district is divided into two drainage areas, in each of which is an ejector station, and the sewage is to be passed into the main sewer. That work is now in progress. The compressed-air main for operating the ejectors on the Stoke side will go from the central station by Russell-road and Commercial-road over Stoke Bridge. The Stoke district is divided into three drainage districts.

* * *

Mr. Marshall, at present a surveyor under the Norfolk County Council, has been elected surveyor to the rural district council of Malling, Kent.

The foundation-stone of new Wesleyan schools and vestries, at Bill Quay, near Newcastle-upon-Tyne, were laid on Saturday. The buildings will cost £1,700, and are the first portion of a scheme to include a new chapel at a further cost of £2,300. Mr. J. W. Taylor, F.R.I B.A., of Newcastle, is the architect, and Mr. Robert Allison, of Whitburn, the sole contractor. The style is Early English, and the facing material Heworth stone.

Colonel Langton Coke, one of the inspectors of the Local Government Board, held an inquiry at the Court-house, Warwick, on Monday, with reference to an application of the town council for a loan of £1,100 for works of water supply. The town clerk explained that the severe frost in January and February last had burst 4,000 yards of water-mains in thirty-five streets in the borough. It was proposed to lay new mains at a greater depth. The borough surveyor, Mr. Melville Richards, gave particulars of the scheme.

Burnley's second public park was formally opened and handed over to the town on Friday. It will be known as the Scott Park, and is the outcome of a generous bequest by the late Alderman John Hargreaves Scott, who died in 1881. Mr. Scott, who was twice Mayor of Burnley, bequeathed practically the whole of his fortune for the purpose of a park, stipulating that the area should not exceed twenty acres. The trustees secured an admirable site on the Hoodhouse estate, and comprising about eighteen acres. The land is beautifully wooded, and a stream flows through the centre of the park, and adds very considerably to its embellishment. Some £16,000 or £17,000 has been expended by the trustees.

Our Office Table.

The Scottish Board of Manufactures have just made an interesting addition to the collection in the Scottish National Gallery, at Edinburgh, by the acquisition of "The Abbotsford Family," painted by Sir David Wilkie in 1827, and well known from the engraving by Robert Graves, A.R A. It represents the Scott family in peasant costume grouped on the terrace near Kayside, commanding a view of the Eildon Hills. Though only of cabinet size, the portraits are painted with remarkable finish. The picture, which is in an excellent state of preservation, was hung at the Scott Exhibition held in Edinburgh in 1871 to celebrate the centenary of the birth of Sir Walter Scott, and it was also shown at the Loan Exhibition of 1884 as the property of Mrs. Admiral Ferguson. The picture was executed for Sir Adam Ferguson, whose portrait is the most successful in the group. It is understood that the Board of Manufactures purchased the work for 800 guineas.

The electric-light works of the Salford Corporation, situated in Walness-road, Lower Broughton, were formally opened on Wednesday week. The amount actually expended to the present time has been £29,206, and the balances due to the various contractors on the expiration of the period of maintenance will increase the expenditure to £34,338. The committee engaged Messrs. Kincaid, Waller, and Manville, electrical engineers, of Great George-street, Westminster, to devise a scheme of supply, and prepare the necessary drawings and specifications. The committee have adopted the high-pressure alternating system, by which the current is supplied at a pressure of 3,000 volts, through concentric copper cables, insulated with special impregnated fibrous compound, laid in cast-iron pipes. This pressure is reduced by transformers at consumers' premises to about 100 volts. There are three sets of engines and dynamos at the generating station, each set capable of supplying 2,500 8-candle power lamps alight at one time, or to 2,800 lamps connected to the mains, it being found that only about 60 per cent. of the lamps connected are alight at the same time. The producing power of the station is equal to supplying 8,300 8-candle power lamps, connected to the mains. The cables have been constructed to supply 17,000 8-candle power lamps. The buildings were erected by Mr. Samuel Warburton, of Manchester, for the sum of £6,600. There are three sets of slow-speed horizontal compound condensing engines of 200N.H.P. each; these were supplied by Messrs. Browett, Lindley, and Co., of Patricroft, at a cost of £4,309. The dynamos and exciters were supplied by Messrs. Mather and Platt, Limited, of Salford, and are driven at the rate of 500 revolutions per minute. Messrs. Mather and Platt also supplied the switchboard and electrical instruments, the total amount of their contract being £3,150. There are three Lancashire steel boilers, fitted with mechanical stoking appliances and economisers; these were supplied by Messrs. Tinkers, Limited, Hyde, at a cost of £3,704. The mains are laid in three circuits, and the charge for current is now 7d. per unit.

Our Transatlantic brethren have not been backward in devising churches with large central areas. A plan of a new church (Holy Trinity), Harlem, New York, is given in the *Scientific American*, Building Edition. The plan is a Greek cross, with short arms, the central area of crossing being a square of 50ft., and the roof is a groined plastered vault with moulded arches and ribs, and each transept has a tunnel-vault. Galleries are provided in the transepts. The chancel is a five-sided apse covered by a semi-dome, the wall of apse is wainscoted in African marble, with oak panelling over, and is said to be impressive. The seating capacity is twelve hundred. The bishop's throne is placed in the apse behind the altar table, which stands in front of it—a recurrence to the old Basilican plan.

The annual summer meeting of the Institution of Junior Engineers, whose headquarters are in London, takes place from August 17 to 24, the rendezvous being Belgium. The towns to be visited include Antwerp, where the municipal docks, M. Kryn's diamond-cutting works, and other places of interest will be opened to members' inspection. At Ghent, MM. Carel's engine works, M. de Hemptinne's cotton-spinning works, and M. van Houtte's nursery gardens will be seen; at Brussels, the electric-lighting station; whilst at Liège the works of the Société Cockerill, the Vieille Montagne Zinc Works, the St. Leonard Locomotive Works, the Val St. Lambert Glass Works, the Small Arms Factory, and the electric tramway installation will be visited. In honour of the institution, a banquet is to be given by the Liège section of the Society of Engineers from the University, and the members will also be the guests of the Société Cockerill. An excursion to Verviers, where the Chamber of Commerce will entertain the visitors, is arranged, for the purpose of seeing works in connection with the woollen cloth industry. Here MM. Peltzer's works, and those of M. Duesberg-Debrez, La Vesdre, and M. Hauzeur Gerard *fils* will be opened. The celebrated Gileppe Reservoir, from which Verviers receives its domestic and manufacturing supply, is also included in the programme. A large number of members have notified their intention of being present at the meeting, which promises to be one of the most successful the institution has held.

The excavating action of water-jets in sinking caissons for foundations is well known. An improved mode of sinking open steel cylinders is described in the *Scientific American*. It consists in forming round the bottom edge of the cylinders a series of water-jets issuing from hollow castings—the lower edge of the castings is made sharp as a cutting edge. The water is forced down to the jet openings through pipes on the inner edge of the cylinder, these being connected by flexible tubes to valves in the main supply-pipe from the pump. As the cylinders are sunk other segments are added. The top of the cylinder is weighted by brick or stone, which assists the descent. The water-jets round the cutting-edge at the bottom wash out the soil, and, rising up the surfaces of cylinder, lubricate them and assist the operation. The jets round the bottom can be manipulated at will by the valves, so that any hard ground on one side can be operated on by opening the jets on that side so as to clear the obstacle. The method described is a simple one, and the cylinders are rapidly sunk.

The annual meeting and two days' excursion of the Cumberland and Westmoreland Antiquarian and Archæological Society took place on Thursday and Friday. The members and their friends met at Carlisle, on Thursday, for the purpose of visiting the remains of the Roman Wall in Cumberland. Proceeding by train to Gilsland, the camps at Bird Oswald and Appletree were visited, the president, Chancellor Ferguson, describing the excavations about to be commenced at the latter station. At Lanercost Priory papers were read by Professor Pelham, F.S.A., of Oxford, on "The Roman Frontier System"; by Sir James Ramsay, Bart., on "The Roman Wall"; by Dr. Barnes, of Carlisle, on "The Proposed Ethnographical Survey"; and by Mr. C. J. Ferguson, on "Carlisle Cathedral." The latter paper explained all the discoveries made during the past three years of the foundations of an eastern apse on each of the transepts. On Friday, the members proceeded by train to Brampton, and after visiting Castlestairs, followed the course of the Roman Wall to Carlisle, and on to Burgh Marsh.

A meeting of twenty-three members of the Scottish Building Trades Federation, representative of the principal towns in Scotland, was held on Tuesday afternoon at 5, St. Andrew-square, Edinburgh—Bailie Selkirk, Glasgow, presiding—when a constitution and rules were formally adopted, and office-bearers were elected. The objects of the Federation, which is composed of employers only, are (1) to encourage, by friendly conference and otherwise, the maintenance of cordial relations between employers and operatives in the building trades, and the satisfactory adjustment of all differences arising from time to time; (2) to secure united action in dealing with demands made by workmen in reference to wages, hours of labour, piecework, overtime, employment of non-union men, apprentices, use of machinery, and generally all restrictive conditions sought to be imposed upon the building trades; (3) to assist, as far as practicable, local associations in time of strikes and on other fitting occasions by such means as may be considered desirable; (4) to secure the recognition by architects, measurers, and others of a fair and reasonable form of contract between contractors and their customers, and to further the adoption, in the building trades, of suitable rules for measuring work, and the adjustment of contractors' accounts;

and (5) to establish branches of the Federation in towns and districts throughout Scotland, and render them suitable advice and assistance as required. Mr. David Heron, Edinburgh, was elected president for the current year, and Mr. John Adam, Glasgow, and Mr. J. B. Hay, Dundee, vice-presidents. An executive of twenty-one members was also appointed.

MEETINGS FOR THE ENSUING WEEK.

Saturday (To-morrow). — London and Provincial Builders' Foremen's Association. Annual Dinner at the Four Swans, Waltham Holy Cross. 4.15 p.m.

A bazaar has been held at Flamborough to provide funds for rebuilding the tower of the parish church, destroyed more than 230 years ago. The plans and specifications for the proposed new tower have been prepared by Mr. C. Hodgson Fowler, F.S.A., of Durham. The estimated cost is £1,000, and of this amount £600 has been subscribed.

The Perth builders had their 21st annual outing on Wednesday last. The trip this year consisted of a drive to Crieff viâ Methven and back by Muthill and Auchterarder. This year the numbers were considerably smaller than usual. At Crieff, dinner was served in the Commercial Hotel. Mr. A. Beveridge, builder, the president of the association, occupied the chair.

The August report of the Amalgamated Society of Carpenters and Joiners contains the following notice to members: "As it is extremely probable that the building trades in the London district will be frequently in conflict with employers for the maintenance of existing working rules, all members are earnestly requested to keep away."

The Sittingbourne Urban District Council have resolved to accept the tender of Messrs. Calvert, Harris, and Co., of London, for two engines and the necessary pumps and fittings, recently in use at the Guernsey Waterworks. The engines, which are to cost £2,065, will be put down at the Sittingbourne Waterworks, and a new reservoir, capable of storing 300,000gals., is about to be constructed.

The War Office are about to demolish the Citadel at Plymouth and reconstruct it as a large artillery depot. The tender has been accepted for the first section, which includes the demolition of the old magazines, and the erection of a mess block for 17 offices, at a cost of £50,000. This portion of the scheme is to be completed by May, 1897. The second section is to be commenced next year, and includes the demolition of the present married quarters, and the building of an extensive drill quadrangle.

The Grand Prix de Rome for this year has been awarded to M. Gaston Larée, a pupil of M Bounat, for his work representing "The Holy Women at the Foot of the Cross." The second Prix de Rome has fallen to M. Albert Laurens, son of the artist, J. P. Laurens, and a pupil of Benjamin Constant and M. Cormon.

A sanatorium, which has been erected by the Cardiff Corporation at Canton, at a cost of about £37,000, was formally opened by the mayor of that town on Friday.

Mr. D. W. Barker, founder of the firm of Barker and Co., of the Worcester Patent Brickworks, and managing director of the company which recently acquired the business, died at Worcester on Friday.

The Wolverhampton town council accepted, on Monday, an oil painting of the late Alderman Edwards in his mayoral robes and chain, to be hung in the council chamber.

At Cockermouth, a park given to the town by Mrs. Harris, of Derwent Bank, was opened on the 8th inst. The park, which is situated near the railway station, and is bounded on one side by the river Cocker, is 12½ acres in extent. It is beautifully wooded, with natural walks, and commands views of lake scenery on one hand, and of the Scotch hills and the Derwent valley on the other. About £500 has been expended in laying out the grounds, a bowling-green, gymnasium, and a children's shelter being among the adjuncts provided.

At an investiture held by the Queen at Osborne on Monday, her Majesty personally invested Mr. John Taylor, F.R.I.B.A., surveyor to H.M. Office of Works, and Major Henry Pilkington, director of engineering and architectural works at the Admiralty, with the insignia of Companions of the Order of the Bath.

The work of restoring Curdworth Church, Warwickshire, is now going on. It has been undertaken by Lord Norton, who is a joint patron of the living. The restoration involves to a large extent rebuilding, and the expenditure to which Lord Norton has committed himself—as a thankoffering to God on entering the ninth decade of his life in health and strength—is £15,000.

Trade News.

WAGES MOVEMENTS.

Building Trades Federation.—At the invitation of the London Building Trades Federation a preliminary conference has been held at the Operative Bricklayers' Hall, Southwark Bridge-road, for the purpose of consolidating the various building federations throughout the country. The business resolved itself into the consideration of suggested rules for the National Federation, which were ultimately agreed to by the delegates, and ordered to be sent to the various federations throughout the country for their ratification. By means of this National Federation, over 70,000 organised building workers will join hands in defence of trade interests.

Dundee.—At the present time an agitation is going on amongst the operative masons in Dundee for an increase in their wages. According to the statements of the men a good deal of work is going on in the city and district, and they have opened negotiations with the masters with the object of having the wages of builders raised from 8½d. to 9½d., and that of hewers from 8d. to 9d. The communications of the men have since been considered by a meeting of the masters, who, while expressing no opinion on the merits of the case, have invited the men to confer with them on the question.

CHIPS.

New schools are being built for the School Board for St. George, near Bristol, from designs by Mr. Mackay, of Kingswood. They occupy a prominent position just off the main road at Two Mile Hill.

The monthly report of the Labour Department, issued yesterday (Thursday), states that the building trades, on the whole, continue busy, and the percentage of unemployed in Union, making returns has fallen from 2·5 in June to 2·4 in July, compared with 3·6 in July last year. The furnishing and woodworking trades have fallen off to some extent, the percentage of unemployed Union members having risen from 2·4 in June to 3·0 in July, compared with 4·4 in July, 1894.

The South Staffordshire Mines Drainage Commissioners, at a special meeting held at Dudley on Wednesday, approved of a scheme, prepared by Mr. Howell, the engineer, by which it is hoped to clear the water in 11,000 acres of mines in the Tipton district. New pumping-engines of the most approved type are to be laid down, also hydraulic engines connected with a ten-mile circuit of piping. These, it is estimated, will raise 12,000,000 gallons of water daily.

Mr. Wolfe Brennan, C.E., has begun the survey of the proposed railway line to connect Loch Fyne with the West Highland Railway system.

The urban district council of Weston-super-Mare are seeking to keep abreast of the times and to provide additional attractions for the visitors. With this object in view, they have been negotiating for the purchase of the Knightstone estate for £12,000, and last week they decided to seek for powers to erect a new pavilion, to construct two marine lakes and a low-water pier in connection with and adjoining the Knightstone property. An engineer is to be employed to consult with the council upon these matters.

The marble bust of the late Mr. Christopher Thomas, which has been presented to Bristol, was unveiled at the Council House in that city on Wednesday afternoon. The bust is from the studio of Mr. Tom R Essex, of Devonshire-street, Portland-place, London. A silver tablet affixed to the pedestal sets forth that he was a member of the Bristol town council for 39 years, from 1845 to 1893, and was mayor in 1874-5.

The late Mr. George Jacques, Spring Bank, Silsden, instructed Messrs. W. Potts and Sons, clock manufacturers, of Leeds and Newcastle-on-Tyne, to place a new Cambridge quarter clock, with four illuminated dials, in the tower of the parish church of Silsden, near Keighley; but having died before completion, Mr. Jacques' family have carried out the project. Messrs. Potts also made and fixed the Prince Smith Memorial, Keighley, and the Haggas Memorial Clock, Ingrow, near Keighley.

Professor Herkomer has consented to open the exhibition of the South Wales Art Society in Cardiff on October 5th. The society has secured the premises of the Glamorgan Club, opposite the Taff Vale Railway offices, for its permanent home, and these will be adapted to the requirements of the society in due course. The formal opening of the building on October 5th by Professor Herkomer will be an auspicious event in local art circles, and will undoubtedly give a deserved filip to the society and its work. The professor is one of the vice-presidents of the society, and sent a fine portrait of Archibald Forbes to last year's exhibition.

At the last meeting of the Manchester city council, it was announced that the purchase of Chat Moss for the purposes of the cleansing committee had been completed, and would meet the requirements of the city probably for fifty years. The area purchased was 2,594 acres, and the total cost to the corporation was £147,631.

A rectory is about to be built at Sheldon, near Honiton, from plans by Mr. E. H. Harbottle, of Exeter.

A new secondary school at Mavisbank, which has been erected by the Airdrie School Board as a higher department of Airdrie Academy, was formally opened on Tuesday by Mr. James A. Campbell, LL.D., M.P. The main block is a building 85ft. by 59ft., and of two stories in height. There are separate entrances for boys and girls. The elementary education accommodation is confined to the ground floor, while the Science and Art department is to be accommodated on the upper floor, and consist of a complete chemical laboratory, balance room, instrument-room, mechanical drawing-room, and cast-room, while provision is made in detached buildings for the teaching of cookery, laundry work, and for modelling. Provost Aitken is the architect of the building.

The recumbent bronze effigy of the late Bishop Harvey Goodwin, designed and executed by Mr. Hamo Thornycroft, R.A., will be unveiled in Carlisle Cathedral by the Archbishop of York on September 17.

The new "Forster" Board Schools, built by the Cowpen U.D. School Board, were publicly opened on Tuesday. The schools are built on a site half an acre in extent, in Hambledon-street, on a portion of the Thornton Croft estate. They are two stories in height, and consist on the ground floor of an infants' department, and on the first floor of a mixed elementary school, with a total accommodation for 650 children. The exterior walls are of deep red brick work, with red terracotta strings and dressings to gables and doorways. The contract, amounting to about £4,000, has been carried out by Messrs. H. Brown and Co., of Newcastle-on-Tyne, from the designs of Mr. J. H. Morton, F.R.I.B.A., of South Shields.

In New York there are signs of approaching activity in the building trade. The number of permits for the erection of new buildings during the past six months is almost exactly twice as great as the number issued during the corresponding part of 1894, and the proportion between the intended cost of the buildings for the two periods follows nearly the same ratio. Meanwhile, the number of permits for alterations has not very much increased.

The annual meeting of the Bristol and Gloucestershire Archæological Society was held on Tuesday at Berkeley. After a general meeting of the members at the Town-hall, luncheon was served at the Berkeley Arms Hotel, followed by a visit to Berkeley Castle, under the guidance of the Rev. W. Bazeley, general secretary of the society. The members were entertained at tea in the gardens of the castle by Lord and Lady Fitzhardinge, and in the evening they attended a conversazione at the Town-hall. On Wednesday Berkeley parish church was inspected, after which the party proceeded in brakes to Wanswell Court, the ancient residence of the Thorpe family, and thence to Bradstone, the home for many centuries of the Bradstone family, North Nibley, and Wotton-under-Edge. The excursions yesterday (Thursday) were to Stone, Tortworth, and Thornebury church and castle.

W. H. LASCELLES and Co.,
121, Bunhill Row, London, E.C.
TELEPHONE No. 270.
HIGH-CLASS JOINERY.
LASCELLES' CONCRETE.
Conservatories & Greenhouses.
WOODEN BUILDINGS.
BANK, OFFICE, & SHOP FITTINGS.
CHURCH BENCHES & PULPITS.
ESTIMATES GIVEN ON APPLICATION.

HAM HILL STONE.
The attention of Architects is specially invited to the Durability and beautiful Colour of this material.
Quarries Well Opened; Quick Despatch Guaranteed; Stonework Delivered and Fixed Complete. Samples and Estimates Free.
Address:—
THE HAM HILL STONE COMPANY,
NORTON, STOKE-UNDER-HAM, SOMERSET.
London Agent:—
Mr. E. A. WILLIAMS, 16, Craven-street, Strand, W.C.

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXIX.—No. 2120.

FRIDAY, AUGUST 23, 1895.

RECENT "CENTRAL AREA" DESIGNS.

WE briefly referred, last week, to the erection of another church in New York on a "central area" plan. A Congregational chapel, on rather similar lines, was recently opened at West Hampstead; and another, almost identical with it in idea, if not in style, was built some time ago at Wigan. These two adopt the familiar form of an octagon, with arms radiating from its cardinal faces—a form which was cleverly treated five-and-thirty years ago by Messrs. Lanyon and Lynn, in their design for Trinity Church, Edinburgh. This, when compared with its recent imitations, shows that the central area idea, like others, depends for its success on the skill and inventiveness with which it is applied. There is much to be made out of it, for certain special purposes; but the making requires a maker. It is not a mere trick, or formula, or recipe, which anyone can follow with the certainty of success; on the contrary, it presents the thoughtful architect with a great many problems, some of which are by no means solved as yet.

Nobody suggests—nobody, as far as we know, ever did suggest—that a central area plan is desirable for all sorts of public buildings, or even for all sorts of churches. Where people go to church simply for the purpose of worship the types of plan which have been handed down by custom and tradition need no radical change. Their own beauty and the associations connected with them will keep them in use, as they ought to do. But there are persons—some in the Church of England, and many more outside it—who are never satisfied without hearing a sermon. Perhaps they are not always of the most intelligent class, but they have to be provided for. On weekdays they do not read much, except their newspaper. Reading, possibly, is little to their taste. What they find to be easier, and like better, is to sit in a comfortable seat and listen to a discourse of moderate length. Like Parson Adams, they think that "no one can have his duty too frequently inculcated into him." So they attend services, and bring others to attend them, and feel that they are receiving good and doing good, provided always that they can hear distinctly what is being said to them. It is mainly, though, people of this class, and the preachers that address them, who find the ancient types of church inconvenient. The architect who works for them may or may not share in their passion for being preached to; but it is his business to provide them with buildings in which sermons can be heard, and heard, in some instances, by very large congregations. If he has anything of the artist about him, he tries to do this in an architectonic way, and not by merely substituting thin iron props for stone nave-piers, as the manner of some is. Towards this architectonic mode of dealing with the problem, the central area idea may help him, if, and only if, he knows how to use it.

The simplest form of central area is a square. And when a building is without columns, a square will obviously hold more people than an octagon of the same diameter. For the sake of acoustics, too, as well as of accommodations, it is often better to retain the square plan nearly up to the roof-level, and to let the octagon, if an octagon is wanted, start from above the heads of the congregation. There is a picturesque specimen of this treatment in Sir A. Blomfield's little church for the deaf and dumb, St. Saviour's, Oxford-street. There is an example of it on the great scale at Sta. Maria delle Grazie, Milan, where the square finishes outside as a many-sided polygon. Both these have a projecting choir and shallow transepts. We illustrated, on November 10, 1893, a Jewish synagogue at Buffalo, N.Y., in which the lower stage is a square without transepts brought into an octagon higher up by diagonal arches. Messrs. Kent are the architects for this interesting and original work. If it has little of what a European recognises as beauty, it has a large amount of character and individuality. There is a certain suggestion of Eastern tastes about it; a sort of exclusiveness and separateness which seem to fit it for a race who, if they are in the Western world, are not really of it. It has small windows, unbroken masses of masonry, rounded corners with domed turrets, and a great rounded dome by way of roof. The details, of which there are few, are Saracenic in character. But there is nothing of the lightness and elegance of Arab or Persian architecture in the design. It has a sort of grim solemnity, not adapted, any more than it is intended, to bring in the Gentile and the stranger.

This is not at all the sort of thing that a chapel committee would choose. Their aim is not to repel, but to invite, and their idea of art is that it should be "an attraction." If it were really art which they employed for this end, we might overlook the motive for the sake of the result. But we all know how seldom this happens. To pile on the cheapest of cheap finery is their general practice, and the architect who can produce the flashiest chapel at the lowest price is the one who gets commission after commision. The central area type, which ten or fifteen years ago seemed to show such people a possibility of better things, is being vulgarised like the rest, and we are learning how hard it is to do good work for clients who like bad work better.

There is no particular advantage in that crudest of all central area forms—a mere octagon, without columns or transepts. By itself it does not seat a congregation to the best advantage, and it involves much danger of echo and reverberation. Yet every now and then some architect—it is to be hoped a young and inexperienced one—builds a chapel of this shape, which is duly announced as a great original invention. But it is not, strictly speaking, a "central area" building at all. A central area is a large open space in the middle of an edifice—a space, that is, with other spaces round it. St. Paul's, for instance, has a central area. St. Stephen's, Walbrook, has another. The Duomo of Florence has a third. Each of these possesses a great unbroken space in front of the choir, with aisles, avenues, transepts, or recesses of other kinds opening into this space. The junction of this space, whether it is square, polygonal, or circular, with these appendages, leads to a great deal of interesting planning, and gives opportunities, amongst other things, for inserting galleries, so as to make them picturesque instead of offensive. Indeed, it is the great merit of the central area system, for congregational purposes, that it does facilitate the artistic treatment of galleries. They are a necessity where a large audience has to be arranged for. They are an unavoidable part of any structure erected for the "popular preacher" of modern times, because no man can long make himself audible to several thousand people, unless they are grouped more closely round him than they can be on a single floor. But we may note in passing that the "popular preacher," or, indeed, the orator of any kind, does not like his audience cut up into a lot of little bits. He objects to a number of separate galleries, each holding its own small group, perhaps, of 50 or 100, away from the other galleries, and from the general mass. He likes one large congregation—not five or ten small ones.

This principle seems to have been borne in mind in the design of the New Synagogue at Berlin, erected not long since by Messrs. Cremer and Wolffenstein. It seats 800 men on the ground floor, and 800 women in the galleries, and has cost £41,000. In general arrangement it closely resembles Union Chapel, Islington, which we illustrated some sixteen years ago. The central area is of the same shape—namely, a square, with the corners cut off—and is a few feet less in diameter than in the English example. A stone pier at each of the eight angles carries moulded arches, alternately wide and narrow in span. The gallery, whose front rests on segmental stone arches, surrounds the central space, and an upper gallery runs straight across one end of the building, above the lower one. This, judging from the views, interferes greatly with the effect, and looks like an attempt to crowd in more people than the design is really fit for. Probably the architects were the last persons who desired this addition; but the "practical man" seems to be as rampant in Berlin as he is here. Perhaps it is to him, too, that we owe the continuing of the gallery into what, in a church, would be the choir. This takes off considerably from the symmetry of the interior, and gives a weak appearance to what should have been the strongest-looking of all the piers. The whole gallery, moreover, is much too heavy, and too ornate. It attracts attention as the main feature of the design, and quite overpowers the arches and vaults above it. The style generally is a kind of Early Gothic.

Of course the central area type need not be, and has not been, confined to religious structures. It appeared as a twelve-sided polygon, 100ft. wide, in Mr. Collcutt's design for the South Kensington Museum. In an imperfect form it exists in most theatres and in some concert-halls. In all such cases the gallery problem goes along with it. Theatres, commonly, are innocent of any attempts to solve it; perhaps the theatre architect has never yet discovered its existence. Perhaps, on the other hand, he is too hardly pressed by the "practical man," in the shape of the manager or the lessee, to whom one more seat means from £20 to £50 a year, and who would turn a deaf ear to all the arts together if they tried for a moment to prevent him from getting it. So between chapels and theatres and synagogues the central-area idea is rather in a hard case. Architects might develop it much further, and carry it to much greater perfection; but the primary difficulty is to educate their clients.

◆

DETERIORATION OF TOWN DWELLINGS.

JUST now a great deal of attention is being directed to sanitary dwellings in large towns. A vast addition to the number of smaller houses and tenements is made every year, with the result that attention to good construction and sanitary precautions depends greatly on the efficacy of administration. The British Institute of Public Health Congress at Hull has been discussing, among other matters, the wholesale manner in which insanitary houses had been closed in Sunderland by the sanitary authority, owing to the system which prevailed of back-to-back houses. The refuse of these houses had to be brought through the houses, often through the bedrooms. Happily this state of things exists only in a few of the towns. Amongst these Halifax is one of the principal. According to D. Barry and Mr. P. Gordon Smith's Report on "Back-to-Back" Houses, published in 1888, the percentage of houses built on this plan was considerable. But here the discretionary powers of the sanitary authority have been exercised of late years. One of the by-laws states that it shall not be lawful for any person, without the consent of the corporation, to erect dwelling-houses in blocks, so that any block shall contain more than eight dwelling-houses when built back to back. These blocks are shown 34ft. deep, with streets of 30ft. between, and about 56 houses to the acre can be built on this plan. At Keighley, the blocks are confined to four houses. An improved arrangement for "through" houses in continuous rows is provided for by the model by-laws, having a back street of 10ft. wide to give access to the privies and ashpits. We hope before long to see the system of back-to-back houses entirely superseded by the arrangement of "through" houses, having access for the removal of refuse. For this and other abuses we have generally looked to individual ownership as the remedy; but there are others who think differently.

Mr. William Stevenson, of Leith, in a lecture on "Uninhabitable Houses in City Slums," given in the *Engineering Magazine*, discusses the question from experience, and throws some light on the advantage or otherwise of the proposal "that the best guarantee that the home of the working man shall be comfortable and healthy is that he shall be owner of his own dwelling." The conclusion drawn is that the proposal is a fallacy, and will not bear investigation, and the author points to the houses in Edinburgh and Leith, in which this system has contributed to make them unhealthy and uninhabitable. Several reasons are given for this conclusion which may be referred to. The idea that every man should be his own landlord has been fostered by building societies and other organisations more or less interested. It is not denied that, when first built, houses of this kind were sanitarily built and tolerably perfect in construction. They have all modern appliances of the time. But have they remained in this state? From investigation of such property at Leith and other towns, it is found that a large proportion of these houses are in a bad state of repair and unfit for habitation. The result is attributed to several causes, and amongst them we may name the following. First, every house is subject to decay, and requires a constant outlay to keep it in repair and efficiency, and the working class who own their houses as an investment are not in a position to keep up the yearly demands for repair or improvement. The owner, in many cases, has invested all his savings in his house for himself and family, and he does not look beyond his own immediate wants. In most cases, he has made no provision for repairs and other expenses necessary to keep the property up to the time. We often see an instance of this in dwellings which come within the jurisdiction of sanitary authorities. The owner is compelled to remove all the old drains and fittings, and substitute those of approved construction and form. The old fittings have become obsolete. The modern tenant requires the latest improvements and appliances in the shape of ventilators, hot-water or bath apparatus, or lavatory fittings. The mortgaged house is still less likely to get attention to its structural wants. The owner in this case has more than he can do to keep the property wind and weather tight, without spending anything on improvements. It is pointed out also that "the better class of tenants gradually remove to houses of more recent construction, where they find the more modern appliances and conveniences." The consequences are that the houses are let to undesirable tenants, and gradually the house gets into disrepair, and goes from bad to worse.

Again, individual owners of the class referred to rarely set aside a reserve fund for repairs or improvements, and in this particular they manage their affairs very differently to any trading or mercantile business, which sets apart a portion of the profits for this purpose. Mr. Stevenson says, truly enough, herein "lies a pertinent cause of uninhabitable dwellings." In the lower classes of dwellings in large cities the carelessness and destructive habits of tenants contribute to the same result. These are mainly the causes which have to be dealt with before dwellings in our towns can be made habitable or healthy. What is the remedy proposed? Mr. Stevenson says "All individual and private ownership in house property in towns should cease"; he would also exclude the State and municipal bodies, and recommends that the owning of house property be taken up by joint-stock companies or by some syndicate which might be limited and co-operative, in which working men of all classes might join and invest their savings. Such a co-operation would have no risk, as the property would be managed on business principles; the dividends would be paid half-yearly, uniformly, and a reserve for all emergencies and improvements be provided. The company would, for its own interests, keep the houses in good repair, and introduce the most modern and approved sanitary appliances, so as to secure the best class of tenants. Shareholders and members could "bequeath the life rent to one person, and the fee on reversion to others, knowing that the life-renter would have no control in deteriorating the principal, and that the fee would go down to the reversionaries unimpaired." As an example of this kind of association, the author points to the Glasgow Workmen's Dwellings Co., Limited.

The scheme is one worthy of consideration, and we allude to it because it points out some of the undeniable factors in the creation of undesirable and uninhabitable houses in our great towns. The ordinary house owner of the small dwelling buys his property under the impression that it is an investment not liable to decay or deterioration, and that a house once built cannot be improved. Under this impression, the idea of a reserve fund is never entertained for a moment. Herein is one fertile source of all the mischief and the serious insanitary condition of the dwellings of our great cities.

◆

FASHIONABLE BUILDING OR ARCHITECTURE?

To what extent genuine artistic feeling or mere spurious sentiment enters into our modern design, we have little direct means of judging in an age when so many conflicting and varied motives find a place and an opportunity. We can only test these motives by their results, or in how far they subserve the requirements of the day. In the designs for modern buildings, two distinct schools are apparently striving for mastery. We have on one side a considerable number of competent men whose ideas of architecture are very little removed from mere construction, and who cannot distinguish building which is architecture from building which is merely the fortuitous combination of trades. On the other side, we have men who regard architecture as building, and something more, who with taste and discretion seek to impart to mere building a sense of artistic fitness and poetry. The man who looks upon architecture as nothing but "decorated building"—and there are hundreds of such men—is one who believes in iron girders when any difficulty arises, likes to hide his roofs, colour and tuck-point his front, and do many other things which are simply atrocious to a man of taste. Our average commercial buildings and shops are examples of the decorated building ideal; but it extends to other buildings as well, our town halls, vestry offices, and public libraries. And is not the labour also misdirected? The architect who takes a low building view of his art is generally fond of cheap ornament and decoration; it hides his want of invention and artistic weakness, for in this matter, as in other things, "extremes meet." The plain unsophisticated, common-sense builder often does something infinitely more artistic because honest, than he who smothers up his unthoughtful work with make-believes and shams. Many a factory or an engine-house is more architectural than a commercial architect's best work. Our simplest and plainest buildings which have been honestly planned to meet what is wanted, as the old-fashioned cottages, barns, and homesteads, or the unpretending village churches that we meet with in Somersetshire and Sussex, often give us hints, and our leading architects still take them as models. Then we have the second class, who from natural instinct and education cannot do many things which seem reasonable in the eyes of the mere "architecturalist," if we may coin a word to designate the men we have just spoken of. Certain things would be impossible or utterly repugnant to the artist, as, for instance, making it appear that a front rested on an entablature or over a plate-glass window; designing an elaborate façade to the street with plain return sides; sham gable fronts, repeating features for the sake of symmetry, putting iron pillars under flat ceilings, iron spiral staircases, ornamental leaded lights, and other shop-fitter's decoration. For the professional decorator's art he has a particular distaste; decoration is to him a very different thing, it means treatment of materials, variety of form, vigour of line. For example, to take a common case, decorating a panel is not the same thing to each of these classes. To one it means *covering* it with decoration; to the other it means leaving portions of the ground untouched. Wall decoration, to the ordinary decorator, is crowding the surface with an elaborate pattern; to the true artist it is treating the surface in such a manner that the eye can appreciate the value of the scheme as a whole, the plain surfaces, the relation of curved lines to straight, difference of texture, light, and shade. Again, let us take another very favourite object for decoration—the column. The common idea is to put some ornament round the column—raised ornament, spiral mouldings, or what not—for the purpose, if anything, of concealing or counterfeiting the column; the true decorative spirit suggests the emphasis of the column as a *support*, to preserve its real outline, so as to give an expression of strength. The ornament he uses is appropriate also in line and in low relief, and rigid rather than weak and naturalistic.

In the more constructional arts of brick and stonework the same divergence of thought and feeling appears. The average designer likes plenty of carved work and panelling; the more of it the better, and the craftsman entertains the same regard for work which is full of labour. He prefers a moulded or carved brick or stone arch to a plain one over a door or window; he would not put a plain stone lintel over an opening if he could use a pediment. For a large blank surface of wall, with two or three windows in it, arranged apparently at random, he has no admiration; nor can he understand the value of a plain and lofty chimney-stack. But these are features which the artist holds in reverence as honest expressions of building. Then as to the kind of relief given to brickwork. The most rational appears to be the vertical membering seen in North German work, as in gables, which gives real as well as decorative value to walls and stacks. These structural lines are not those which find most favour with architects of the "decorated" building kind. They prefer heavy and elaborate cornices, which are top-heavy and unstable; or panelled and carved surfaces. Much of their want of discernment of what is proper is due to their absence of knowledge of the traditional mode of workmanship in brick and stone which has been inherited through many generations. The old artist and craftsman naturally succeeded to this endowment of method and traditional skill; but the modern art designer has no part or lot in it; it is quite as foreign to him as the costumes of the Plantagenets or the Tudors. Only those who have patiently studied the old work and imbibed the true spirit of its workers can understand or appreciate those ways of doing things which have ever seemed the truest and the best. Mind, we do not say followed the letter or revived the dead forms of past art, but have caught the true *method* of the old work. We may observe the same difference of design in woodwork. The Gothic woodwork was simple and solid, and even the later Renaissance, from which our modern furniture and decorative woodwork are copied, showed a national character; the framing was honest and solid, the mouldings delicately wrought, and there was breadth and sobriety in the design. The craftsman was a master of his trade, he was a member of a guild which became the depository of traditional skill. He had an intuitive idea of what be wanted, he used his material with meaning, and worked with reserve and thoroughness. His modern successor of the showy school can claim none of those qualities.

Modern domestic interiors afford us a capital idea of the divergent views of the decorative builder and the true architect. On one side we see commonplace and vulgarity; on the other, simplicity, solidity, and quaintness. In the first case the plainest and commonest building as regards plan and design is made the groundwork for a variety of fancy designs. The bare walls are covered with "art" papers or applied decorative materials, the floor is parqueted, and the ceiling divided into panels. The "decorative" architect goes in for all the latest "crazes" in woodwork and wall linings. These are to his hand, and he has only to apply them. He does not think it necessary to change the shape of his rooms, to make his walls thicker, to build recessed jambs, if he can obtain all the effect in a cheaper and more expeditious form. For example, if he can introduce a panelled fabric for his walls, he sees no need to erect pilasters or to specify solid oak or walnut wainscoting. Modern decorative taste is nowhere more assertive than in that essential provision of the English home—the fireplace. On this feature, the decorative architect of the modern commercial type is wont to lavish all his attention. The ironmonger, the marble mason, or the furniture maker can furnish all he wants to make it "chic," or agreeable to the taste of the day. The illustrated catalogue of a stove manufacturer will give him the latest pattern in which fashion and quaintness are blended. As for the mantelpiece, this same order of interior has a stock design in walnut or cast iron as appropriate as it is obtrusive. Atrocious colonnettes, figures, and mouldings, abound, quite out of keeping with the meagre look of other details of the room. If of marble, or an artificial material, the design is often more repugnant to good taste. In these fittings we have a notable instance of misapplied craft, or sometimes excellent workmanship devoted to atrocious design. The architect who employs this sort of art is wise in his generation, for he gauges accurately the taste of the public, which prefers a blend of the showy and sentimental. If we turn to wall decoration, we see that the low-priced, showy wall-papers, or the inferior imitations of the better designs, have by far the best chance. Fashion and archæology is a mixture which the modern architect of the class we are describing strongly affects. On the contrary, the honest designer takes a commonsense view, and adapts his design, whether it be a chimneypiece or decoration, to the purpose it is intended to fulfil. He sees no good in giving a new dress to anything, if an old form is better suited to it. Fashion or novelty he despises for its own sake, and this is one reason why a few among the profession who have been foremost in their revival of "Queen Anne" or English Renaissance are condemned for their use of old and quaint methods. They are charged with having no sympathy with the age, with giving us antiquated houses and furniture and old-fashioned wall-papers, with a kind of affectation for everything which savours of the last century or two. Is it not rather that they are disgusted with modern shams and trickery, and are anxious of bringing back the honest design and workmanship of the best periods; because they find that the old methods give the most comfort; that the quaint wide fireplace and "ingle"-nooks are better ways of utilising heat and economising space? The reserve and quietness in the work of this school of thought cannot be put down only to affectation of quaintness; they are qualities that find a response amongst people who dislike ostentation or a parade of mere fashion; who admire art of this kind for its honesty of purpose, and for the refining grace which the artist has been able to bestow upon every detail of his work. The fashionable and commercial designer is never particular as to details; it does not pay him to trouble much about them, for he finds his customers content with general effect.

"OLD MASTERS" ON THE CONTINENT.—XX.

By Charles L. Eastlake

(Keeper of the National Gallery).

If the primitive but useful custom which so much prevailed in portraiture during the 15th and 16th centuries had been universally adopted—viz., that of inscribing on a corner of the background the name of the person represented, posterity would have been relieved from a vast deal of trouble, and the history of pictorial art might have been enriched by many details which at present remain obscure. There is scarcely a gallery in Europe which does not contain some important work overshadowed by doubts even as to the identity of the painter, because the features which he transferred to canvas have remained unrecognised. The so-called "Fornarina" in the Uffizi at Florence is a case in point. The interesting "Portrait of a Young Man," ascribed to Francia Bigio, in the Louvre, is another instance. The old Pinakothek at Munich contains the likeness of a merchant once believed to have been painted by Garofalo, but the merchant's name and the authorship of the work are both involved in obscurity. In our own National Gallery the admirable portrait of Cornelius van der Geest—one of the chief gems of the collection—was long supposed to represent Caspar Gevaerts (Gevartius), the friend of Rubens, and though the picture is catalogued, with excellent reason, as an example of Van Dyck, some adventurous critics still maintain that it is the work of his distinguished master.

That a picture by Holbein could ever have been attributed to Leonardo da Vinci seems incredible in these days of enlightened connoisseurship. Yet this egregious blunder was perpetrated, and prevailed for nearly a century regarding the famous portrait of Morette which hangs in the Royal Gallery at Dresden. The mistake is all the less excusable because the *provenance* of the picture was well known. About two hundred and fifty years ago it belonged to the Marchese Maximilian Montecuccoli, then enyoy at Parma and Rome; from whose possession it passed into that of Duke Franz I. at Modena, and at that time it was known as the work of Holbein. In 1746 it was removed from Modena to Dresden, when it seems to have passed for a portrait of Ludovico Sforza by L. da Vinci. In 1846 Rumohr, who succeeded in exploding this theory, expressed his belief that it was from Holbein's brush. But a further mystery remained respecting the subject of the picture. Ludovico Sforza had been known as "Il Moro," a fact which in itself should have dispelled the idea that it was his portrait, seeing that the complexion of the sitter is not dark, but ruddy. Possibly this *agnomen* may have led to further speculation. At any rate, Herr von Quandt published an article in the *Kunstblatt* of that day to prove that it was the portrait of no Moor, but of "M. Morett," a jeweller employed by Henry VIII. This explanation was gradually accepted, and seemed so satisfactory that for many years the picture was officially catalogued under that title. In due time, however, further researches were made, and a new light seemed to be thrown on the subject by the discovery of a letter from Sir Isaac Wake to William Boswell in the 17th century. The following is an extract:—

"Turin, $\frac{\text{November 26,}}{\text{December 6,}}$ 1628.

"My dear Friend and Sweetheart,

* * * * *

"The picture after which you do seem to inquire was made by Hans Holbein in the time of Henry VIII., and is of a *Count of Moretta*. My Lord of Arundel doth desire it, and if I can get it at any reasonable rate he must and shall have it. * * * *

"Your faithful friend and servant,
"I. Wake."

The supposition that the picture was intended for Hubert Morett, the king's jeweller, had been to some extent based on an inscription which appears on Wenzel Hollar's engraving of the portrait. But it so happens that while Holbein was employed by Henry VIII. there was about the Court a certain French nobleman, the Sieur de Morette, and if we have to choose between these two personages, it seems far more probable that the painter received his commission from a foreigner of distinction than from an English tradesman. Such, at least, is the conclusion at which most modern critics have arrived, and it is evident, from the description of the picture which appears in the official Catalogue, that Prof. Woermann, Director of the Dresden Gallery, inclines to the same opinion.

The portrait which has been selected for illustration with this article is of life size, and rather more than half length. It represents a bearded man, above fifty years of age, whose sandy-coloured hair is beginning to turn grey. His fine, square head denotes power and intellect, and the admirably-modelled features are inserted with great vitality, but the expression is peevish and almost forbidding. It is the face of a person with whom it would be dangerous to quarrel. He is dressed in a black satin doublet with slashed sleeves, disclosing the ruffles of a cambric shirt below. He holds a glove in his right hand, while his left rests on a sheathed dagger which hangs from his waist. Over the doublet he wears a black silk cloak lined with fur. Round his neck is a gold chain with a locket attached to it. His flat black cap is stitched with gold thread and enriched by a cameo brooch or medallion. In the background is a green curtain of figured silk.

It would be difficult to overrate the quality of this excellent and characteristic work. As a portrait it is full of interest, while the technical skill with which the texture of fur, silk, and other details of the dress are rendered, shows the hand of the master throughout. It is painted on panel about 3ft. high by 2ft. 6in. wide.

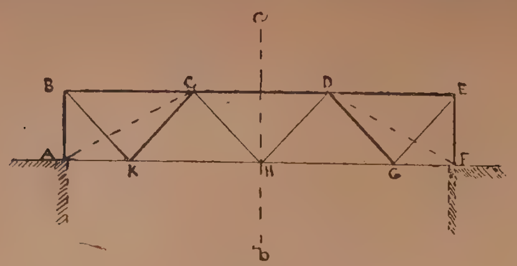


Fig. 1.

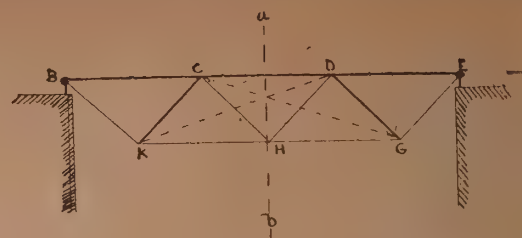


Fig. 2.

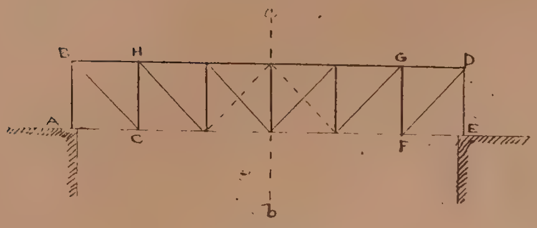


Fig. 3.

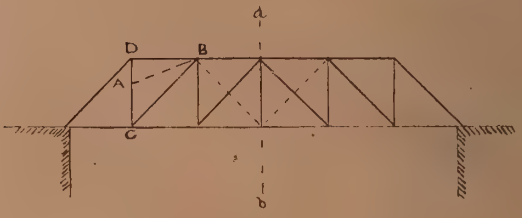


Fig. 4.

DESIGNING OF STEEL BRIDGES, THEORETICAL AND PRACTICAL.—XXI.

We have now to consider a little more fully the examples of open-web girders and trusses, to which the general equation already given—

$$S = (2 \times A - 3),$$

is particularly applicable. The duty of redundant members or counterbraces, as they are termed, to distinguish them from the principal or main braces of a truss, and the conditions governing their use, have also to be investigated, and the proper rules regulating their employment deduced and applied. A simple example of an open-web girder is shown in Fig. 1, which is supposed to be uniformly loaded on the bottom flange A F. It should be mentioned here that although the terms are not always strictly synonymous, yet "flange," "boom," and "chord" are frequently used in the same sense. The last word is very commonly employed by American engineers, and no doubt took its origin from the circumstance that timber bridges were so largely built in that country. As generally understood in England, the term "flange" is scarcely applicable to bridges built of timber, into the construction of which angle, tee, channel, or other sections of steel do not enter as part or parcel of either the upper of lower chord. The word "boom" was originally intended to signify, after a nautical fashion, that it was the longitudinal member of the truss that stretched or kept taut the sides or web as they are styled, in the same manner as a boom or yard keeps a sail stretched. Whether the boom stretches the web, or the web keeps the boom taut, is a doubtful matter in actual practice, especially when the element of deflection, which is merely a small amount of deformation, is in a vertical plane, and in a state ofs table equilibrium. It has been stated by some authors that the sides or web of open-web girders and trusses have no influence on the amount of deflection under a heavy passing load. When the depth of the girder is comparatively small in its ratio to the span, this statement may be approximately correct; but in large and deep girders of long span, it is by no means a true one. In all such structures, the depth very considerably modifies the deflection.

Since the load on the girder, shown in Fig. 1, is supposed to be uniformly distributed over the lower chord, it may be regarded for the purpose of calculating the resultant stresses on the different members of the truss, as if equally apportioned upon each of the lower apices, K H G. The manner in which this description of loading will affect the individual and separate parts of the truss is shown in Fig. 1, in which the character of the various stresses are represented by thick black lines for those in compression, and by similarly thin lines when they are in tension. If, now, we apply our general formula to the truss in Fig. 1, we shall find S to be equal to 15 and A equal to 9, and the equation will furnish the identity—

$$15 = (2 \times 9 - 3) = 15.$$

If we now introduce two other bars, A C and D F, the equation becomes, substituting the proper values for S and A respectively—

$$17 = (2 \times 9 - 3) = 15.$$

In other words, both bars are redundant under—and this is an important reservation—the supposed uniform distribution of the load. What has been actually accomplished by the introduction of the two new bars or members requires a like attention. A reference to Fig. 1 will point out that, while two additional bars have been inserted in the truss, no additional apices or angular points have been introduced. Consequently in the equation—

$$S = (2 \times A - 3),$$

the quantity on the left-hand side of the equation has changed in value, while that on the right has remained constant. It may, therefore, after this explanation, be inferred in future, *à priori*, that additional members or bars, introduced into a truss without increasing the original number of apices or angular points, will be redundant, unless the truss should be deformable, and not, therefore, fulfilling the required conditions expressed in the general equation.

If the truss in Fig. 1 be loaded on the upper chord, and supported, as it sometimes is in construction, upon a hinge or shoe attached to its upper chord, as represented in Fig. 2, the bars A B, A K, and E F, F G, shown in the truss in Fig. 1, must be omitted, and it remains to be seen whether the truss, when shorn of these members, will fulfil the conditions of indeformability. In this case the value of $S = 11$, and $A = 7$, and we obtain—

$$11 = (2 \times 7 - 3) = 11.$$

From what has been previously stated, it is known that, in a theoretical point of view, the two bars C G and D K, shown by the dotted lines in Fig. 2, are redundant. Nevertheless, it might, under certain circumstances and conditions of loading, be practically very advisable to add them for the purpose of stiffening the truss. Under a uniform load on the upper flange, there will not be any resultant stress upon the central bars C H and D H, in Fig. 2. Another example of a truss is shown in Fig. 3, in which, with a load uniformly distributed over the upper boom, the vertical members will be in compression, and the diagonals in tension, as shown by the thick and thin lines. In this instance the theoretically redundant member or conterbraces, represented by the dotted lines in the figure, are absolutely essential in every similar girder and truss subjected to a moving load. Applying the equation, and neglecting the counterbraces, we have, with the proper values of S and A—

$$25 = (2 \times 14 - 3) = 25.$$

It is unnecessary to repeat the calculation to point out the theoretical redundancy of the counterbraces under the assumption of a uniform distributed load. From the example of girder in Fig. 3 may be derived the general rule that where vertical members in the web of an open-web girder are employed, and two sets or systems of diagonal bars intersecting one another, and introduced, there is a corresponding waste of material. The railway bridge over the Thames at Charing Cross has been frequently quoted as a case in point. In each main girder there are some thirteen or fourteen tons of useless and extra material in the form of double vertical bars at the apex of each panel length in both the upper and lower booms. Sufficient practical examples have now been adduced to distinctly indicate and explain the relations existing between their various arrangements of parts and the rule governing their liability to deformation or even torsion. There are altogether three general equations applicable to this subject, one of which has already been enunciated, and using the same notation for the number of parts and angular points or apices in the truss is—

$$S = (2 \times A - 3) \ldots\ldots\ldots\ldots\ldots (1)$$

Any girder or truss which under a uniformly distributed load satisfies this equation of whatever shaped figure it may consist, is not only indeformable, but has, in addition, no redundant members. It possesses, in fact, the smallest number of parts necessary to impart indeformability to it under the conditions assumed, commencing with the simplest form, that of the triangle, to the most complicated polygon that can be delineated. When the truss happens to be endowed with redundant members, the formula becomes—

$$S > (2 \times A - 3) \ldots\ldots\ldots\ldots (2)$$

showing that the numbers of the different members are in excess of those actually required. It follows as a corollary from equation (2) that a redundant figure must necessarily be also indeformable. The third formula is just the reverse of the former, for it applies to girders and trusses which are deformable—that is, which do not possess a sufficient number of individual parts. For these trusses the equation becomes—

$$S < (2 \times A - 3) \ldots\ldots\ldots\ldots (3)$$

If the load on the girder in Fig. 3 be supposed to be situated uniformly along the lower chord, the bars A B, B H and D E, D G may be omitted, and the truss will take the form given to it in Fig. 4, in which the arrangement of the bracing is altered, the vertical members being now under tension, and the diagonals in compression. Although there is considerable latitude allowed to the designer with regard to the particular system of bracing and arrangement of bars he may choose to select, yet there are at the same time many well-recognised forms of open-web trusses from which it is not generally advisable to depart, except for especial reasons dictated by the particular character of the case, or where girders of a very large span are called in question. No doubt the larger the example of construction is, the more scope there is for a display of the inventive faculties, skill, experience, and ability of the professional man. Also, it must be remembered that, on the other hand, the very same circumstances not only call for, but demand, a very high standard of education, training, and knowledge on the part of the engineer, architect, and builder.

Giving to S and A their proper values for the truss in Fig. 4 of 21 and 12 respectively, we obtain the identity—

$$21 = (2 \times 12 - 3) = 21$$

It will be observed, on referring to Fig. 4, that the two redundant members or counterbraces shown by the dotted lines are inclined in exactly the contrary direction to that which they occupied in Fig. 3, and they are also subjected to stresses of opposite character under the same conditions of a rolling load. Before leaving this part of our subject, the practice of "cutting-down," so to speak, the trusses in Fig. 183 to the forms in Figs. 2 and 4 by pruning off the several parts previously enumerated, is not to be recommended, except for bridges of small spans under 80ft. for railway bridges, and 100ft. for road bridges. We are not, and never have been, advocates for cutting down and skimping useful material, except when it is in the wrong place. In the small examples of bridge girders, in which the individual parts are comparatively slight, and of small sectional area in themselves, it is very false economy to impair the stability and rigidity of the structure, regarded in its entirety, by snipping off a bar here and there, simply on the plea that it could, theoretically, be dispensed with. The actual saving of material is not worth considering; and besides, if the principle be indulged in to any great extent, it invariably leads to a cramped and defective style of designing which finds little favour in the eyes of thoroughly sound and experienced arbitrators and judges. The case is far otherwise when girders of considerable magnitude are in question. Each separate member becomes then a small built-up girder in itself, and its own sectional area and weight are more than sufficient to bestow upon it that condition of rigidity and stable equilibrium which the smaller specimens do not possess.

Redundant members may evidently be divided into two principal classes:—

(1) Those which are theoretically redundant, and not necessary for the indeformability of truss, but which are indispensable for practical reasons, and they then become counterbraces, and must be designed and treated as such.

(2) Those which are redundant both theoretically and practically. An instance of this duplicate redundancy is shown in the truss in Fig. 4, by adding the bar represented by the dotted line A B. Although it adds one more side or separate part to the whole truss, it does not alter the original number of the apices or angular points, and will, therefore, not satisfy equation (1), and is theoretically redundant. It is equally so practically, for it is impossible to ascertain exactly what portion of the stress at the apex B might be taken by it, and what by the proper brace B C, both of which would be in compression. The principal mischief which it effects, which would alone forbid its use—even if it had any—is that it brings a cross stress on the vertical brace C D. This last member is a tie, and not intended to resist the thrust which the bar A B would bring upon it, and if, perhaps, in solid beams and girders, a few unregarded or imperfectly ascertained stresses may adjust their differences among themselves—as it were, become absorbed in the whole mass—such an adjustment does not present itself in open-web girders and trusses. The lines of action or direction, of all the weights, forces direct and indirect, and the resulting stresses brought upon any one member by the stresses upon any of its fellows, are too unequivocally marked out in intensity, character, and position, to allow of any appreciable deviation from the path prescribed by theory and assigned by practice. The manner in which counterbraces act under a moving load, and the necessity for them, will be fully explained by a practical example in our next article. It is important to bear in mind that both the main and the counterbrace cannot be in action at one and the same time.

COUNTY LUNATIC ASYLUMS.—XXVI.

By George H. Bibby, F.R.I.B.A.

WORKROOMS FOR FEMALE PATIENTS.

THE occupation of female patients, beyond what work can be given them in the laundry, the kitchens, the wards and dormitories, and in the sewing and knitting-rooms, is occasionally a matter of considerable difficulty. It is obvious that many of the patients may be, for a variety of reasons, absolutely unfitted mentally, physically, or as a result of their previous training or condition of life, for any of the above named employments.

Having in view the very high importance to the patients that they should not be permitted to pass away time in idleness without a great effort upon the part of the officials to provide them with suitable and interesting work so soon as they may be found capable of employment, it appears to be necessary that the architect should provide in his plans of the wings of the buildings for female patients something more than the rooms for needlework, &c.

Long galleries or workrooms, divided at intervals (generally with glazed screens for purposes of observation), are as necessary as in the buildings for the male working patients, the worktables and seats being placed so that the women may have a cheerful look-out (the window-sills to be not more than 3ft. in height above the floor), and, as on the men's side of the building, in lines parallel to the length of the apartments, which should be so constructed that patients may not necessarily have to pass through divisions occupied by other classes of workers to reach their own wards or the lavatories and waterclosets.

There are more than 120 trades or occupations at which the female patients of the London County asylums have worked prior to their admission, and at several of these it is probable that patients could work or be taught to work, provided that suitable buildings be erected.

Amongst these are (in addition to the knitting, needlework, and laundry workrooms) apartments for basket-making, the manufacture of cardboard boxes, straw-bonnet makers, artificial florists, cigar and cigarette-making, folding and stitching books and pamphlets and reports, tailoring, millinery work, weaving, bookbinding, French polishing, and many others, and the larger the asylum the greater would be the opportunities of variety in the occupations and number of workrooms.

All these trades are suitable for the more intelligent classes of patients, and when the numbers to be employed upon some of these may be but few, one or more trades might be in some cases conveniently followed in the same apartment, provided that the patients thus associated can be in other respects suitably associated as regards their temper, bodily or mental health. Very large numbers of females are employed in London cigar manufactories. The work is of a simple description, and each worker usually has an allotted space of about 2ft. 6in. by 2ft. 6in. at a long table, divided from her neighbours by divisions about 6in. in height, so that each worker may be able to keep separate her supply of raw and manufactured material. There are some thousands of these cigar-makers in London alone, and the nature of the work is such that they are able to do what is required in a very small space, and, in consequence, are, in private factories, occasionally unduly crowded together without sufficient cubical contents in the rooms, or without adequate means of escape in the event of fire or panic.

In the room for cardboard and fancy-box-making glue and paste would be considerably in use; therefore a steam apparatus for boiling these would be advisable, and as the materials for making boxes are inflammable, an open fire or gas apparatus would be objectionable for obvious reasons. Similar precautions must be observed in the book-folding, artificial-flower making, and other rooms.

For female patients of a very low state of intelligence the picking of horsehair is a very suitable occupation. This work is constantly needed in asylums, and is not difficult to execute. The hair should always be thoroughly cleaned, and, if possible, steamed, before it is given to the patients to be operated upon. This work should be done in a separate and well-ventilated apartment, and certainly never in the wards. The picking should be done first by the less intelligent patients, and completed by a better class in another room.

In several architectural competitions in connection with asylums proposed to be erected with a view to future extension, it has been usual to demand that the administrative portions should be sufficient for the ultimate capacity of the institution. This requirement, however, need scarcely apply to the workshops, as temporary divisions of the various apartments might be made.

If from circumstances the workrooms must be situated at a distance from the wards, it would be well to provide a room (about 14ft. by 7ft.) in connection with the workroom blocks, to which those patients taken with epileptic fits could be removed without having to be conveyed to a considerable distance. This room would correspond in all respects with those frequently placed near the entrance to the asylum chapels, and previously described, and a convenient place should be provided for a movable couch about 5ft. 9in. long by 2ft. 3in. wide and 18in. in height. It should be provided with rubber-covered wheels about 8in. or 9in. in diameter, and would be required for the immediate removal of patients taken ill or suffering from fits during the working hours.

Whatever may be the financial profits from the work of asylum patients as a whole, there can be no doubt that the returns resulting from the labour of individual patients are in many cases very highly remunerative, and that the so-called pauper-patient not infrequently does more than earn the cost of his maintenance in the asylum (in which he may be confined for no reasons affecting his ability to work at his trade, in which he may, indeed, be a highly-skilled workman). Therefore, in the construction of the work buildings, every reasonable convenience should, if possible, be provided, that all who can be induced to work may do so under the most favourable circumstances procurable.

Epileptic patients, for instance, are usually considered to be very good workers, being very frequently strong and energetic; but they are so liable to sudden falls, that they should not be permitted to work near to open fires, high places, or under other similar dangerous conditions, and, where practicable, all sharp corners and necessary projections should be rounded off in the workrooms and approaches thereto, and it should be noted that all severe injuries to the head are known to be of great importance in the production of insanity—whether these consist of fracture of the skull, extravasation of blood, loss of cerebral substance, or simple concussion; and while in the most severe of these cases the resulting mental disturbance generally appears at once or on recovery from the actual injury, in other cases it does not appear till much later, perhaps not until even ten years after the accident; and in certain instances concussion may be followed by such results within the brain that it remains for years very susceptible to disease, so that after the slightest exciting cause insanity is produced.

The workrooms both for male and female patients should, if practicable, be always in one-story buildings; but whenever, for economical or other sufficient reasons, two-story buildings must be adopted, the staircases should be in short, easy, straight flights, and be constructed with fire-resisting material, inclosed within brick walls; or if, by reason of the varying levels of the site or kindred causes, it be found convenient to form an inclined plane to the upper floor, the higher portions must be protected with railings, with the view of preventing any of the patients from throwing themselves over to the ground below, or from placing themselves in danger by climbing to positions from which they might fall.

There would be less objection to a two story building for workshops if the lower floor were sunk below the ground level to a depth of 3ft. or 4ft. By this means a much more economical arrangement would be obtained, and considerably greater accommodation obtained at a lower cost, as *practically* the same foundations and roof would serve for a two-story as for a one-story erection. The ground level being midway between the floors, it would be much easier to arrange for inclined planes to both floors, or, in the event of staircases being necessary, the height of the same and number of steps would be greatly diminished, a manifest advantage to the working patients (especially when carrying loads of materials and goods); but the window-sills of the lower floor being thus placed on a level with the ground, special care would be observed to provide against breakages of glass.

These apartments could scarcely be termed "underground workshops," inasmuch as the whole of the window area for lighting would be clear of the general ground level. There should, if possible, be an outside area extending to the level of the lower floor. This, however, *must* be covered with iron bars to keep the patients from falling through. There should be a floor of wood in all the rooms (unless the nature of the work specially disallows this), and the whole should have a bed of concrete beneath all usual and necessary structural precautions being observed to keep the apartments dry.

The danger to the mental and bodily health of working asylum patients by putting them to unsuitable employment cannot be disregarded, and it has been frequently observed that thwarted plans and determinations (for example, an occupation enforced while all the inclinations of the individual are directed towards engagements of quite a different nature) become the causes of an intensified insanity. It would, therefore, appear to be somewhat difficult to know how to employ those patients, during rainy and winter seasons, who usually work in the gardens, or upon fields and roads attached to the asylum. Amusements are, of course, not always practicable at these periods, and idleness cannot but prove to be a calamity to be avoided by sane and insane; therefore, some workroom accommodation should be provided beyond what is requisite for those whose work is chiefly indoors, so that the workrooms be not overcrowded during unseasonable weather, and this precaution should be especially observed in those asylums where the inmates are largely drawn from the agricultural districts, and where the farmlands attached to the asylum are of an extensive description. To billet these occasional indoor workers amongst those who are continually within the workrooms would be manifestly disadvantageous to the discipline of the asylum, for in every well-ordered institution there should be a proper separation of the inmates, so that each patient shall, so far as is practicable, associate only with a few whose company is suitable; and a new patient should, for example, never have any intercourse with the bad and hopeless cases. Such an arrangement could not fail to have a very deleterious influence upon him. An eminent medical authority upon asylums has written:—"Those patients who come into contact with one another, though on the best of terms, are, at the same time, profoundly indifferent about each other, each one being almost wholly occupied with himself. Many remark the insanity of others, and become cognisant of their own state by observing that a similar treatment is adopted towards them; and it exerts the most beneficial influence upon the new patients to be led spontaneously, through the example of those around them, to conform to the order and routine of the establishment, and to learn from the others submission to all over them, and from the recoveries and dismissals taking place around them, to become tranquil, and encourage the hope that they too will some day be dismissed."

In the separation of patients according to their supposed condition or outward demeanour, caution has to be observed not to carry it to such an extent in the planning of the workrooms as to subdivide the service too much, and thereby unreasonably augment the requisite amount of superintendence.

In former times little or no provision was made in asylums for the employment of the insane, and attempts to amuse or instruct them were very deficient. Probably workrooms were wholly unknown. The progress in this direction has been but slow, until about twenty-five years ago, since which time it would appear that architects and medical superintendents have, by their joint efforts, greatly improved the general arrangements of asylums in many respects, while the modern inventions of the telephone, electric lighting, and improvements in cooking, laundry, ventilating, heating, and engineering have all contributed to make some modern asylums marvels of constructive ability upon the part of those who have produced them. As now planned, they are vastly superior to those existing in 1845; but even then, in different countries where the subject of insanity had commenced to receive serious attention, widely different architectural arrangements existed A writer in that year stated that "while the English institutions in general present a most imposing appearance by their massive and elegant exterior, possess the greatest completeness in the interior as regards convenience of space and all domestic arrangements (as heating, lighting, cleaning, working arrangements, &c.), and, combined with great comfort, a certain regularity of routine that corresponds well with the almost mechanical nature of the superintendence and treatment, the French asylums, on the other hand, are (1845) constructed on quite a different principle, especially those formed on Esquirol's plans. They consist of a series of square houses, widely apart, of merely a ground-floor containing a number of single cells or rooms, a common conversation-room, work-room, &c., with a colonnade around, and inclosing in the centre a plot of grass. Several parallel rows of such single-storied squares are connected together by those colonnades, including the store-houses, work-room, chapel, bathing-houses, &c. This mass of distinct buildings, which occupies an immense area, is not only more costly to erect, but renders the oversight more difficult, and affords fewer facilities of visiting the more distant parts of the institution and of general superintendence. On this account, up to the period when, by the *introduction* of *labour and instruction*, quite different principles were followed in the construction and arrangement of French asylums; these institutions were distinguished by a want of restraint, the uncontrolled roaming about, and unruly character of the patients. In the construction of the most modern institutions in France, the ideas of Esquirol seem to have been considerably deviated from. In Germany there has been an attempt to combine the good qualities of both systems, although upon the whole the German institutions approach nearer in their construction to the English asylums than to those formed on the plans of Esquirol. The newer institutions are usually so arranged that in one, or several, central buildings of two or three stories in height, the common rooms, the office, the chapel, the kitchen, the washing-houses, the store-rooms, the rooms of the officials, are all together. From each side of these one or two double-storied side-wings extend, either in direct communication or detached. In these are the different divisions for convalescents, boarders, quiet patients of middle and lower rank in life, together with attendants' accommodation, baths, &c. As a completion to the whole are small single-storied buildings as far as possible removed from the centre, which contain the cells for unruly patients, especially those requiring isolation. Each division of the house must have its own garden and pleasure-grounds for its inmates; all the stairs, windows, and doors must be seen to, that they are not only of sufficient strength, but also that they are of the simplest possible mechanism, and a sufficient guarantee for the security of the patients. The internal fittings of the dwelling and sleeping apartments in the division for the noisy and maniacal must be of the simplest description. They must also be immovable, and in the other parts of the institution simpler or more elegant, according to the station and requirements of the patients."

The foregoing gives what appears to be a fair description of asylum arrangements in England, France, and Germany some fifty years ago. Even then some attention had been directed to the necessity for providing workshops for the employment and instruction of the patients; but their occupation in asylums is still a matter of considerable anxiety to the various authorities, and of continual investigation, I believe, by the Commissioners in Lunacy, whose reports as to England and Wales concur with those of the authorities in Scotland and Ireland as to the insufficiency of the existing means of suitable employment of patients in asylums.

(*To be continued.*)

THE CANARY ISLES: STRAY NOTES DURING A RECENT VISIT.—II.

CLOSE to the English church outside Las Palmas is a particularly good wooden detached villa, roofed in with stained shingles. We pronounced it American at first glance, and so it proved to be. Its story is somewhat curious. It was originally shipped from the United States to England, the steamer calling on its way across the Atlantic at Las Palmas. In London it was bought by a gentleman, who brought it over to the Grand Canary again, and caused it to be erected where it now stands, an ornament and a pleasure to all who see it. The architecture of the United States generally does not find favour with the average educated eye; but in the designing and erection of villa residences American architects quite "take the cake." Nothing better, architecturally speaking, to our mind can be seen on the outskirts of any English or Continental city than the houses found in the suburbs of many American cities. Even Chicago, awful and intensely coarse as it is generally, can fairly and honestly boast of hundreds of capitally-conceived outside-town residences.

At Las Palmas the roofs are generally flat. During our stay at this city we were fortunate in having as fellow guests at our hotel (Hotel Metropole) Mr. Alfred Bovill, F.R.I.B A., architect, late of Buckingham-street, Strand, W.C., and at one time, we believe, the district surveyor of St. Pancras, N.W., and Mrs. Bovill, a most charming lady as well as an accomplished artist. Their present residence is at Villa Orotava, on the Island of Teneriffe. This place was formerly Arautápala, the capital, whereat lived the last Guanche king. Villa Orotava bears the goodly repute of having the finest climate in the whole world. Mr. Bovill, who is an ideal-looking jolly Englishman, had come to Grand Canary anxious to buy a cargo of pitch-pine for one of his clients resident on another of the islands, and to him we were indebted for much practical information upon local building matters generally. The flat roofs, he told us, have splinters put from joist to joist (these joists are commonly of téa, a native pine), and on these three layers of concrete, made of volcanic ashes and lime, 9in. or thereabouts thick, are laid. After this has been well rammed, a top coat of sand and lime is floated, and afterwards rubbed with stone to a smooth sanded face, and washed over with hydraulic lime. Wheelbarrows are unknown. Clay and sand are carried in small baskets. The bricks (5in. by 11in. by 2¾in.) and tiles (the latter are all semi-circular) cost about £2 per 1,000. The tiles go 30 to a square yard. Deals cost from £6 to £8 per 1,000ft. super. by 1in. thick. Pitchpine, which is very largely used, costs £9 for the same quantity. It is chiefly shipped to the islands from Florida in schooners of 300 or 400 tons burden. There appear to be a large number of cabinetmakers on the islands. These almost entirely use pitchpine, and very creditable work they do. Furniture, however, is largely imported. The first bullock-waggon we saw going up the steep roadside at Teneriffe was laden with a big packing-case, with "From Maple and Co., Limited, Tottenham Court-road," in distinct letters on its outside. The original pine on Grand Canary has nearly all been consumed. It is very hard, sinks in water, and a stick of it set alight at one end burns like a candle. Fuerteventura furnishes the best lime. It costs 1s. per 80lb. The stone at Grand Canary seems to be better than that on the other islands. A common stone called *tosca*, a friable material—some of it white, and in other quarries red—is worked into blocks 1ft. 8in. by 11in. by 6in. These are brought into town, tied by ropes, on long narrow waggons, or on the backs of horses, camels, and mules. They cost 2½d. to 4½d. a stone, the price varying with the distance taken. They are generally used for quoins, &c., to houses. In the country places the usual way of building seems to be to collect the boulders and stones, and with them make the outside of a wall 1ft. 8in. or 2ft. thick, and fill up as one builds with puddled local earth, which soon sets almost as hard as mortar.

At the time of our visit (last month) the working hours in the building trade were from 5.30 a.m. to 7 p.m., with two hours out for meals. The toilers practically work from sunrise to dark, so that in the winter the hours are two less per diem. Carpenters, masons, and other trades incidental to building get about 3s. a day in the towns, and 6d. less in the country districts. The average wages of labourers (*Peons*, pronounced *payon*) is 1s. a day; a man and a mule, or a camel, costs from 2s. to 3s. per day. The employer is expected to give the quadruped one feed per diem. In the quarries at Grand Canary, the best of the stonecutters get about 2s. 6d. a day; but many, we understand, only earn 1s. for a like period.

We have already remarked that it is sometimes rather difficult to come away from the Canary Isles. It is also, at times, not so very easy to get there. During our recent visit on the voyage out, we "slowed-down" for many hours, as, it being dark and misty, our captain could not find the bearings of the Isle of Grand Canary. Mr. Bovill records that he once took passage from England to the Canaries, and the weather being bad, the captain refused to land him and eleven other passengers, also bound there, so they were all taken on to Cape Town, the next stopping place—three weeks' passage further on!

The balconies, latticed windows (*postigos*), gurgoyles, and interior *patios*, or courtyards to the houses, and the *miradores*, or "view-towers," are perhaps the most picturesque architectural features in the islands. Many of these are several hundred years old, and evince charming work, both in design and execution. The exterior balconies and latticed windows are often quaintly carved, and nearly always painted. The water-spouts are great features. They project 3ft. or 4ft. out from the flat roofs, and often take the form of cannons, thus making the parapets look like so many lines of fortifications. Some of the designs assumed by these gurgoyles are very odd. Most of the houses are built around a central courtyard, which has a covered way on either side, and flowers, tropical plants, and a fountain in the centre. Herein many a picturesque nook and shady corner delight the artistic eye. The turrets to the dwellings are mostly happy in position and outline. At Las Palmas there is no rain, as a rule, after February until the next year. The beds of the rivers, known as *barrancos*, are everywhere perfectly dry. They are composed of boulders, mostly of volcanic origin, and are often crossed by good bridges. Especially so is the long stone one that spans the barranco near Telde. The main square at Las Palmas—the Alameda—is ornamented by colossal marble busts—one of Columbus, and the other of a native 16th-century poet. In our last we referred to the beautiful specimens of beaten ornamental silver work to be found in some of the churches; that of the Virgin del Pins at Teror may be mentioned as containing a particularly fine shrine of that metal.

Santa Cruz is, of course, the chief port of Teneriffe, although the real capital and seat of the bishopric is La Laguna, five miles or so inland. It was at Santa Cruz that Nelson was defeated by the Spaniards, and lost one arm and two flags. That occurred in A.D. 1797. The flags are preserved in glazed cases, hanging on either side of an altar on the north side of the Church de la Concepcion at Santa Cruz. This church contains a good, if rather high, pulpit of inlaid and coloured marbles, made in A.D. 1736. Its flight of stairs and approach are all in character with the ornate design of the pulpit, and at a little distance look part and parcel of it. As a matter of fact, these adjuncts are nothing but common deal, carefully painted to resemble the marbles used in the pulpit itself. The timbers in some part of the roofs exhibit the ornamental Moorish treatment already mentioned as observed on some of the other islands, and the wrought silver shrines are very beautiful. There are several large new buildings in hand just now at Santa Cruz. One of them, at the corner of a main street, now roofing, is a stone erection of goodly design, and appears intended for bank premises. Santa Cruz, although not such an important coaling station as Las Palmas, does a large and increasing trade in that way. Just outside the town, on the over-Mont-Cenis-like road to La Laguna, is the new bull ring of Salamanca, a large amphitheatre, built seemingly strictly on the lines of Spanish bull rings. It was on this hill, at an outside hostel, known as the Venta de la Cuesta, we tried the weight of one or two of the loads the women carry up the mountains into the interior. It is a usual thing for these hardy creatures to balance 18 large pans of brown clome all tied together upon their heads. Several of these burdens we handled; but each and every one was almost more than we could even lift off the ground. Near here is the oldest church on Teneriffe. It is known as that of Sta. Maria de Gracia. In the open space on which the cathedral at Laguna stands are heavy stone seats of quaint design. The same sort of seats—very effectively conceived—we saw repeated in other parts of the island. Don Alonso Fernandez de Lugo, the Spanish conqueror of Teneriffe, is buried in this cathedral. It also contains a marble pulpit of Genoan make. In the oldest church in the city (the Iglesia de la Concepcion) there is a fine silver reredos. A heavy iron grille at the western end of the church entirely walls it off from the part where the nuns worship. In the Convento de San Francisco is a massive silver altar and a good crucifix. The main road from Laguna to Orotava commences with a long avenue of eucalyptus-trees, in which, at short intervals on both sides of the road, are numerous crosses. Near Tafira, about half-way between Santa Cruz and Orotava, Mr. Comarcho, who owns the popular English hotel bearing his name at Santa Cruz, is building close by the roadside a goodly-sized hotel. It is now being roofed-in, and it stands on an elevated spot overlooking the sea. It will contain 25 bedrooms. He has raised all the stone used in its construction from the rock-side just behind the structure. Near here is what is known as "Humboldt's Corner." The renowned traveller in question declared the views to be obtained at that spot to be the finest in all the world. The sea stretches on the right, a vast and fertile valley is at one's feet in front, and the great peak is to the left. Much pumice-stone is found on the mountain, and on the summit is a large deposit of pure sulphur. Going gently down the steep, one passes Santa Ursula, a small village with a little church in its midst. The latter contains a remarkable old pulpit of carved wood (about 300 years old, we thought). It is highly decorated with colour. Are there any painted pulpits in England save the one in St. Margaret's Church, Westminster, S.W., which the late Sir Gilbert Scott, R A., had decorated at the time of the general restoration, a quarter of a century or so ago? This rural church owns a remarkably good life-sized sculptured representation of the Crucified Christ, and a very old organ and organ-case. There are some exceedingly ancient instruments on the islands in the shape of organs. As a rule, the choirs occupy the western end of the church, and have a large reversible music lectern in their midst. Some of these are full of interest. One we particularly remember that had a strikingly carved crucifix rising from its centre. In the vestry at Santa Ursula is a curious old bier of painted wood, so constructed that the head of the coffin it contained when carried would be considerably elevated. It is canoe-shaped, and short poles at the head and feet protrude, for the bearers' use. We remember seeing three curious hand-biers in the cathedral at Throndhjem, in Norway, a few summers ago. They were dated 1765 and 1791 respectively, and were probably about as old as the one at Santa Ursula. But the Norwegian biers were very long, measuring over 20ft. in length.

The English Grand Hotel at Port Orotava stands upon a hill of lava, and is an immense building, containing 250 or 300 bedrooms. It is seen as far off as is the State House at Albany, U.S.A., and, to our minds, is just about as much too big. Near to it is the new English church, and not far off a well-designed stone mansion is in course of erection for Colonel Wethered, an English gentleman, resident, we learned, at Marlow. Its architect is Mr. Alfred Bovill, already referred to. Puerto Orotava lies down some hundreds of feet below the vast hotel. There are many quaint bits about this little fisher village. The groups of old houses and the colouring thereupon seen from the Mole struck us as being the most exquisitely beautiful we had ever met with anywhere. Villa Orotava is a few miles away, and although only a place of something like 9,000 inhabitants, is entirely lit by electric light. Here we had the pleasure of meeting Mr. Alfred Sax, of the firm of Messrs. Julius Sax and Co, the widely-known electrical engineers of West Smithfield, E.C.

The tall, slender date palms are marked features on the islands. The biggest is at this town, and stands 110ft. high. It is an old tree, and history records it was just the same height as it is now 400 years ago. Near to it there formerly stood an immense dragon-tree. Humboldt, who was born A.D. 1769, estimated its age at least 6,000 years. Its butt measured 48ft. 6in. girt 60ft. above the ground. It was 95ft. high. The original stem of these peculiar trees invariably rots away, and so the trunks are hollow. The interior of this particular tree was used for ages as an aboriginal temple, and after the Spanish Conquest Mass was sung therein. This tree was thrown down—we did not learn how—some eight-and-twenty years ago. An old chestnut tree hard by, which the Spaniards planted in A D. 1493, measures 27ft. 6in. girth. The dragon-tree is a native of Teneriffe, and its growth as remarkable as is that of the *Euphorbia Canariensis*, referred to in our last. The most venerable and the largest of the species at present existing on the island stands near the church at Icod, and is said to be over 3,000 years old. The broom, known locally as *retema*, grows up the hills to a height of nearly 11,000ft. The téa (*Pinus Canariensis*) and the native cedar (*Juniperus oxycedrus*) are the next hardy, and both thrive at an altitude of 8,000ft. The principal forest trees not already mentioned are the *venatico*, or native mahogany (*Persea indica*); the *palo blanco* (*Peccoma excelsa*), a hard white wood; the *til* (*Oreodaphne fœtens*), a hard dark wood; and the *barbusano* (*Phœbe barbusano*), another very hard and dark wood. The last mentioned has the reputation for being one of the strongest woods known. It is much sought after, for the beams of native wine-presses. Some species of gigantic heather grow 40ft. to 50ft. high, and girths 5ft. at their stem.

There are many other trees. Amongst them may be named the oak, plane, elm, cork, beech, cypress, umbrella pine (*Pinus pinea*), coral-tree, camphor, india-rubber, pepper, walnut, orange, vine, lemon, peach, pomegranate, apple, &c. In the island of Hierro, which we have already noticed as the most western of the group, there are no springs, and its inhabitants depend entirely on the rain for their water supply. There used to be a tree there called El Garoe, which, tradition records, distilled enough water from its leaves to supply all that was required. This is probably true, and if the site of the long since disappeared tree could be found, and some pines or laurels planted on the spot, it is not unlikely that the new trees would distil water also. Mons. Sanson, in his "Description of the World" (1670), refers to this marvellous tree (page 75), and says: "In this isle there is no fresh water found, only in the middle of the isle there grows a tree whose leaves are much like those of the olive, which, being always covered with clouds, drops from its leaves into a *cistern* which is underneath it very good water, and in such great abundance, that it suffices all the inhabitants, as also all the *cattle* and living creatures, in the island. . . . There is no fresh water, neither of *rivers*, *fountains*, *lakes*, nor *wells*, and without this tree it would be unhabitable. One Jackson, an Englishman, who reports to have seen, considered, and measured this tree in 1618, saith, that the water falls into a *pond* containing 20,000 tuns, which in one night is filled, and that from this *pond* the water is by divers channels conveyed into other *ponds* or *cisterns* through the whole isle, which is very well peopled, some say it hath in it 8,000. . . . Moreover, Jackson assures us that this tree hath neither *flowers* nor *fruit*, that it is on the side of a mountain, that it dries up in the day, that at night a cloud hangs over the tree, and that in the same time it distils its water drop by drop." But, "*Firdinand Suares* saith this tree bears a *fruit* like acorne, of a pleasant taste, and aromatick. . . . Most authors agree that its leaves are alwaies green, and compare them to the laurel."

Although there are no railways on any of the isles at present, a survey has been completed between Santa Cruz and Orotava (a distance of rather less than thirty miles), and it is possible that the scheme may be carried out with a light line at no distant date.

We will conclude these somewhat lazily jotted-down notes by a story told us by our state-room steward on our voyage home again to Devonshire's pleasant shores. The late Mr. Bull, of Belvedere Works, Southampton, will be remembered pleasantly by many readers as the energetic contractor for the late Mr. G. E. Street's Law Courts in the Strand. He also carried out a large contract in Cape Colony. The last time he was at the Cape, he met with some wood he took so great a fancy to that he had his coffin made of it, and brought it home with him. Our informant assisted Mr. Bull, when he came on board, to stow the not very pleasant-looking package, snug and taut, in his own state-room. When, not so very long afterwards—to the grief of all who knew him—Mr. Bull died, his remains were reverently deposited in the casket in question.

Harry Hems.

FOUNDATIONS FOR THE CATHEDRAL OF ST. JOHN THE DIVINE, NEW YORK CITY.

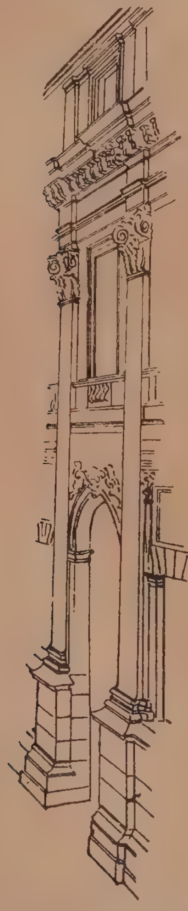
Progress has been made, according to the *Engineering Record*, in the foundation work of the Cathedral of St. John the Divine, New York City. The proposed cathedral will be one of the largest and finest ecclesiastical structures of modern times. The site is on the crest of a bluff overlooking a large part of Upper New York and the Hudson River. The church will be 520ft. long by 290ft. extreme dimensions, and of about the size of St. Paul's Cathedral. The foundations for the tower and adjacent choir are said to be well advanced. Much delay and expense have been caused by the unsatisfactory condition of the ground. The rock outcrops the site; but the excavations have revealed difficulties, owing to the surfaces of the ledges of rock being at a sharp angle, and to the inequality of the soil and softness in places, which rendered considerable excavation necessary. Several large pits were excavated, each containing the piers and other important foundations. The main piers at the crossing of transepts, nave, and choir for the main tower are thus dug out to the solid rock. The rock surfaces were dressed, cleaned with wire brushes and hose, and the space filled up to a maximum depth of 45ft. with concrete, upon the level surface of which the cut-granite pier footings are laid. The tower rests on arches sprung high in air, from four smaller corner towers with flying buttresses. Each of these towers is calculated to transmit a pressure of 17,000 tons to the bed of concrete, which supports its base 38ft. square, thus making a load of about 10 tons per square foot. To transmit this pressure equally the "concrete is composed of cement, sharp sand, and gravel, in proportion of 1, 2, and 3 respectively, mixed quite dry, and rammed by 20lb. rammers from 10in. horizontal layers to 8in. thick layers, and till the water was flooded to the surface." Each layer of concrete is treated like blocks of stone; between the layers that are rammed and left over-night a mortar of 1 of cement and 2 of sand is spread to give coherence between the layers. The concrete work is of unusual magnitude, and the mode in which the concrete is made, mixed, and rammed, so as to produce a homogeneous mass, described in detail in the *Record*, is remarkable. The plant and machinery for mixing the concrete and distributing it by means of trucks and derricks are admirably devised for the work.

CLASSIC DETAILS AND THEIR APPLICATION *

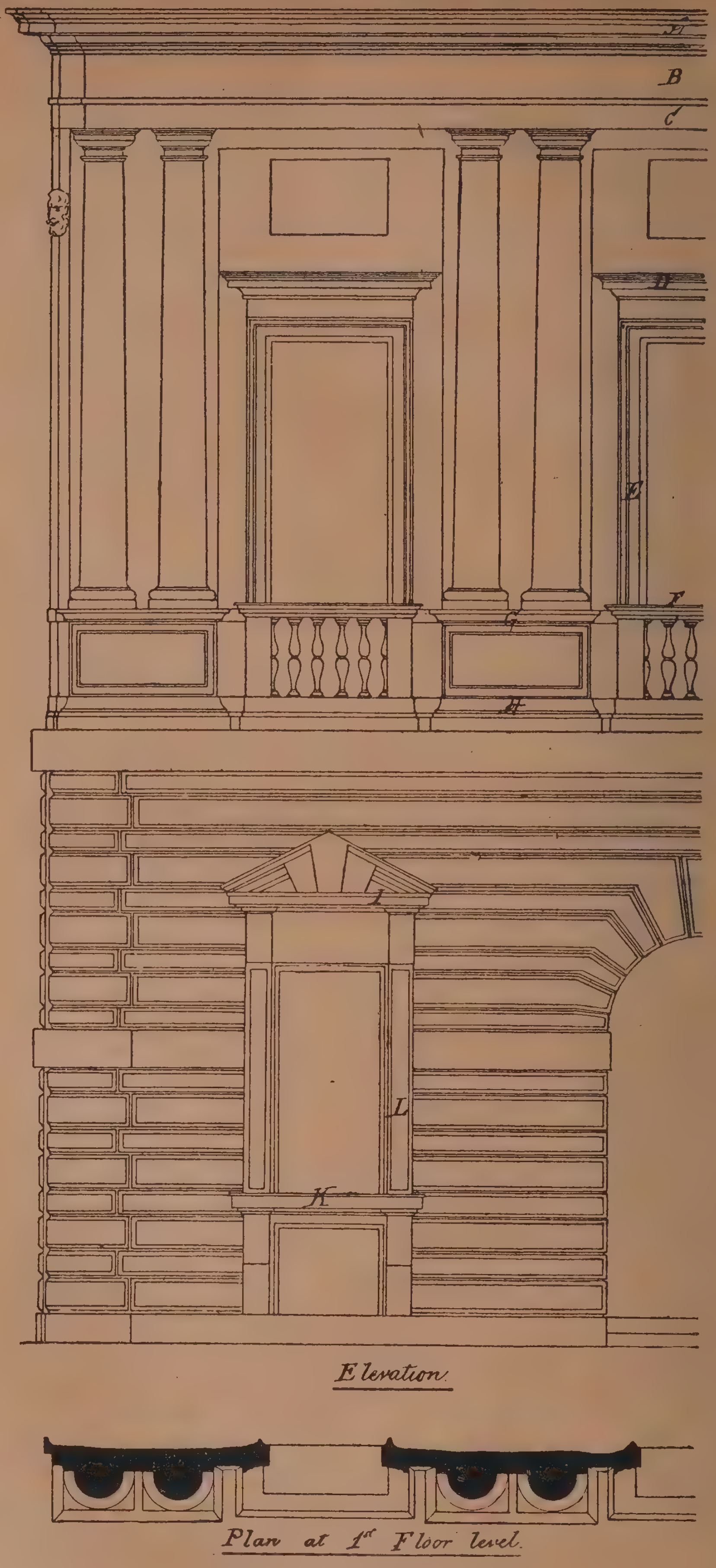
By G. A. T. Middleton.

VIII.—ITALIAN RENAISSANCE: BUILDINGS WITH SINGLE ATTACHED ORDERS.

THOUGH Raffael, in his Pandolfini Palace at Florence, had adopted the usual Florentine system of treating the Palace as orders, without the use of many parts, such as the columns, of which the orders would in Classical times have been more strictly considered to consist, yet when he built the Caffarelli Palace at Rome, he employed one complete attached order. This marks a new departure, and is one of the distinguishing points of difference, generally speaking, between the works of Florence and of Rome. Certainly, the Farnese Palace, of which there will be more to say presently, is treated in the Florentine fashion externally; but, generally speaking, complete orders, either single or super-imposed, are used for the sake of ornament, attached to the outer walling, but without constructional function.



Palazzo Valmarana, Vicenza.—Andrea Palladio. (From Schütz.)



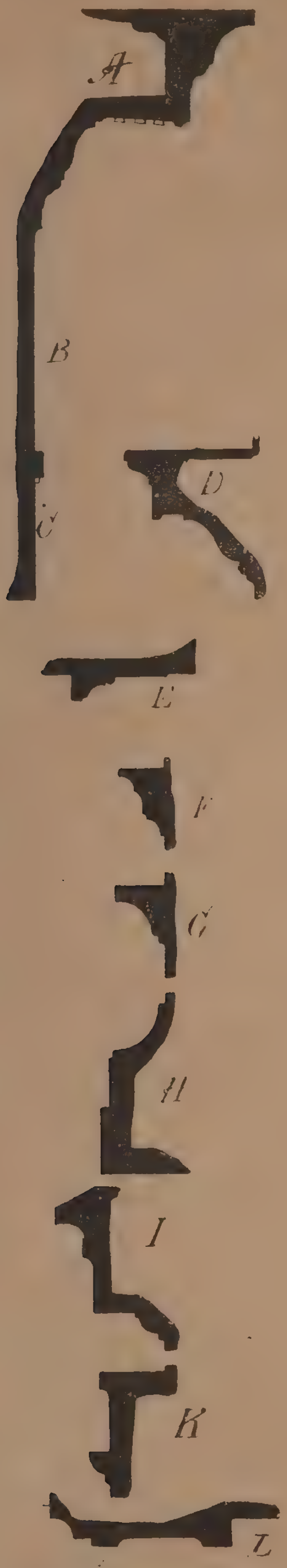
Caffarelli Palace, at Rome. (By Raffael.)

In the example under discussion—the Caffarelli Palace—the lower story is heavily rusticated, with a plain band of stone to form its plinth, and another half-way up, inserted at the springing of the arch of the doorway, and still another, absolutely plain, but projecting rather more than those below, to act as stringcourse, and separating the lower from the upper story.

The cornice is not so deep as usual in comparison with the height of the whole building; and it will now be seen that, instead of proportioning it to the building as a whole, as had hitherto been the rule, Raffael had rather proportioned it to the Doric columns of the upper story, to which it more immediately belonged. With these columns, too, he took considerable liberties, both in proportion and detail, as compared with the work of the Romans, upon which all the Renaissance was founded. They are tall and slender, and are placed in pairs close together, with a considerable distance between the pairs, and each pair resting upon a surbase. The effect is perfectly harmonious, and allows for the introduction of windows, thus in every way carrying out the ideas of the Italian architects as to the employment of the forms of the more ancient architecture of Italy, to meet the needs of the buildings which they were called upon to erect; and it is characterised, as all the best work is, by extreme restraint, and the employment of the least possible ornament, to satisfy the needs of the case. The only carving upon the front of the Caffarelli Palace is the small mask on the corner, where there is usually to be found the coat of arms of the owner.

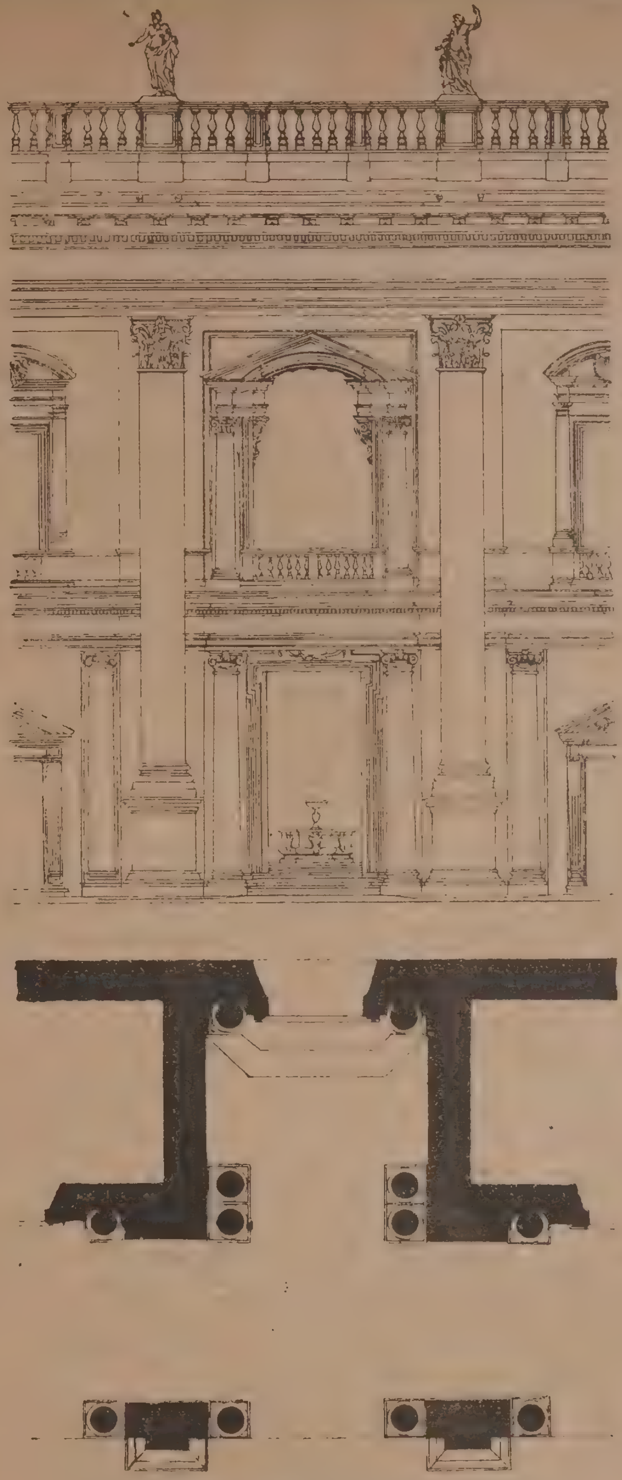
---

* All rights reserved.



Mouldings from the Caffarelli Palace, Rome.
(By Raffael.)

A reference to the details will show upon comparison considerable difference between the treatment of the mouldings of the Romans and by their successors of the Renaissance. There is the same use of the circle and its segments, but with considerably greater freedom and a higher appreciation of the exact part which each moulding is to play. Each one seems to have been most carefully thought out, having regard to its position, above, level with, or below the eye; and particular attention may be directed to the frequent use of the cavetto, and to the very different curves which are given, both to the cyma recta and to the cyma reversa, wherever they are used, as in mouldings A and D.

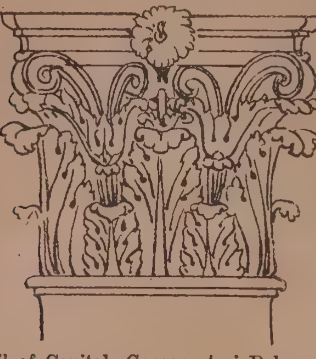


Courtyard of the Conservatori Palace, in Campidoglio, Rome.
(By Michael Angelo.)

The employment of single attached orders is generally considered rather a sign of Venetian than of Roman work, and correctly so. Single orders were there introduced by Palladio, and greatly used both by him and his successors, often comprising the entire height of a building, and including several stories. This carries off the cornice well as proportioned to the whole building, for at the same time it is proportioned to the attached order; but the separation of the stories is, of course, not so well marked, and a vertical tendency of the general lines becomes prominent to an extent which is not usual in architecture of the Classic type. In the Valmarana Palace, at Vicenza, which may be considered to be fairly typical, tall Corinthian pilasters rest upon a deep plinth, and are continued through the two lower stories of the building. They carry the main cornice, which, though rich, is plain compared with the Corinthian cornices of the Romans, and is destitute of carving. Above this, however, in this instance, there is a third, or attic, story; but the building would have been complete as an architectural composition without it.

A very similar method of treatment had been attempted by Michael Angelo in the courtyard of the Conservatori Palace, in the Campidoglio, Rome; but the Corinthian pilasters there hardly give the effect of carrying the cornice, and the result is by no means so good as it generally is in the work of Palladio and his followers. Analysis of the cause shows the pilasters to be too widely spaced—too weak for the task imposed upon them—and the pedestals upon which they rest is but a poor substitute for the continuous plinth. The rich effect, however, of the constructional

Ionic order to the lower story, carrying the intermediate cornice, which the main pilaster interrupts in crossing, is a point well worth attention, and a detail of the pilaster capital is appended for comparison with the capital of the Pantheon, illustrated on p. 40 of the Building News for July 12th last, in order to show how closely in such respects the Renaissance architects followed their models of earlier times.



Detail of Capital, Conservatori Palace, Rome.

◆

CAST IRON IN BUILDER'S AND CONTRACTOR'S WORK.—I.

By Joseph Horner.

Cast iron, though now so common, is a comparatively modern product; that is, its history is very much more recent than that of malleable iron, or of steel. The latter were known two thousand years ago. Cast iron was not used as a definitely distinct product of manufacture until the later Middle Ages. In some parts of Africa the iron reduced by the native smiths is identical with that which was manufactured a couple of thousand years ago—that is, either malleable, or steely, not fused or cast. The peculiarity of the products of the primitive furnaces, of the Indian and African forges, and of the Catalan furnaces, is, that from the same furnace, and even from different parts of the same charge, malleable iron and temper steel can be produced at will, dependent on the conditions which the smelter desires to set up. Cast iron, however (which differs from malleable iron and steel mainly and essentially in the presence of a larger amount of carbon, and of some other foreign elements), is not produced by these methods. In these, small quantities only of ore are reduced at once. The heat is not sufficient to cause fusion, but only a pasty condition of the resulting bloom, and the product is either a soft, or a steely iron, according to the proportions of fuel and ore used, the nature of the blast supplied, and the duration of the process.

It does not seem at all clear when, and how, the knowledge of the production of cast iron as a distinct product first came about. Statues of cast iron are mentioned by Greek writers, but none are known to be in existence, and it is difficult to understand how they could have been cast at all, because the rude hearths of India and Africa, which are probably practically identical with those of earlier ages, are not capable of producing a liquid product. More than one modern writer has contended that the knowledge of cast-iron ante-dates the Christian era; but the evidence adduced is wholly documentary, and though iron corrodes so readily, that would not account for the total disappearance of all heavy masses, such as pigs, and statues. Probably the earliest known casting is a tombstone—the incongruity must be pardoned—in Burwash Church in Sussex, which dates from the 14th century. Sir I. Lowthian Bell places the introduction of the blast furnace between the years 1556 and 1618, because the work of Agricola, published in the former year, contains no allusion to it, and the work of Dud Dudley, published about the latter year, mentions mottled and grey irons. But the Prussian Stückofen furnace, described by Agricola, was a Catalan furnace extended into a shaft, in which iron could be liquefied, as well as rendered malleable, and this, taken in conjunction with the existence of the 14th-century tombstone, seems to show that the knowledge of cast iron might have been about contemporary with Chaucer. Henry Poole, in a paper contributed to the Royal Society in 1676, alludes to the pig-iron as being taken from the high-blast furnace to the open hearth charcoal refinery. So that the making of cast iron was a recognised industry at that time.

It was evidently not until the device of erecting a shaft over the ordinary furnace was adopted that the regular production of cast iron was possible. By such a device the draught would be increased, and the iron liquefied. Whenever that was effected, the art of casting in iron was inaugurated, and the utility of the metal became capable of indefinite extension. But its manufacture was long limited by the practice of smelting with charcoal.

The earliest uses for cast iron were the manufacture of cannon and balls, replacing the old "gun-stones" alluded to by Shakespeare, and the old andirons or fire-dogs, and grate-backs and railings. Many of these still remaining attest to the skill of the early founders. The iron railing round St. Paul's is one of the earliest extensive works in cast iron. Sixpence per pound was paid for it, the total cost being £12,000. It would not cost a penny a pound now. The rails were executed by several contractors, but the bulk was cast at Lamberhurst, near Tunbridge Wells, in Sussex. The first English cast-iron cannon were made at Buxtead, in Sussex, in 1543. Some of the earliest cannon made in England are still preserved in the Tower grounds. The industry grew so rapidly that in the reign of Elizabeth iron ordnance was exported, whereas formerly it had been imported. Sussex became the chief locality of the new industry. In the reign of James I. about one-half of the iron produced in England was manufactured in Sussex. But this received a check by the laws passed to prohibit the felling of forest-trees, which were required for the renewals of England's navy and for other purposes. Since all the cast iron at this period was smelted with charcoal, the ironmasters migrated to other parts of the country, or were ruined. The first Act, prohibiting the destruction of forests within 14 miles of London for iron making, was passed in 1581. Other Acts followed from time to time, until finally, as a result, the Sussex iron industry died out entirely about the close of the 18th century.

It was not until the discovery by Dud Dudley that iron might be smelted with pit-coal that the industry could truly be said to have been born. Dud Dudley's first patent for smelting by means of pit-coal was taken out in 1620. It was renewed in 1638. But the iromasters did their utmost to ruin his trade, and being also an ardent Royalist, he became involved in the troubles of the Revolution, and died, a disappointed man. The iron industry still declined, until in 1725 its production had fallen to less than 13,000 tons. But at about that period Abraham Darby, 1720-1733, was working on the lines inaugurated by the unfortunate Dud Dudley. Darby substituted charred coal, or coke, for coal, and made a fortune. Darby's first success was in the making of cast-iron pots for domestic use, which, previous to that time, had been mostly imported from Holland. He started the Coalbrookdale works in Shropshire in 1709, and turned out other light ironwork besides pots, using at first charcoal only. But the industry was slow in recovering its lost ground. Even in 1740, only 17,350 tons of pig-iron were produced in Britain. In 1788, the product had risen to 68,300 tons, and three-fifths of this was still smelted with charcoal. At this period the cost of pig was from three to four times its present price. At the beginning of the present century it ranged from about £6 to £9 per ton. In 1825 it reached its highest mark—£12 per ton.

The discovery of the Blackband ironstone in Scotland, in 1801, by David Mushet, in which the ore and fuel necessary for the extraction of iron exist in combination, marked an important epoch in the history of the Scottish iron trade, as well as in that of other districts in which the same formation occurs. In 1828, the hot blast was invented by Neilson, and within four years of this the firm at the Clyde works in Scotland were producing twice as much iron as previously with the same expenditure of fuel. The hot blast then used was at a temperature of only 600° Fahr., or about half the temperature now employed. The real era of cast iron dates from this period. Thenceforward the manufacture of cast-iron articles grew steadily. The Sussex blast furnaces were only capable of producing from three to four tons per week, while a modern furnace will turn out 550 tons or more. Without the invention and growth of the steam-engine and the manufacture of powerful blowing engines, the development of the iron industry would have been confined within narrower limits; but these have developed concurrently, and superseded the old water blast used with the primitive furnaces.

But with each step in the growth of the iron manufacture the quality of the product has deteriorated. The iron and steel of the rudest primitive furnaces has never been surpassed, and is seldom equalled. The quality of average cast iron has never been worse than it is to-day, and it is fortunate that wrought iron and mild steel are capable of being substituted for it in all structures where great strength and reliability are essential. As the subject of wrought iron and steel does not concern us in these articles, I make no allusion to the various steps in the growth of these industries.

After the smelting of cast iron from the ore with pit coal had become an industry, almost every piece of structural work which could be made in iron was made in that material, timber being the alternative structural material. That was the era of cast-iron bridges, many of which still remain, testifying to the excellent quality of the material then smelted by the cold-blast process. The first cast-iron bridge made in England was built by a grandson of Abraham Darby, at Coalbrookdale. It was erected over the Severn at Broseley in 1779. The span is 120ft., and it is still in existence. The facility with which the molten iron could be made to assume any required form, and the large masses in which it could be cast, caused it to be employed for all conceivable classes of work, both structural and ornamental. It was not until after the inventions of the Craneges, of Onions, of Cort, and Hall, by which the production of malleable iron was rendered practicable in much larger masses and in forms which could not be produced at the hand forges, that the use of cast iron for some purposes for which it has been previously used began to decline. The elasticity and ductility of the new material gave to it such distinct advantages for certain classes of work that it began to supersede cast iron for those classes of work, just as to-day mild steel is superseding—perhaps I ought to say has superseded—wrought iron for the same kinds of work, and for the same reasons. But the operation of the first named went on much more slowly than that of the latter, because of the high excellence of the cold-blast iron. After the introduction of the hot blast the quality of the product deteriorated simultaneously with an increase in the masses in which wrought iron could be rolled, and this concurrence of circumstances accelerated the displacement of the former by the latter. And, most unfortunately, cast iron has received much ill-deserved discredit because of the dishonesty of some greedy manufacturers, who have not scrupled to risk safety and reputation for the sake of excessive gain. I have had to do with cast iron all my life, and I say unhesitatingly that for certain purposes it is a splendid material; a better material than any other; a material which is, as far as our present knowledge goes, never likely to be displaced by any other. But then it needs to be used and treated intelligently. So much depends on the design, on the practical details of the work itself, that a man is scarcely qualified to inspect, or to form a reliable judgment on cast-iron work, unless he has been practically engaged in such work. I will give illustrations of what I mean in the course of these articles, in which I propose to treat of the nature, properties, and uses of cast iron, the essential differences between sound, good, and reliable castings, and those of an opposite character, and of the methods by which one may be distinguished from the other.

◆

PRACTICAL RIVETING.

Rivets play precisely the same *rôle* with respect to iron and steel work as bolts and spikes do in carpentry, and screw and nails in joinery work. The object in all cases to be attained by their employment is the prevention of all relative motion among the separate parts of the metallic girder, timber frame, or piece of furniture which they bind together. In the particular instance under consideration, the stress takes the form of a direct shear, in a direction probably at nearly right angles to the axis of the rivet. This shear is clearly due to the tendency of the plates, bars, or other sections of iron which are riveted up to slide one upon the other. Recently some very interesting and valuable experiments have been carried out in connection with the whole question of practical riveting, which throw a fresh light upon some points which have always been regarded with some doubt. During the actual operation of riveting, when cooling, being "closed," and occasionally under other conditions, rivets are exposed to tensional stresses of a very severe character, in some cases even exceeding the original elastic limit of the material itself. Whether the iron or steel work be punched or drilled, or whether hand or machine riveting be used, there is but one result to be effected. It is quite possible, although it may read a little paradoxical, that a rivet may, in the discharge of one part of its duty, so act as to completely nullify or prevent any shearing stress upon it whatever. In order to fully understand how this can occur, we must examine what takes place during the actual operation of riveting. Should machine riveting be used, it is especially necessary to take the precaution of bringing the bars, plates, or other pieces into fair contact by means of temporary bolts. No great pressure need be exerted, but sufficient to bring the two pieces well "home." If this preliminary precaution is neglected, as it sometimes is, the rivet metal will be squeezed out between the interior surfaces of the plates or bars, instead of filling the rivet-holes. The result of this intrusion of material in the wrong place is that a ring or small collar becomes formed on the shank of the rivet, and the two pieces cannot be brought together until the bulge be removed. Under the most favourable circumstances the cutting-out of rivets is not a job to be desired, and all practical riveters are aware of the difficulty and extra trouble involved in cutting out rivets which have been put in by hydraulic machinery. It is also certain that if the plates or pieces to be united are thin, their condition is not improved by the unavoidable slogging and hammering to which they are exposed.

When a rivet, either in machine or hand-riveting, commences to cool, it also commences to contract, with a force proportional—although not in a direct ratio—to the temperature to which it was raised. This contraction is evidently, mathematically speaking, of the third order—that is, of a cubical character. In a lateral sense—that is, in a direction transversely to the geometrical axis of the rivet—it is not exactly favourable to good riveting, since its tendency is to prevent, although to a very small extent, the complete filling of the rivet-holes. Great stress is, and always has been, very properly laid upon the importance of rivets thoroughly filling the holes in which they are inserted, but there is no evidence of the failure or collapse of a bridge girder or roof truss resulting from rivets not filling the rivet-holes. In the recent experiments to which we have already alluded, one of the conclusions arrived at was to the effect that rivets do not fit exactly—that is, absolutely and completely fill the rivet-holes. Even if we assume this assertion to be universally true, it must not be forgotten that there is a great difference between a rivet which fills the rivet-hole in the practical sense of the term, and one which does not, and is called a loose rivet. In steel and iron constructions subjected to the impactive action of heavy moving loads to shocks and jerks, and to "reversal" of stresses, many of the rivets undoubtedly work loose after some years of wear and tear. There is another direction in which the contraction of rivets, while cooling, exercises a very beneficial effect upon the security of the joint, both as regards the rivets themselves and the parts of the structure they unite. This is the contraction in the direction of the longitudinal axis of the rivet, which, through the medium of the rivet-heads, grips the pieces joined together like a clamp or vice, with a pressure which it is impossible to estimate or measure with any degree of exactitude. The greater the pressure thus exercised the greater becomes the friction between the plates—assuming for the sake of simplicity and conciseness that plates are the parts to be united—and their resistance to the sliding of one plate upon the other is also proportionally augmented. If there were no friction between the plates, they would, when under stress, tend to slide, and shear the rivets. It is therefore evident that the greater the friction, the less is the shearing force and the stress on the rivets. In a word, they are inversely proportionate to one another.

It is quite possible, and very probably frequently occurs, that the grip, or vice-like squeeze of the rivets upon the plates, assumes such a high degree of intensity as to increase the friction to an extent which virtually prohibits all sliding of the plates one upon the other. Under these circumstances the frictional resistance of the plates is so great that it can take up the whole stress upon them, and the shearing strength of the rivets is not called into play at all, as was stated at the commencement of our article. But as the amount of this frictional resistance between the plates is quite uncertain, no reliance can be placed on it, and in calculating the strength and dimensions of riveted joints it should never be included in the calculation. The reader will find full information respecting this subject in our articles on "Riveted Joints" in the Building News, 1893 and 1894. Another reason for neglecting the frictional resistance of plates is to be found in the fact that whatever may be its initial intensity, it diminishes in the course of time, especially in the case of structures exposed to sudden and frequent vibration. The variable nature of the resistance to sliding is due to several causes. One is the temperature at which the riveting is commenced, continued, and completed. The last stage, or that in which the rivet is "closed," has to be attended to with particular care in the case of steel rivets which are put in by hand, as they will not stand the hammering and knocking about at a low red heat with the same degree of impunity as their iron brothers.

Again, the material itself of which the rivet is composed exercises a considerable influence upon its contractile power, as also does the method or system of riveting employed. Although, as previously stated, there are no means of measuring with absolute accuracy the limit of the resistance to sliding, it varies nevertheless with the limit of the elasticity of the material of the rivet. Should the stress upon the rivet, in its plate-gripping effort, exceed the limit of elasticity, it will gradually lose its hold, though not altogether. It was ascertained in the experiments under notice that in some instances where the rivet-holes were drilled and machinery employed for riveting, the pressure culminated in a resistance to sliding which was nearly equivalent to an actual weld.

It is usual, and indeed necessary, when designing a riveted joint to take into consideration the different, or at least the principal different, ways in which the joint might fail. Otherwise, the length and thickness of the wrappers, as well as the number of the rivets, could not be arrived at. The theory that the rivets might hold on one side of the joint, while those on the other side were either sheared through or the plate torn, is not confirmed by the late experiments on the failure of joints of this description. It was found that where there were several rivets, as there are in all ordinary joints, they all fail together, the yielding of the first one or two entailing the destruction of the others. In another respect the experiments fully bore out the well-known practical rule, that the ultimate shearing strength of rivets per square inch of sectional area is not less than three-fourths of their ultimate tensile strength. Since the frictional resistance of the plates counts for something, we, in our calculations, adopt the same factor for both kinds of stress, which is more simple, convenient, and quite sufficiently accurate. It may be mentioned that rivets may yield a little, without all at once jeopardising the safety of a structure; but the partial failure ultimately conduces to their general deterioration, and affects the life and durability of the bridge or girder. In all experiments connected with the testing of rivets, or of riveted joints, all holes should be drilled and hydraulic machinery employed. Where steel is the material under trial, punching the holes should never be employed unless the plates or bars are very thin. Although drilling is not attended with the disadvantage of injuring the material round the rivet-hole, in the manner in which punching does, yet the drill leaves a sharp edge which should be slightly rounded off, or it will tend to facilitate the failure of the rivet by shearing. One of the chief practical advantages of machine riveting is the regulation of the pressure, and the general control which it allows the workman to have over his work.

◆

BOOKS RECEIVED.

Diphtheria and its Associates, by Lennox Browne, F.R.C.S.Ed. (London: Baillière, Tindall, and Cox).—The volume before us is based on a course of lectures delivered by Dr. Lennox Browne, in which their author emphasises "the desirability of assimilating the teachings of bacteriology to the purposes of practical medicine." Clinical observations, as he shows, gain additional confirmation, and are often corrected by the light of bacteriological science. We can only give the titles of the chief chapters, which are illustrated by many beautiful photomicrographs. The history of diphtheria forms the first chapter, in which the learned author considers the many hypotheses as to its origin. The differentiation of several allied maladies has progressed of late years, and these are noticed. The etiology, the predisposing causes, are also entered into at some length; after which chapters on the pathology; bacteriological diagnosis of diphtheria, and its associates; clinical diagnosis of the disease; the treatment of diphtheria; croup; remedies in diphtheria and the serum treatment, are given. The great value of the facts brought forward by the author, and the opinions he deduces therefrom, cannot be overrated. The latest views are recorded, and the author lays down the lines of a safe middle course in the treatment of this formidable disease.——*Glossary of Technical Terms used in Architecture and the Building Trades*, by Gavin James Burns, B.Sc. (London: E. and F. N. Spon), is a useful compilation, based on the author's instructions to the students attending his classes in building construction. The definitions are short but concisely stated, and would have been rendered more useful by a few more illustrative diagrams. For the student's use this glossary will be found of value.——*The Law Relating to Building Societies*, by Edward Albert Wurtzburg, of Lincoln's Inn, Barrister-at-Law. Third edition (London: Stevens and Sons, Ltd.)—This edition has been thoroughly revised and brought up to date. The law relating to building societies has been amended, and several decisions have been given which have thrown new light on the law. The appendices contain the several statutes relating to incorporated societies, the building society regulations of 1895, &c. In this volume the author treats of the formation of these societies, their purposes and powers, the rights and liabilities of members, mortgages to building societies, settling disputes, winding up, and other questions which have more than general interest just now. The book is well printed, with marginal headings, and is furnished with a complete table of cases and a copious index. Everyone who is a member of a building society, or is officially connected with one, ought to possess this compendium of the law, a knowledge of which would save many mistakes and heartburnings.——*Transactions of the American Society of Civil Engineers* (May) comprises a few instructive papers. One is by Mr. Herbert M. Wilson, M.Am.Soc.C.E., on the "Topographic" map of the United States, which describes in detail the methods employed by the U.S. Geological Survey on this work, which is being proceeded with simultaneously in all portions of the country. The triangulation executed in the field is clearly shown by a map. It was done on the plane-table board. The red lines represent the various sight-lines from one occupied station to another. Heavy red lines indicate the three primary triangulation stations—Giant Mountain, Hurricane Mountain, and Blueberry Hill, which are connected by straight lines. Tertiary locations are also represented. Vertical angles were taken to all of these points, and their elevations computed within a few feet. Meanwhile, assistants are carefully traversing all roads, using a light form of plane-table, having no levelling apparatus, on which is a compass needle. The distances are measured by the odometer on the wheel of the buggy on which they ride, and every road in the area is thus surveyed. Fore and back sights are taken, and lines are plotted to prominent objects—as hilltops or buildings. In this way the assistant connects his work with that of the topographer, as he locates all houses on the lines of traverse. This work is plotted 1 mile to 1in. It is stated the average traverseman covers about 12 miles a day. The plates illustrating the triangulation are admirable specimens of colour engraving. To all interested in survey work this paper is of interest. *Management of Highways*, by E. Parnell Hooley, Assoc. Mem. Inst. C.E. (London: Biggs and Co., Salisbury-court, E.C.), is a useful brochure, originally prepared as a paper read at a conference of the new Urban and District Councils of Notts, in 1895. Mr. Hooley has attempted to bring before his readers the practical bearing of the clauses of the Local Government Act, 1894, on highways, and the powers and duties imposed on the new District

Councils by the Public Health and General Highways Acts. The author, who is county surveyor of Nottinghamshire, usefully applies the practical experience gained by the county council of this county, for the benefit of other authorities. He points out the many defects of previous mismanagement, such, as applying material at the wrong time of the year; want of skilful application of materials; "starving," and use of improper materials; false economy and insufficient manual labour, and of not having supply of such labour regularly. These several defects are explained, and will be usefully read by all highway authorities. The author also deals with the system of book-keeping, and shows that the chief defects in the accounts is the "absolute impossibility of tracing the cost of a particular road for any purpose, and the consequent trouble to obtain any information of a reliable nature as to checking waste or improper expenditure." The list of books or accounts that are necessary for audit are given: wages book, materials account book; team; tradesmen's bills, and miscellaneous expenses for repairs. Mr. Hooley points out the defects of the present system of accounts, such as the ordinary "materials" book, which gives no check on the weight, cartage, or place of deposit, only of amount of material supplied. The system of book-keeping and forms in use in Notts are given, and these are kept in the surveyor's office. The value of this little book will be found in the specimens of pages of Manual labour book, Team labour daywork, Materials account book, &c., which give the various headings and columns; also forms of tender for day and piecework, for materials, &c. Other valuable details are given, such as the form of county surveyors' cash book, memoranda of agreement between contractors and county council.——*The Management of Dynamos*, by G. W. Lummis-Paterson, Electrical Engineer (London: Crosby Lockwood and Son).—This little handbook is intended for the use of mechanics, engineers, students, and others who have, or will have, the charge of dynamos, and who wish to know the theory and principles of their construction. The theory of the dynamo is first described, then the construction and action of the various kinds of dynamos, and lastly the practical working and management. The diagrams are numerous and clearly drawn, and the chapters are divided into sections of marginal headings. The magnetic principles are well explained by the aid of illustrations of the magnetic field, solenoids, curve of saturation of the electro-magnet, the cutting lines of force of conductors. The types of armatures are illustrated and described, and the author gives a very full explanation of the principles before he discusses the practical working and management of dynamos. We can safely recommend this handbook to all students and engineers. *Notes on Shippo: a Sequel to Japanese Enamels*, by James L. Bowes, author of "Japanese Pottery," &c. (London: Kegan Paul, Trench, Trübner, and Co., Ltd.)—The author of this work is well known for his researches into the history and manufacture of Japanese wares. The information here collected in volume form was first intended for a paper to be read before the Japan Society. Mr. Bowes, in his "Japanese Enamels," describes the art of *cloisonné* enamelling, and in these "notes" he records valuable information upon the subject which has since come into his possession. In the work on enamels, he said: "The Japanese themselves designate these works as *Shippo* ware, meaning that they represent the seven precious things—namely, gold, silver, emerald, coral, agate, crystal, and pearl." The *cloisonné* and the *champlevé* enamels are described, and the three well marked classes. Shippo-working is intimately associated with glass-making, and the author describes the latter process, and several examples of Shippo. The earliest example is a "mirror said to have belonged to Emperor Shomu, whose reign commenced 724 A D. It is known as the *Kingin juniyo*, the mirror, with 12 leaves of gold and silver, the back of which is *shippo yaki*." Mr. Bowes gives an illustration of this mirror. It is of polygonal form, and is divided into 12 leaves outlined in wire and filled in with glass. The back has a frame of gold wire in the form of a flower, which is filled up with various-coloured glass. We have no space to refer to other examples, nor to the conclusions of the author, which are of interest to the collector and student of Japanese enamels. Some admirable photos are given of the work of the *Hirata* family, who are the only *shippo* workers whose names are recorded in Japanese textbooks.——*Contractors' Price-Book for* 1895, by Edward De Vere Buckingham. (London: Bigge and Co., Salisbury-court, E.C.) The combination of prices with formulæ, patented appliances, and data for calculation is a desideratum. The compiler of this thick and compendious volume has produced such a book at a reasonable price, which will be found of use to all architects, engineers, and contractors. The author has incorporated in a well-printed volume practical data, calculations, and memoranda on the various trades, which must be of considerable help to all contractors and others engaged on large works. In another edition no doubt many omissions will be supplied. Under the important branch of "Excavator" we have not only the prices of every class of work, the weights of earth, natural slopes of earth, formulæ for ascertaining cost of excavation per cube yard, bulk of excavation after removal, cost of filling, of wheeling; notes on tunnelling, pneumatic foundations, rock drills, blasting, air locks and hoisting gear, hydraulic construction, dam and reservoir construction, plant for sinking cylinders in river beds, bridge excavations, and foundations, cylinder piers, canal works, formulæ for discharge of water (Kutter's, Bazin's, and others); stone-breakers' pulsometer and other tools and appliances, sinking wells and shafts, &c., &c. The other trades are similarly treated. To engineers and general contractors Mr. Buckingham's Price-Book will be found invaluable.——*Proceedings of the Engineers' Club of Philadelphia.* Several papers appear in the July number of this journal. One on the "Methods of Stream Measurements by the U S. Geological Survey," by Mr. F. H. Newell, is of interest. The hydrographic division of the Geological Survey has great value and interest, and the author of this paper describes various instruments and methods used in measuring the flow of water, the relation of height to discharge. Tide gauges are of value when under the care and supervision of skilled men. They are simply vertical rods fastened and marked in feet and tenths. Inclined rods are used for the slope or bank, these being marked to equivalent vertical feet. Current-meters are constructed in several ways. The float is generally used, but the meter is preferred, though no one meter has been found to be generally applicable. Mr. Newell describes and illustrates cup-shaped meters used for shallow streams and for canals. The wheel must be held horizontally, or the velocity is recorded too great. The Haskell meter, made with only two flukes on the revolving wheel, is used for torrential streams, and can be used either on a rod or suspended by a cord from a bridge. It records electrically. Illustrations of this form of meter are given. Meters are generally handled from a boat, bridge, or pulley-suspended car, carried by a stretched cable, in which car the hydrographer sits. Measurements of discharge for various heights of water are plotted upon cross-section paper, on which the distance from base corresponds to height of water, and the distance from left to right to the volume of stream or "discharge in second-feet." The author gives diagrams of daily discharges plotted graphically, and the names of streams and rivers. The Potomac, Owyhee, Arkansas, and other river discharges are shown graphically. The paper is full of instruction to all students of hydrography and those who are interested in stream measurements. Other papers are on "Electric Heating," "Cribwork Cofferdam," "Wreck of the Connersville Bridge," "Manual Interlocking of Railroads," &c., and are all illustrated.

DEPARTMENT OF PUBLIC WORKS, NEW SOUTH WALES.

We have the report (Blue-book) of the Department of Public Works, New South Wales, for 1893-4. The report of the Government architect (Mr. W. L. Vernon) gives a long list of new buildings completed at Sydney during the year 1893, comprising the Central Police Office, at a cost of £40,546; fire-brigade station, at £11,069; general post office, clock, &c., £6,167; lands office, £141,153; public works office, additions at, £54,926, &c., &c. The phototypes give illustrations of Sydney Hospital, lately described in our pages, also the Lands Office, Sydney, an important and monumental-looking building in the Italian style; bridge over the Darling river, with lifting section; wrought-iron aqueducts, Walli Creek; saddles for carrying pipes over Cook's river; also plans of Sydney Hospital, details of timber trusses, Wentworth Bridge, details of towers and machinery, western suburbs sewerage, maps, &c. The progress of this enterprising colony in architectural and engineering projects is fully recorded in this voluminous report.

CHIPS.

In Rome the excavations round the Colosseum have brought to light the remains of the ancient portico which formed part of the façade of the Baths of Titus.

The reopening of the Wesleyan Chapel at Montgomery took place on Sunday week after restoration. The alterations have comprised improvements to the pulpit, porch, and Communion rail, and the provision of a vestry, the architect being Mr. Potter, Welshpool, and the tradesmen employed—Mr. T. Lucas, painter; Mr. T. Marsby, gasfitter; Mr. T. H. Evans, carpenter; and Messrs. J. Jones and Son, stonemasons.

The corporation of Southampton have adopted plans by the borough surveyor, Mr. W. B. G. Bennett, for the erection of a four-cell refuse destructor and the installation of two water-tube boilers for use in connection with sewage pumping plant; and also for the construction of mixing chambers for sewage treatment at the Platform.

At the church of St. Thomas, Northaw, Herts, on Sunday week, a fresco and stained-glass window was dedicated. The fresco is in the north transept, and represents Christ charging His eleven apostles to make disciples of all nations. The window, which is on the north side, completes a series of three, two of which were dedicated a few months ago. It represents the Parable of the Talents. The windows, frescoes, and decorations have been carried out by the firm of Messrs. Heaton, Butler, and Bayne, Mr. Hegerty being the fresco artist, and Mr. F. Barron having had charge of the remaining mural decoration.

In the 14th-century church of St. Faith, Bacton, Herefordshire, which was reopened after restoration 15 months since, an organ, built by Messrs. P. Conacher and Co., of Huddersfield, was opened last week.

The ceremony of laying the foundation-stone of the extension of the Esplanade took place at Lynmouth on Friday. The work of extension is being carried out under the Lynton urban district council, who have let the contract to Messrs. Jones Bros., of Lynton. It is intended that the Esplanade shall now be carried out a quarter of a mile further than at present, as far as Riddiball. The sea wall, which will measure about 10ft. in thickness at the base and 8ft. at the top, will start from the finish of the old Esplanade wall, and run off in the direction of an obtuse angle. The estimated cost of the work is £3,000. The stone for building purposes is being taken from the cliff.

At the last meeting of the Sheffield town council a communication was read from the Local Government Board, granting the application of the council to borrow money for the purposes of the widening of Angel-street and Castle-street. The board agreed to the borrowing of £50,000 for 50 years, £2,000 for 10 years, and £14,000 for one year.

A chancel is about to be added to St. Mary's Church, Todmorden, from plans by Mr. Medland Taylor, of Manchester.

Barrow Church, near Wenlock, was reopened after restoration on the 7th inst. In the porch is a tablet bearing the following inscription:—"The restoration of this church was commenced by the Rev. the Right Hon. Orlando Watkin Weld, 4th Baron Forester, and completed to his memory by his wife, Emma Lady Forester, 1895." The architects were Messrs. Christian and Purdy, Whitehall-place, London; the builder, Mr. C. T. Smith, Broseley; and the clerk of works, Mr. R. Dick.

A monument is to be erected in Quebec to Samuel de Champlain. Artists, sculptors, and architects are invited by the local committee, of which Mr. Ludovic Brunet is secretary, to send in models, plans, or drawings before Jan. 2 next. The cost of the memorial is not to exceed 30,000dol. Copies of the conditions may be obtained on application to the High Commissioner for Canada, 17, Victoria-street, S.W.

The foundation-stones of a new English Congregational church were laid on Friday at Cocklebank, near Bagillt, Flintshire. The new church (which is to replace the present dilapidated one) will be the only English place of worship within two miles of Bagillt. It is to be of red brick, in the Gothic style, with seating accommodation for 300, and will cost about £700. The architect is Mr. Parry, Rhyl, and the contractor Mr. T. W. Sibeon, Holywell.

CONTENTS.

Recent "Central Area" Designs ... 251
Deterioration of Town Dwellings ... 251
Fashionable Building or Architecture ... 252
"Old Masters" on the Continent.—XX. ... 253
Designing of Steel Bridges, Theoretical and Practical.—XXI. ... 254
County Lunatic Asylums.—XXVI. ... 255
The Canary Isles: Stray Notes during a Recent Visit. 256
Foundations for the Cathedral of St. John the Divine, New York City ... 257
Classic Details and their Application ... 258
Cast Iron in Builder's and Contractor's Work.—I. ... 260
Practical Riveting ... 260
Books Received ... 261
Department of Public Works, New South Wales ... 262
The Building News Directory ... ix.
Our Illustrations ... 263
Obituary ... 282
Building Intelligence ... 282
Elementary School, Pyrton, Oxon ... 283
Sanitary Appliances ... 283
An American Double Cottage ... 284
Architectural and Archæological Societies ... 284
Engineering Notes ... 285
Correspondence ... 285
Intercommunication ... 286
Legal ... 287
Legal Intelligence ... 287
Parliamentary Notes ... 287
Stained Glass ... 287
Water Supply and Sanitary Matters ... 287
Our Office Table ... 288
Trade News ... 288
Tenders ... 289

ILLUSTRATIONS.

HENRY THE EIGHTH'S GOLDSMITH, BY HANS HOLBEIN.—THE DINING-ROOM IN THE OLD HOUSE OF LORDS, BY JOSEPH NASH.—BISHOPSGATE HOUSE, E.C.—HALL OF RESIDENCE, UNIVERSITY COLLEGE, ABERYSTWITH.—OLD HOUSE AT TEWKESBURY. — LYCH GATE, SHANKLIN. — FRENCH MEDIEVAL AND RENAISSANCE FURNITURE.—ELEMENTARY SCHOOL, PYRTON, OXON.—AN AMERICAN DOUBLE COTTAGE.

Our Illustrations.

"OLD MASTERS" ON THE CONTINENT.—XXIII.

From the great collection of paintings in the Royal Gallery at Dresden, the finest in Germany, we give another example this week, being the ninth since our series of reproductions of works by the Old Masters commenced. (The other illustrations from this gallery will be found in our issues of Feb. 8 and 22, March 8 and 29, April 12 and 26, May 31, and June 28 of the current year.) The work now shown is the three-quarter length portrait by Hans Holbein the younger, popularly supposed to be that of Hubert Morette, the Court jeweller to Henry VIII. of England, although it will be seen that Mr. Charles L. Eastlake, in his article on p. 253, concurs with Professor Woermann, the Director of the Royal Gallery at Dresden, in believing it to be more probably the portrait of Sieur de Morette, a French nobleman at the same court. It was formerly supposed to have been painted by Leonardo da Vinci. Whoever may be the subject, as a portrait, from the technical no less than from the pictorial standpoint, the work is admirable.

THE DINING-ROOM IN THE OLD HOUSE OF LORDS, BY JOSEPH NASH.

This excellent drawing by Joseph Nash belongs to Mr. Thomas Stopher, F.S.I., of Winchester, who kindly sent it for reproduction, and it is certainly worthy of a place in our series of direct facsimiles from originals by this master of architectural draughtsmanship. The history of this drawing we are not able to trace, neither do we know at whose instance it was made. The drawings for Brayley and Britton's "Westminster Palace," published in 1836, were executed by R. W. Billings. Sir John Soane, R.A., built in 1823 the Royal Gallery and entrance to the old House of Lords on the site of the old Parliament Chamber, below which was Guy Fawkes' cellar. This ancient building was removed to make room for Soane's work. He may have had to do with the interior of which Nash made this drawing, and it will be remembered that Soane also built the Law Courts, which stood on the western side of Westminster Hall. The old House of Lords was destroyed by fire on the night of October 16, 1834. In 1836, the design of Sir Charles Barry, R.A., assisted by Pugin, was chosen from 97 sets of plans, and the foundation-stone of the new palace was laid on April 27, 1840. Nash's picture has now become historically interesting, and for the crispness of its architectural delineation and power with which the life-like figures are sketched in the drawing is clearly worthy of record. It may be useful to give the dates when other examples in this series of Nash's pictures appeared in the Building News—viz., Jan. 5, Feb. 2, Feb. 23, March 30, May 11, Aug. 3, Sept. 14, Sept. 28, Nov. 23, 1894; Jan. 4, Jan. 25, March 15, April 19, and June 21, 1895. We are still open to receive the loan of any of Joseph Nash's architectural drawings for our series of reproductions of his works, which we are desirous of making as complete as possible.

BISHOPSGATE HOUSE, E.C.

This drawing represents the entrance bay of one of the several large commercial buildings lately carried out in the City of London, where every inch of available space, and the utmost amount of light, necessarily determine the leading characteristics of the street façades. Mr. T. H. Smith has designed and superintended the erection of several such blocks as this, which he has enabled us to illustrate to-day; but we have no precise particulars to print about Bishopsgate House other than these.

UNIVERSITY COLLEGE, ABERYSTWITH: HALL OF RESIDENCE.

The Hall of Residence for lady students of the University College of Aberystwith, of which we herewith give an elevation of the sea-front and plans, is being erected on a fine open site, forming a continuation and a finish to the main parade facing the sea. The site is practically open on three sides, with its main frontage to the sea, the others to the rolling moors and hills, which shelter and inclose the northern end of the great bay of Aberystwith, the opposite end being capped by the buildings of the university, and the remains of the ancient castle. This Hall of Residence, or hotel, is presided over by Miss Carpenter, and is intended to provide accommodation for the ever-increasing number of lady students which flock to Aberystwith. The present block is a portion only of a greater scheme, and provides for the reception of about 150 students, and when completed will house upwards of 200 students. The arrangement includes administrative department, kitchen offices, and so forth, and the great dining-hall, about 70 by 30, and a series of common rooms or drawing-rooms, all on the ground floor; cloak-rooms, drying-rooms, and other departmental offices suited for the completed building; sanitary block, contained in a separate tower, and approached by bridges from every floor; and the accommodation especially intended for the housing of the students' use, which gives them the choice of a combined bedroom and study, with use of the public rooms on one hand, or a separate bedroom and study, or a share in a dormitory and common study. The site is oblong, and the plan consists of three blocks at right angles to the front, and connected along the front by a range of rooms, recessed somewhat from the main line of frontage, and at the rear by the kitchen offices of one story only. Of these, two blocks are now in course of erection, with complete administrative and sanitary departments. The main entrance is in the centre of what will eventually be the central block, with first a recessed porch, then an inner hall with an open staircase to the first floor immediately facing the entrance, and great corridors to the right and left. Corridors about 12ft. wide lead to the great dining-hall, and to a suite of drawing-rooms, which is amply lighted, and form an additional room when required. The other wing will be on similar lines, with probably a library or recreation-room in place of the dining-hall. The passages and staircases throughout are of concrete, and are practically fireproof, and the main staircases, being placed against external walls, are readily accessible from their landings in case of panic. Ventilation has been provided by windows, and by Tobin tubes throughout, and special extracts where required. The windows in almost all cases are coupled, so as to be readily opened or shut, and give an abundant light without the mechanical difficulties of a very large sash window. The arrangements for heating, cooking, and hot-water services have been duly considered, and care has been taken to make the necessary working of the establishment as simple and direct as possible. The kitchen and service rooms are on the ground floor. The sanitary arrangements have received special attention. Each floor has its own service of hot and cold water, and its own access to a semi-detached sanitary block, in connection with a service hoist from the basement. The building is built of fine blue limestone of the locality, with dressings of Grinshill stone from Shropshire. It is being carried out from the designs of Mr. Charles J. Ferguson, of Westminster and Carlisle, in conjunction with Mr. T. E. Morgan, of Aberystwith, and the builder is Mr. David Lloyd, of Aberystwith, who has the whole of the work in hand, except the internal plumber's and sanitary work, for which the tender of Messrs. Braithwaite and Co., of Leeds, was accepted.

A HOUSE AT TEWKESBURY.

This drawing, given in continuation of the series of sketches illustrating the Architectural Association Excursion, is by Mr. Alfred J. Dunn, A.R.I.B.A., who says:—"The existence of the windows to first floor, as shown in sketch, were until a few months ago unsuspected. Mr. Collins, of Tewkesbury, the owner of the property, having decided to restore two windows already in existence (similar to the one in gable, also restored), found it necessary to remove some of the plaster, which at once brought to light the 14th-century work. The whole front was then stripped of its stucco, when it was discovered that, with the exception of the third light from either end, the series was in a splendid state of preservation. Little doubt was felt that originally these two compartments were filled with windows of similar design, whereupon the intention of replacing the two former windows was abandoned, and in lieu of this the openings were made to correspond with the rest, as now seen. No doubt the window-tax would account for the greater part of the windows being obscured. The timber employed is oak, the surface of which is free from paint or tar. The date of execution is considered to be about 1350."

LYCH-GATE, SHANKLIN.

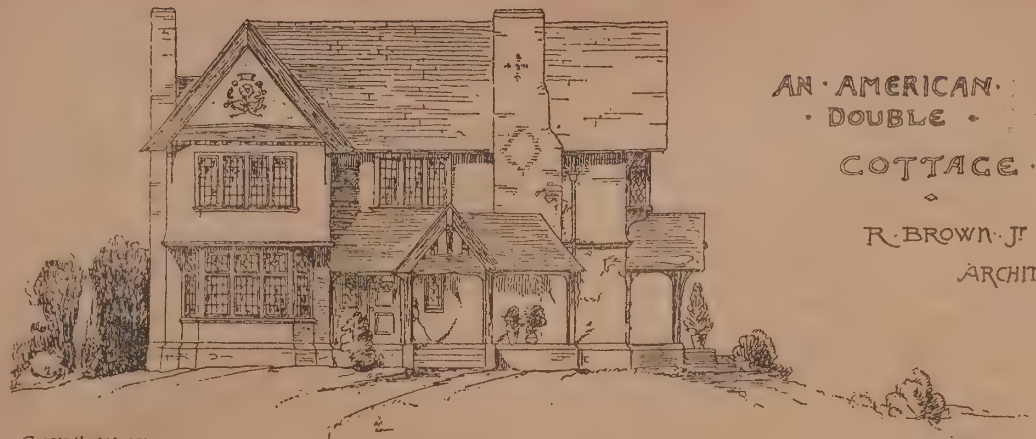
This lych-gate is a memorial to the late squire, Mr. White Popham, subscribed for by the inhabitants of Shanklin, where he was much respected. The side walls are of freestone, the superstructure being of oak, and the roof is covered with Broseley tiles. This part of the work was carried out by Messrs. Cornish and Gaymer, of North Walsham. The eight-day clock, which is contained in the roof, was supplied by Messrs. Gillett and Johnson, of Croydon, the weights being inclosed in the centre-post on each side of the lych-gate. The clock-face, which is of beaten copper, was made by Messrs. Campbell and Smith, and there is a bell under the projecting-barge-board of the other gable. The cost of the lych-gate, exclusive of the clock, was £140. Mr. Arthur C. Blomfield, M.A. (of Messrs. Sir Arthur Blomfield, A.R.A., and Sons), was the architect, and our illustration was reproduced from his pencil drawing, kindly lent us for the purpose.

FRENCH MEDIEVAL AND RENAISSANCE FURNITURE.

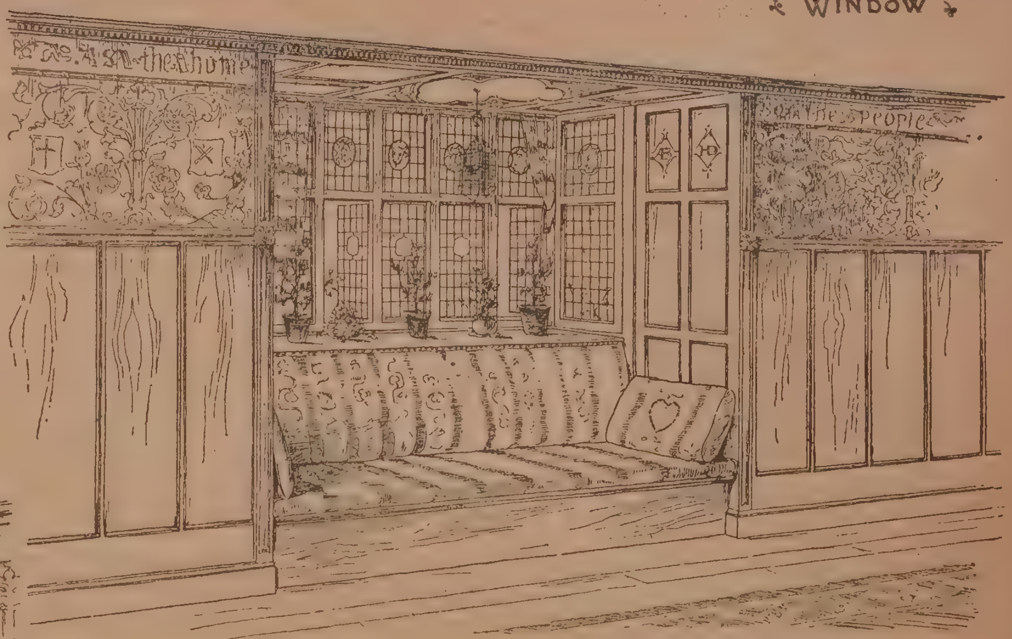
The earliest example on the sheet of sketches given on another page is the fine old iron-bound Coffer, belonging to the latter part of the 13th century. Few specimens of woodwork emanating from that period have been preserved, and those that exist are scattered abroad hither and thither, many being greatly mutilated. The chest before us is, however, in a fair state, presenting a somewhat hale old age. To this, its massiveness, and the liberal supply of scrolled ironwork with which it is bound and decorated, no doubt, largely contributed. It seems at one time to have possessed five locks; but, as our sketch shows, several of them are missing, and their places patched with iron or wood. A very different, but also interesting, piece of furniture is the Money Changer's Table of the 16th century. It is shown closed in our sketch; but when in use the top flap was brought over level with the under one, thus doubling the amount of table surface. This flap would be supported by the two shaped brackets, which swing out at right angles. The design of the scroll carving recalls Scandanavian or Celtic work, whilst it is an instance of that delight to enrich and beautify articles of a commonplace character, which is a distinguishing feature of old craftsmanship. Oak and walnut are both used in the construction of this table. The dignified Arm-Chair is made in walnut wood, and belongs to the second half of the 16th century. The space below the seat is inclosed, forming a box, the seat being made to open as a flap between the balusters supporting the arms. The two Oak Panels, carved with crude representations of Evangelistic symbols, are spirited pieces of work of the 15th century. All these objects form part of the "Payre" collection now at the South Kensington Museum.

AN · AMERICAN ·
· DOUBLE ·
COTTAGE ·

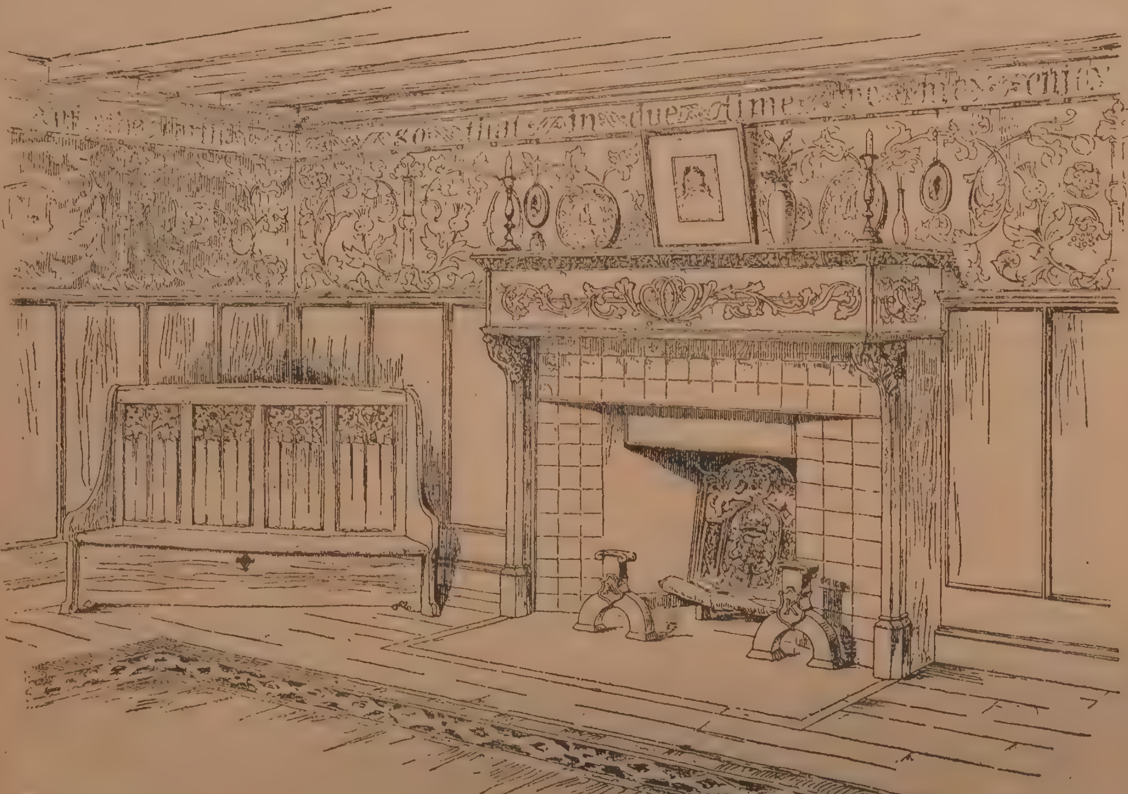
R · BROWN · Jr
ARCHITECT



SOUTH · WEST ·

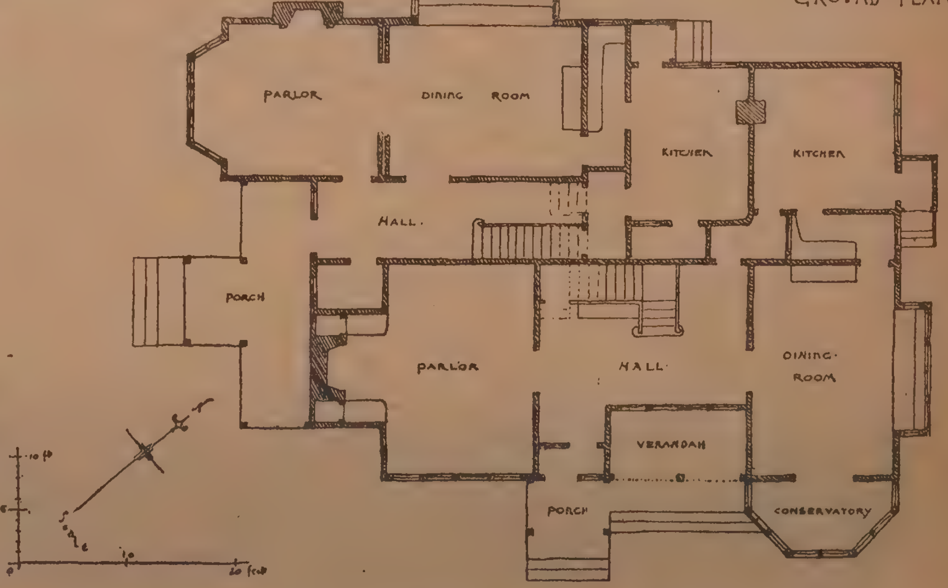


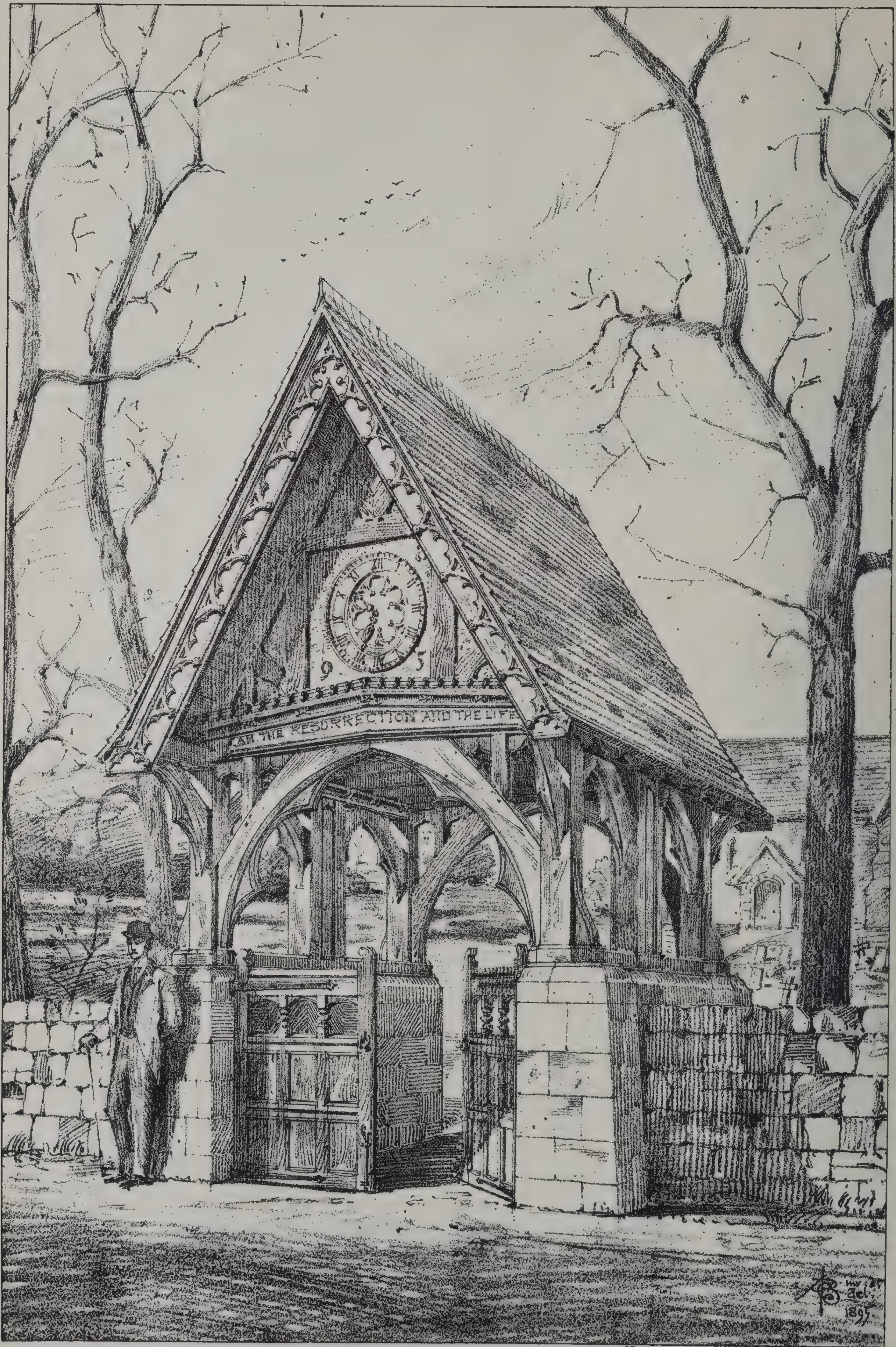
· DINING · ROOM
WINDOW



FIREPLACE

GROUND · PLAN

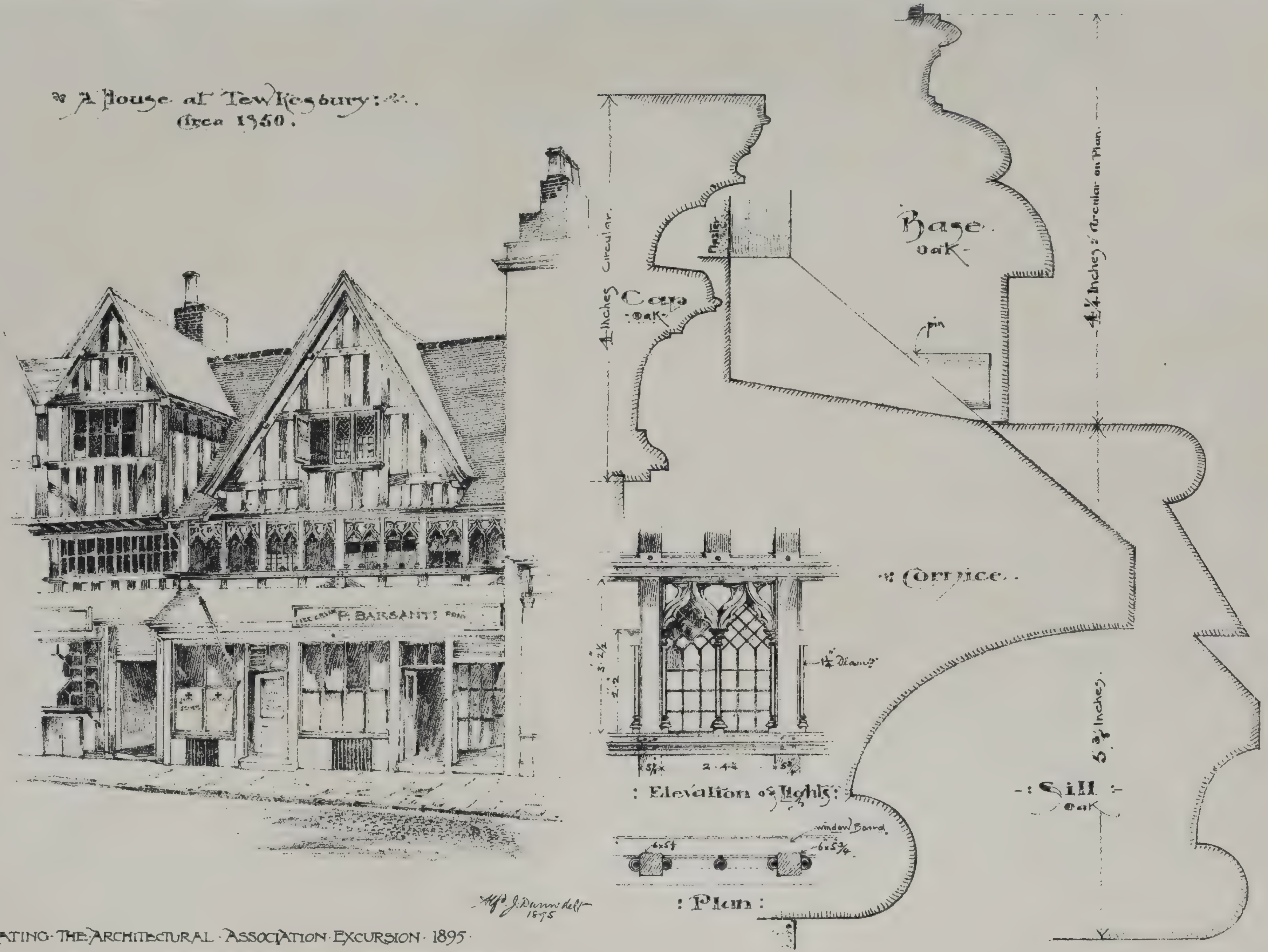



I AM THE RESURRECTION AND THE LIFE
ACB my'st del. 1895

"PHOTO-TINT," by James Akerman, 6, Queen Square, London, W.C.

NEW · LYCH - GATE · OLD · PARISH · CHURCH · SHANKLIN · ARTHUR · C · BLOMFIELD · M · A · ARCHT

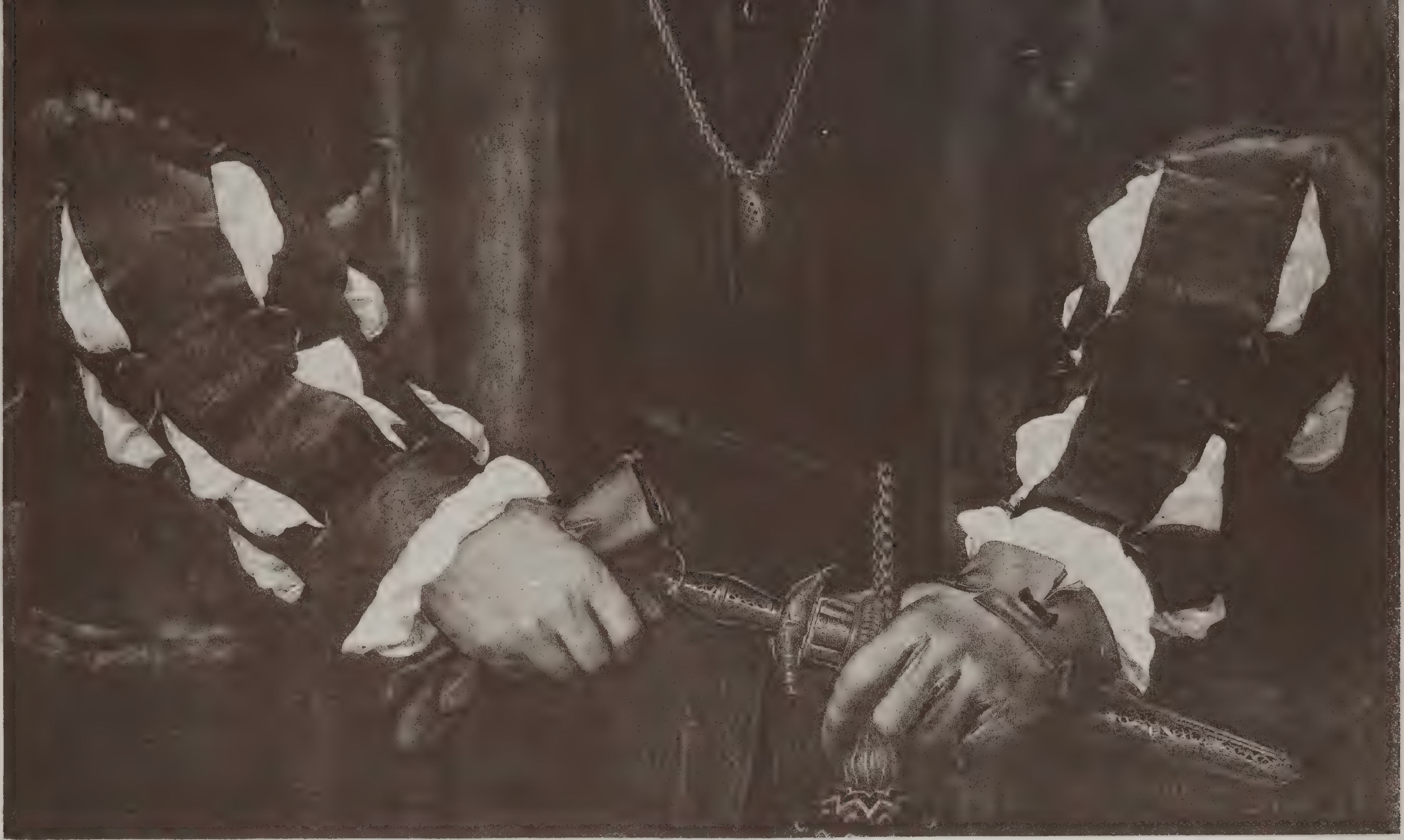
A House at Tewkesbury: Circa 1350.



Alfd J. Dunn delt 1895

ILLUSTRATING THE ARCHITECTURAL ASSOCIATION EXCURSION 1895.

"PHOTO-TINT," by James Akerman, 6, Queen Square, London, W.C.

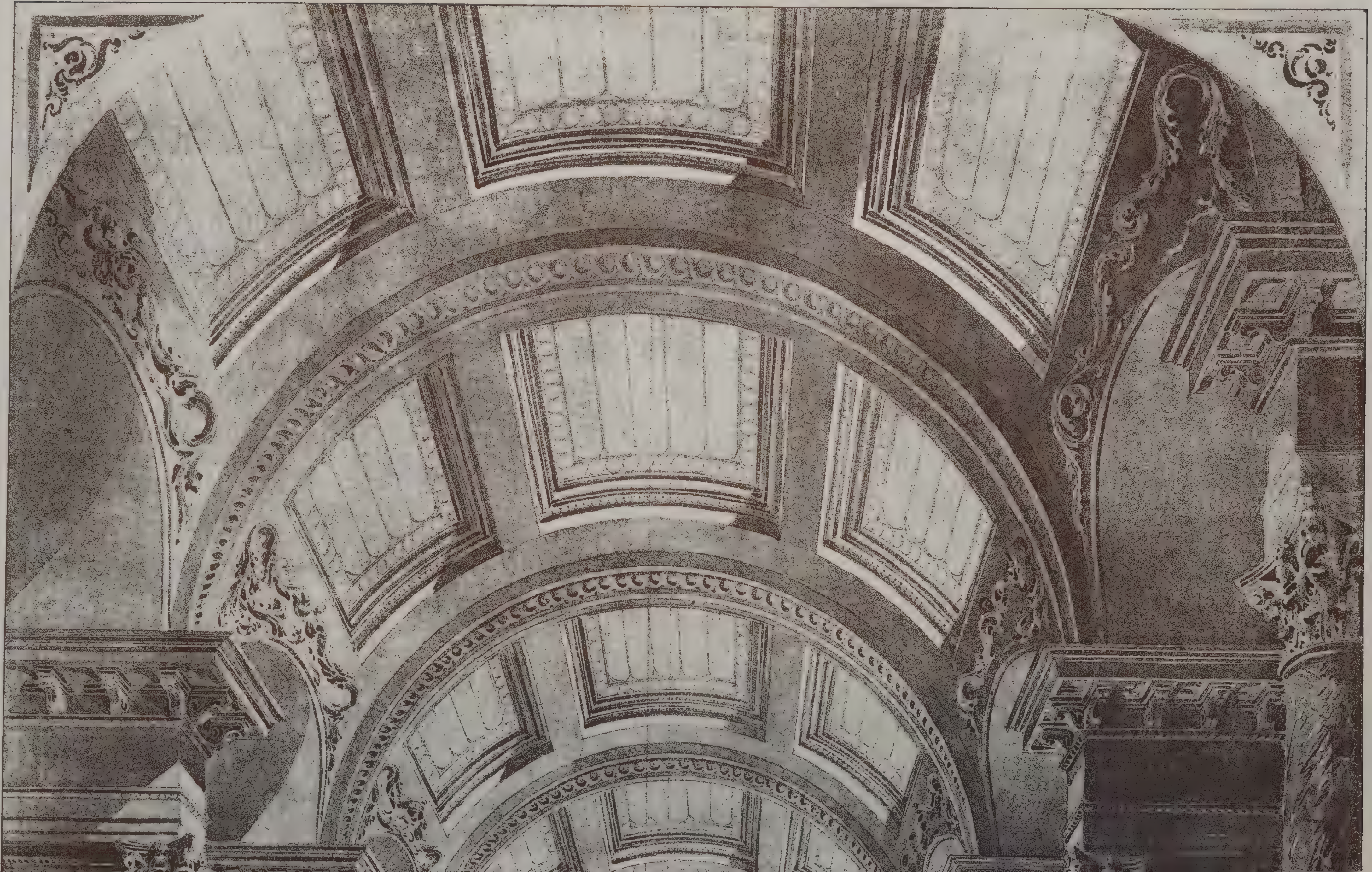


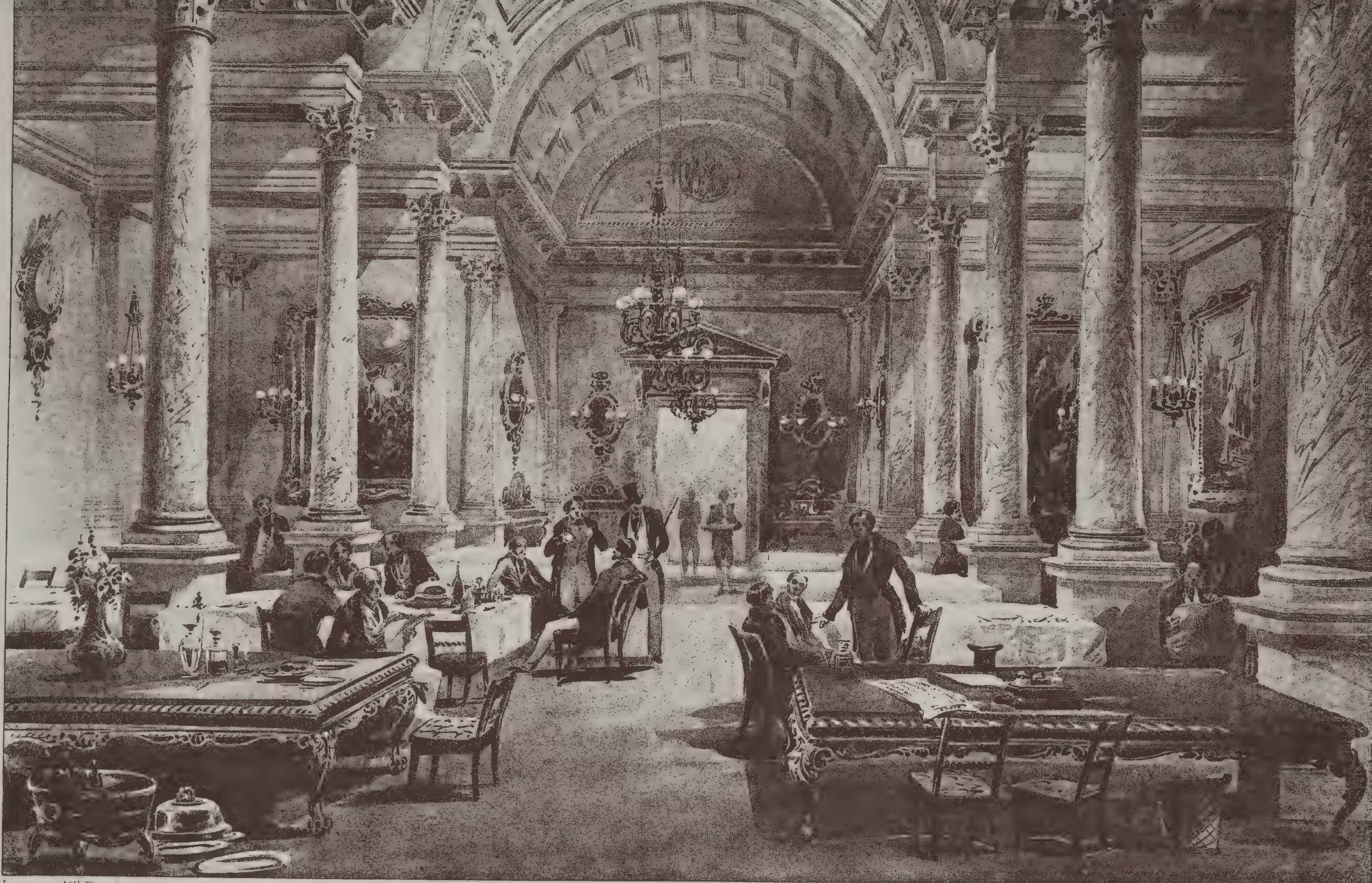
- PHOTO · BY · FRANZ · HANFSTAENGL. -

"PHOTO-TINT." [illegible]

OLD · MASTERS · ON · THE · CONTINENT · N°23 ·

PORTRAT · OF HUBERT MORETTE GOLDSMITH TO HENRY VIII (DRESDEN) BY HANS HOLBEIN · THE YOUNGER (B 1497 D 1545?) GERMAN · SCHOOL ·

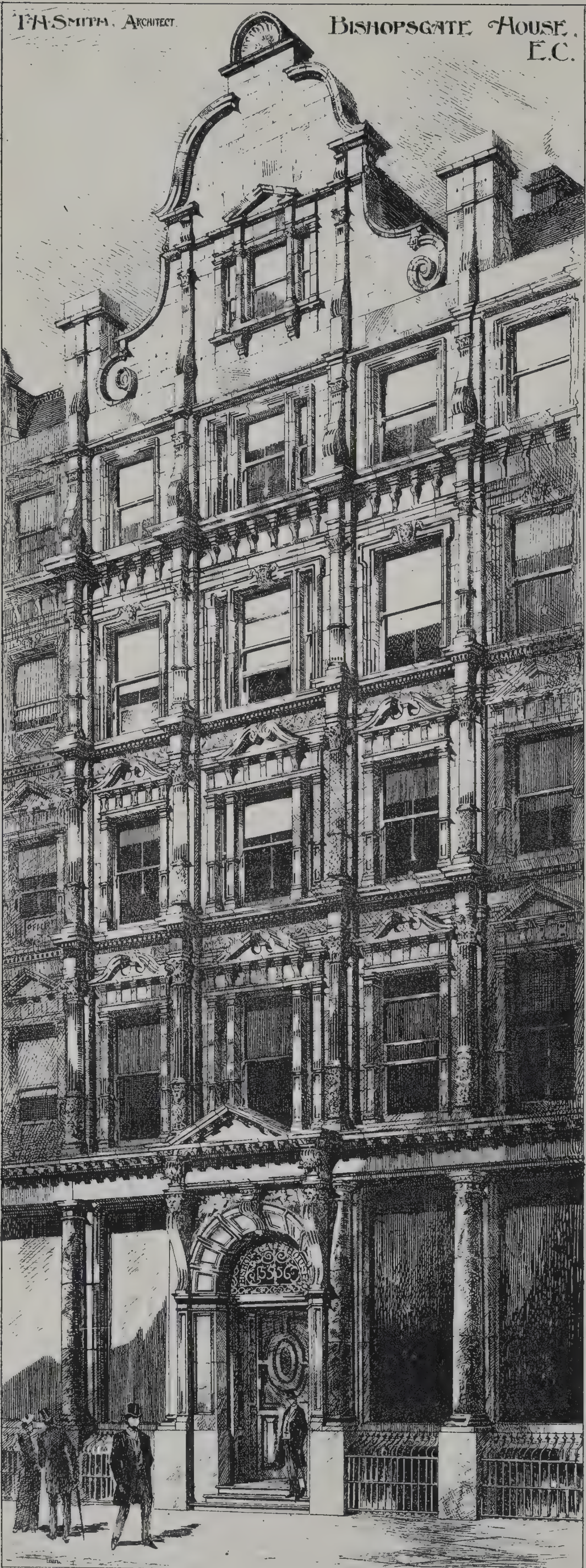




LENT BY MR THOS STOPHER ARCHT

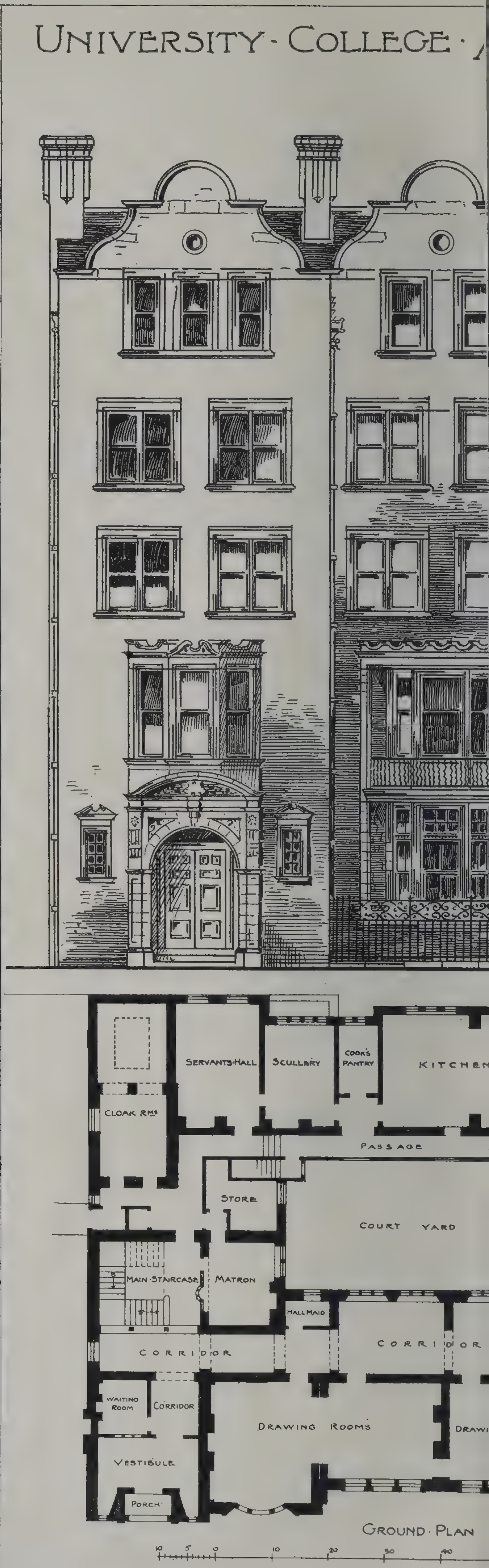
"PHOTO-TINT" by James Akerman, Queen Square, London

THE · DINING · ROOM · IN · THE · OLD · HOUSE · OF · LORDS · BY · JOSEPH · NASH ·



T.H. Smith, Architect.

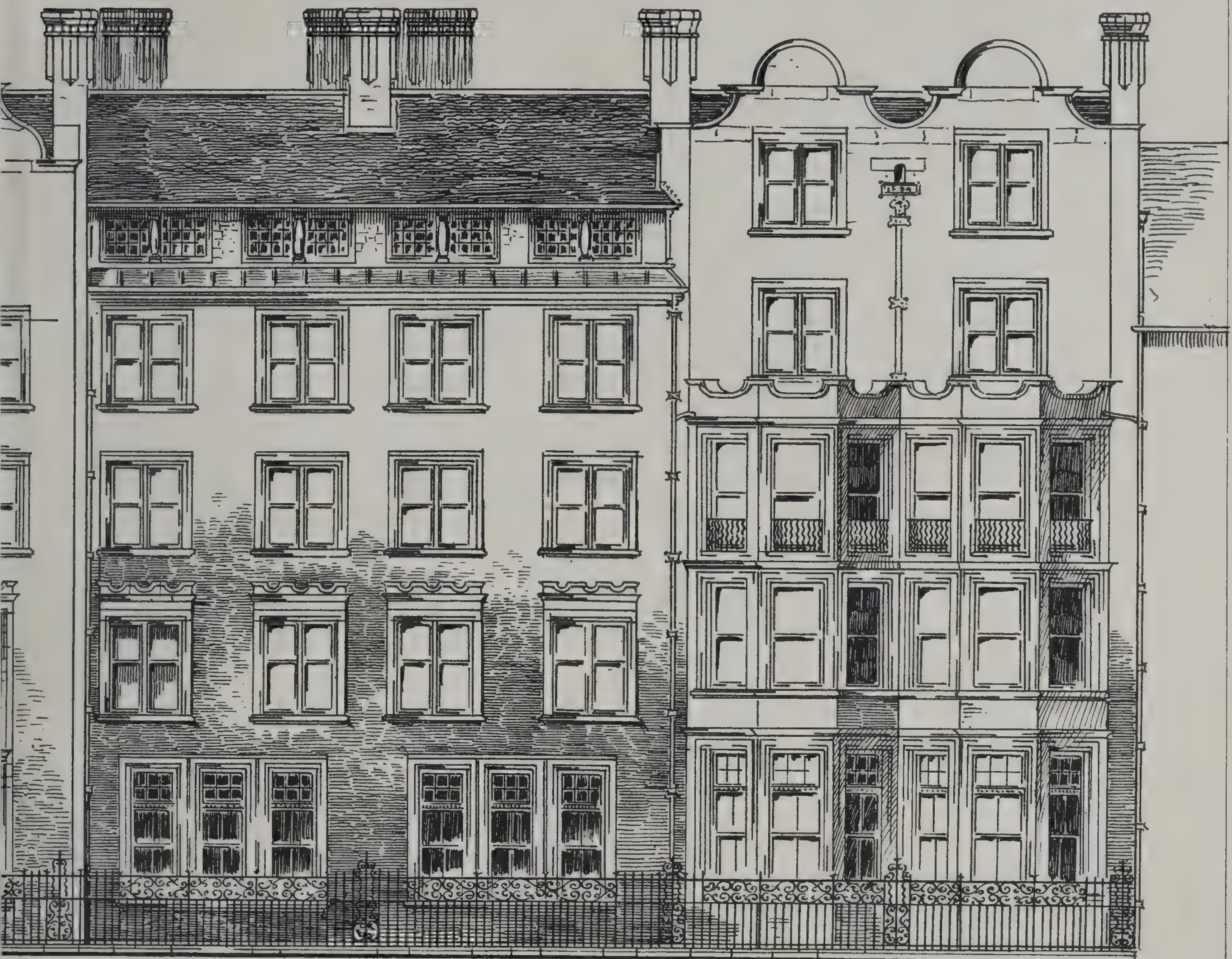
Bishopsgate House, E.C.

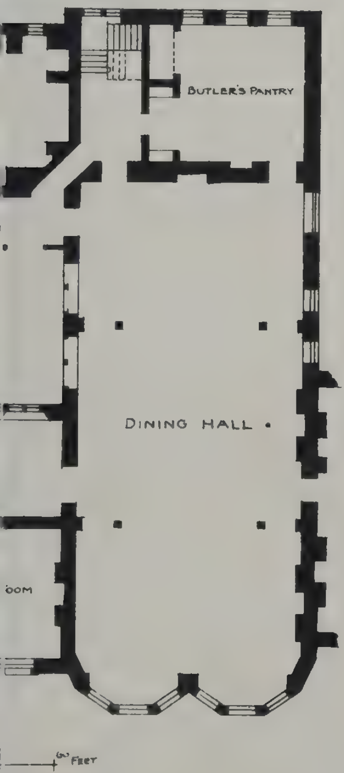


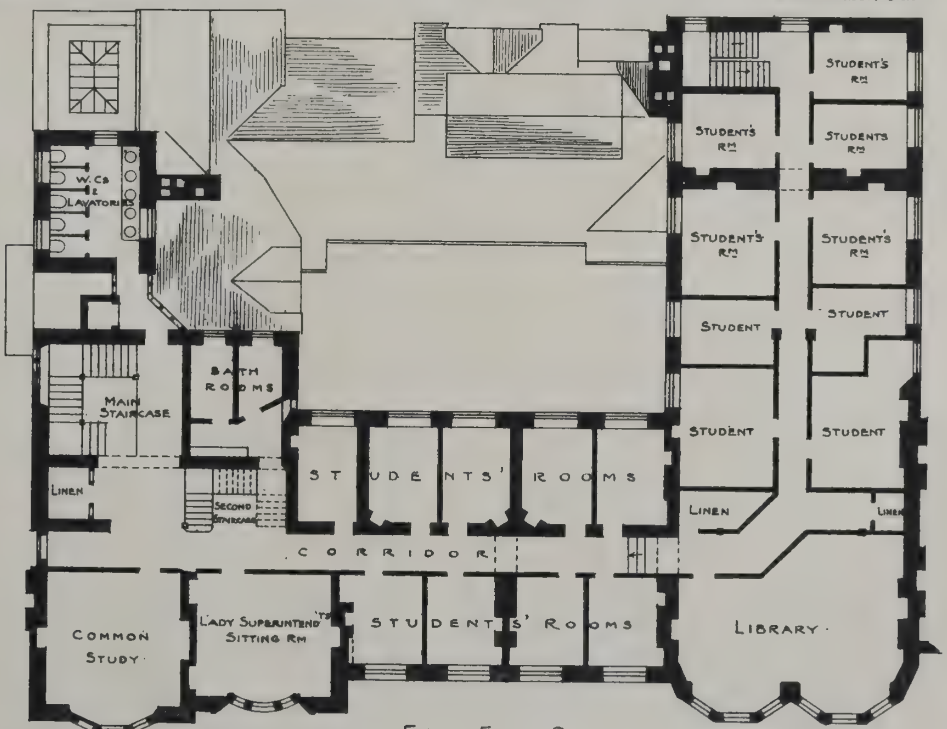
UNIVERSITY · COLLEGE ·

BERYSTWITH · HALL · OF · RESIDENCE ·

C · J · FERGUSON · F · S · A ·
T · E · MORGAN ·
} JOINT · ARCHTS


A. E. CHANCELLOR . DEL.

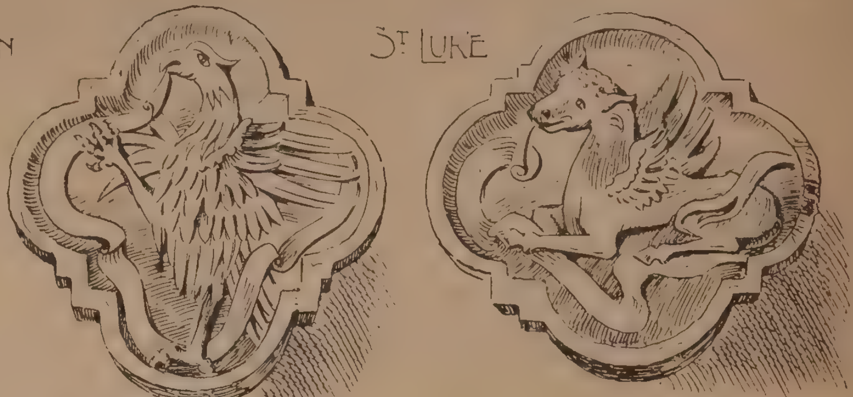




FIRST · FLOOR · PLAN

Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C.

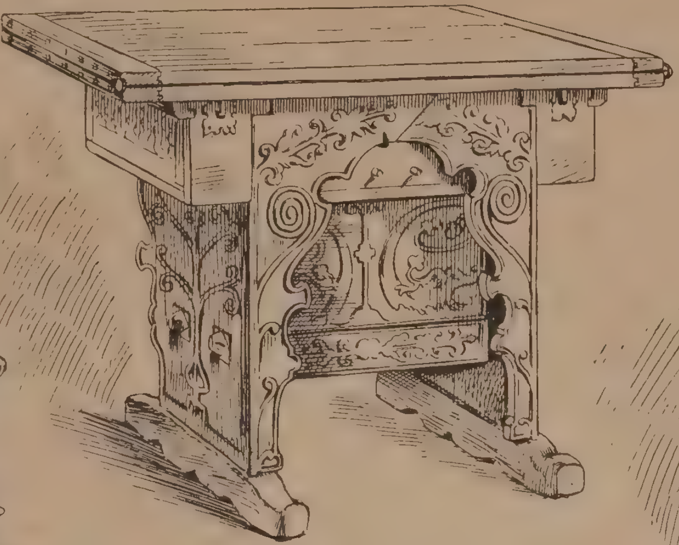
French · Mediæval · and Renaissance · Furniture



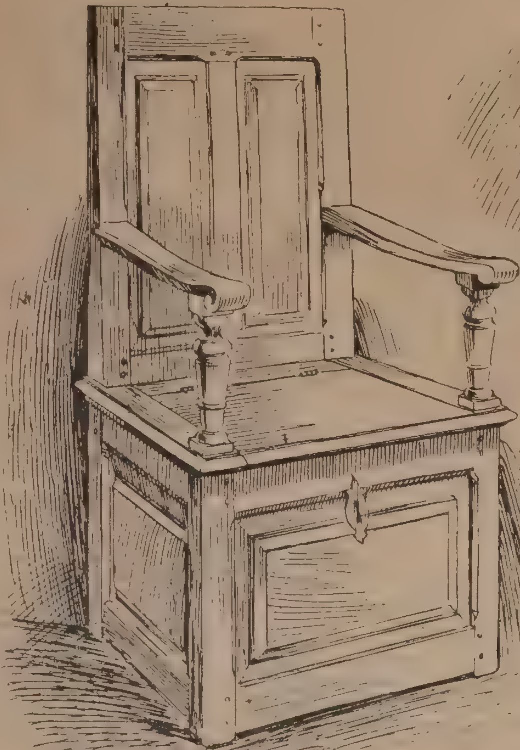
St John

St Luke

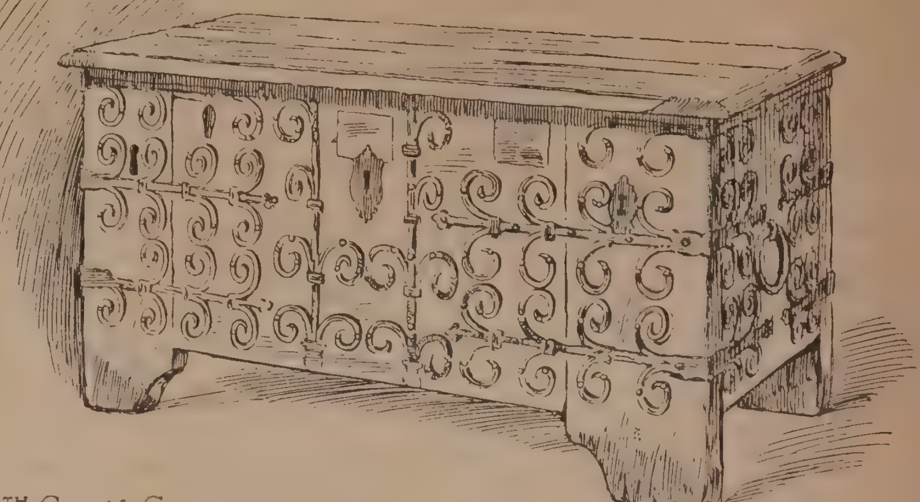
15th Centy Oak Panels · Carved with — — Evangelistic Symbols ·



Money - Changer's — — Table · 16th Centy



Panelled Chair 16th Centy with Chest under Seat ·



13th Centy Coffer

Decorated with Wrought-Iron Scrolls

H. E. Chancellor del.

OBITUARY.

We regret to announce the death of Mr. Henry Clutton, F.R.I.B.A., F.S.I., formerly a well-known architect and surveyor, which occurred at his residence, Hartswood, Reigate, on Saturday last. Mr. Clutton, who was in his eighty-second year, succumbed to what at first seemed a comparatively trivial accident. He grazed the sole of his foot on a crack in a foot-bath, but thought so little of the occurrence that he went out next day for a walk. Inflammation set in, however, from some fragments of enamel piercing the skin, gangrene supervened, and he died after a week's illness. He was one of the sons of the late Mr. John Clutton, surveyor, and after some years' independent practice as an architect, joined his elder brother, Mr. John Clutton, and nephews, in the eminent firm of surveyors at 9, Whitehall-place, S.W. He withdrew from the firm 15 years ago, and retired into private life at Reigate. Mr. Clutton was one of the seniorn members of the Royal Institute of British Architects, having joined that body as an Associate in 1838, becoming a Fellow in 1850; he served for some years on the council. Of the Surveyors' Institution, of which the present Mr. John Clutton was one of the founders, he was an original member, his name being No. 29 on their roll. He was no relation to, though frequently confounded with, his namesake, Mr. Henry Clutton, F.R.I.B.A., of Onslow-gardens, the pupil of Blore, and for a while partner of the late William Burges—that Mr. Henry Clutton, who was five years the junior of the one whose death we now have to record, died in June, 1893.

CHIPS.

The Louvre has obtained a portrait of a young man, painted by Palamedes, dated 1655, and given to the French nation by M. Sedelmeyer. Until now the Louvre possessed no work by this master.

In the case of William Harding, of Market-place, Mitcham-lane, late Thrale-road, Streatham, S.W., carpenter and builder, the discharge from bankruptcy has been suspended for five years, ending July 22, 1900.

In celebration of the fiftieth anniversary of his accession to the Austrian Throne, which falls in December, 1898, the Emperor Francis Joseph intends to present to the city of Vienna the Prater, a notable open space covering 4,228 acres, and containing a central avenue five miles long and with four rows of magnificent chestnuts. It came into possession of the reigning dynasty in 1570.

The parish church of St. Leonard, at Downham, Norfolk, has just received a richly-carved oak chancel screen. It is of 15th-century character, the tracery work in the upper part being almost Flamboyant. There is a wide central doorway, with gates of hammered metal-work, designed, like the screen itself, by Mr. Thomas Garrett, A.R.I.B.A., Percy-road, Shepherd's Bush, W. The sides are panelled and traceried, and the transoms are carved. There are two open bays above these, on the north and south sides respectively of the doorway. The carving upon the main cornice is delicate in treatment, and the whole is surmounted by a pierced cresting. The screen, which is made of English oak, has been carried out in the studios of Messrs. Harry Hems and Sons at Exeter.

There has just been placed in Monzie parish church, Perthshire, by the Rev. Hugh M. Jamieson, a two-light window, in memory of his late wife. The subjects chosen for the windows are the Resurrection and the Ascension. The window is the work of Messrs. James Steele and Co., West George-street, Glasgow.

The sanction of the Local Government Board has been given to a scheme for the drainage of Lydney, prepared for the district council by Mr. Threlfall, C.E. The estimated cost is £5,000.

On Thursday in last week a new Wesleyan chapel at North Luffenham, in the Stamford circuit, was formally opened. Messrs. Hinson Bros., of Stamford, were the contractors for the building.

At the last meeting of the town council of Glasgow it was reported that tenders had been invited for the section of the new aqueduct extending from Loch Chon to Loch Katrine and relative inlet basin, and for the heightening of the inlet basin of the existing aqueduct. This will be the finishing portion in bringing in an additional supply of water, and when it is completed the Water Trust will be able to provide a supply equal to all the needs of the city. It was also decided to proceed with the building of a block of workmen's dwellings in Cumberland-street, East End, being the largest section of workmen's houses with which the Glasgow Improvement Trustees have yet dealt.

Building Intelligence.

Inverness.—The plans of the projected additions to the Inverness Lunatic Asylum having been adopted by the District Lunacy Board, have been submitted, along with the estimates of cost, to the General Board of Lunacy for Scotland. The proposed extensions are estimated to cost little short of £20,000; but it is the intention of the district board that the work shall be carried out in sections. When completed, the extensions will provide accommodation for about 200 patients. At present the patients in the house number 450. The first portion of the extensions to be completed will be an additional male hospital ward at the north-west end, and these will be followed by the construction of a new entrance at the back of the asylum, new shoe-rooms, a new wing for females in the north-east end, and the remodelling of sick wards, &c. The plans were prepared by Messrs. Ross and Macbeth, architects, in conjunction with Dr. Keay, the medical superintendent.

Liverpool.—A new warehouse has just been completed by the Cheshire Lines Committee at their Brunswick Station, Liverpool. The work was designed by and has been carried out under the personal supervision of the company's engineer, Mr. W. G. Scott, C.E. The new warehouse is 600ft. in length by 105ft. in width and 70ft. in height, having three upper floors; also covering three lines of rails and two spacious loading wharves on the Sefton-street level. The frontage is largely built of Ruabon red brick. In the base courses and other portions of the building stone from the Horsforth Quarries, near Leeds, has been extensively used. The three upper floors, like the ground floor, extend the full length and width of the building. The top and second floors, it is proposed to utilise chiefly for the storage of grain. The third floor will be devoted to miscellaneous traffic, while the ground floor will be chiefly used for loading and unloading traffic from the adjoining docks and from town. Care has been taken to occupy as little space as possible with machinery and appliances, and the pillars supporting the floors are a wider distance apart than usual. The structure is of iron and concrete throughout, except the columns, which are of steel, and it is thoroughly incombustible. The whole of the loading, unloading, and hoisting operations will be conducted by hydraulic machinery. Adjoining the building is a new hydraulic pumping station, comprising two compound stationary engines (the patent of Messrs. Tannett, Walker, and Co., of Leeds). There are three large boilers, supplied by the Galloway Company, Ltd., of Manchester. This station contains the largest and most powerful steam-crane power in Liverpool. There is on the wharf a 40-ton steam crane, with a length of traverse of 350ft., and no fewer than 45 hydraulic cranes, 20 sack and bale hoists, and 22 hauling capstans have been laid down to facilitate the work both in the new warehouse and in the yard. Six 20-ton hydraulic traversers have been provided to transfer waggons and trucks without the delay or difficulty caused by shunting from one set of rails to another. Fifteen hatchways have been constructed on each floor, and these are placed above the lines of railway which run through the basement at street level. During the period of the construction of the new warehouse there has been erected a new electric-lighting installation for the whole of the Brunswick Station and yard. There are provided 65 arc lamps, and 350 incandescent lamps. Two 50H.P. engines are employed, and there are six dynamos for incandescent and arc lighting. This work has been executed by the engineer's department, the machinery having been purchased from Messrs. Mather and Platt, Ltd., of Manchester.

Manchester.—The internal appearance of the Manchester Royal Exchange has been transformed, having been redecorated in much brighter tints. Cold greys are replaced by glowing variations on a ground of yellow. The panels under the base of the great central dome, which were formerly dealt with by the general decorator, are now occupied by a series of paintings representing scenes on the Ship Canal. These are by Mr. Edward Noak, of Newton Abbot, who has selected as subjects the Salford Docks, the Partington coal basin, and the Eastham locks, supplemented by a view of the Mersey. Another new feature is the introduction of shields bearing coats of arms of the United Kingdom and the principal cities and towns, all in their proper colours. The work has been done under the supervision of Mr. G. Faulkner Armitage, of Altrincham, from designs by Mr. Murgatroyd, of Manchester, the architect of the Exchange.

Totterdown, Bristol.—Memorial-stones of new school buildings about to be added to Totterdown Free Methodist Church were laid last week. The portion of the work now being proceeded with includes the school and classrooms, consisting of a large room 50ft. by 24ft., with an additional length of 12ft. forming a gallery, the under part of this annexe (intended for an infants' room) being separated from the main room by movable screens. The whole of one side of the school is similarly fitted with glazed movable screens between the piers, and give access to four classrooms adjoining. The façade is in hammer-dressed blue Pennant stone, with dressings of Monk's Park freestone. The whole of the internal joinery will be of pitch-pine. The roof will be of hammer-beam construction, with a boarded ceiling, polygonal in shape. The floor will be of wood blocks on concrete. The additions to the chapel embrace the substitution of a large traceried window for the present window and door in Oxford-street; a tower with a spire 70ft. high; a porch with pinnacled octagonal piers and truncated roof in Bush-street; and new boundary-walls, gates, railings, and lamps. In addition to these, the chapel is to be extended about 12ft., and minister's room provided. The whole of the stonework will be renewed or cleaned, as the case may be, and the windows fitted with leaded lights. The gallery will be altered, and fitted with a new iron front. A new choir and organ gallery and rostrum will be fitted at the new end. The whole of the chapel will be reseated with pitch-pine seats, and the gasfittings and ventilation renewed. with the addition also of a new heating apparatus. Other works and decorations will also be carried out. The architect is Mr. William Paul, Wells-road, Bristol.

The ceremony of turning on the new water supply for Lostwithiel will be performed by Lady Robartes on Thursday, August 23.

An appeal is being made for £2,000 for the restoration and repair of St. Leonard's Church, Leicester, built in 1876, and one of the poorest parishes in the town. The works will be carried out from plans by Mr. Goddard, of Leicester.

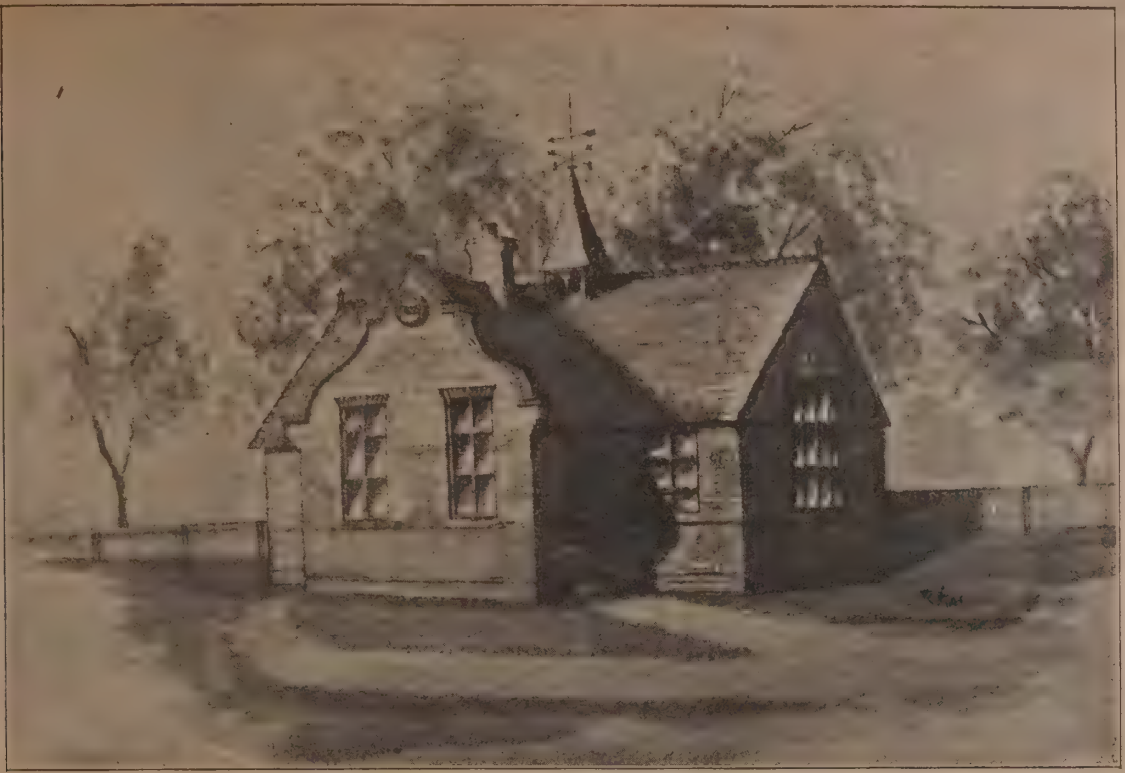
Lord Esher, who completed his eightieth year on Tuesday in last week, has lately had erected in the churchyard of Esher, in Surrey, his own and wife's effigies in marble, though both are at present in the enjoyment of excellent health. They are represented as lying under a canopy with their hands clasped and their eyes closed as if in death. The work is by Mr. J. F. Williamson, of Esher.

The judgment of the Chancellor of St. David's on the question of the rebuilding of Swansea parish church was delivered at Carmarthen on Saturday. It was stated that in accordance with a report and plans prepared by Sir Arthur W. Blomfield and Sons, the whole structure will be rebuilt, excepting the Herbert Chapel, which is to be restored and thrown open to the new church. The work will be carried out in two stages, at an estimated outlay of £24,000. The judgment stated that the faculty will be granted, and leave was given to commence the work after fourteen days from the delivery of the judgment.

Major-General C. Phipps Carey, R.E., held an inquiry at the Guildhall, Windsor, on Friday, with reference to an application which had been made by the Windsor Town Council to the Local Government Board for authority to borrow £850, to carry out some Thames-side improvements in the vicinity of the ferry. The alterations will include the construction of 679ft. of camp shedding, the taking in of portions of the Thames bed between River-street and a boathouse upon the Berkshire shore, and the making of a promenade thereon. There was no opposition to the application.

The Duke of Fife has commissioned Mr. Marshall Mackenzie, of Aberdeen, to prepare plans for a new house in Mar Forest, to take the place of Mar Lodge, and building operations will be commenced in October. The new house is to be on a much larger scale than the one recently burnt down.

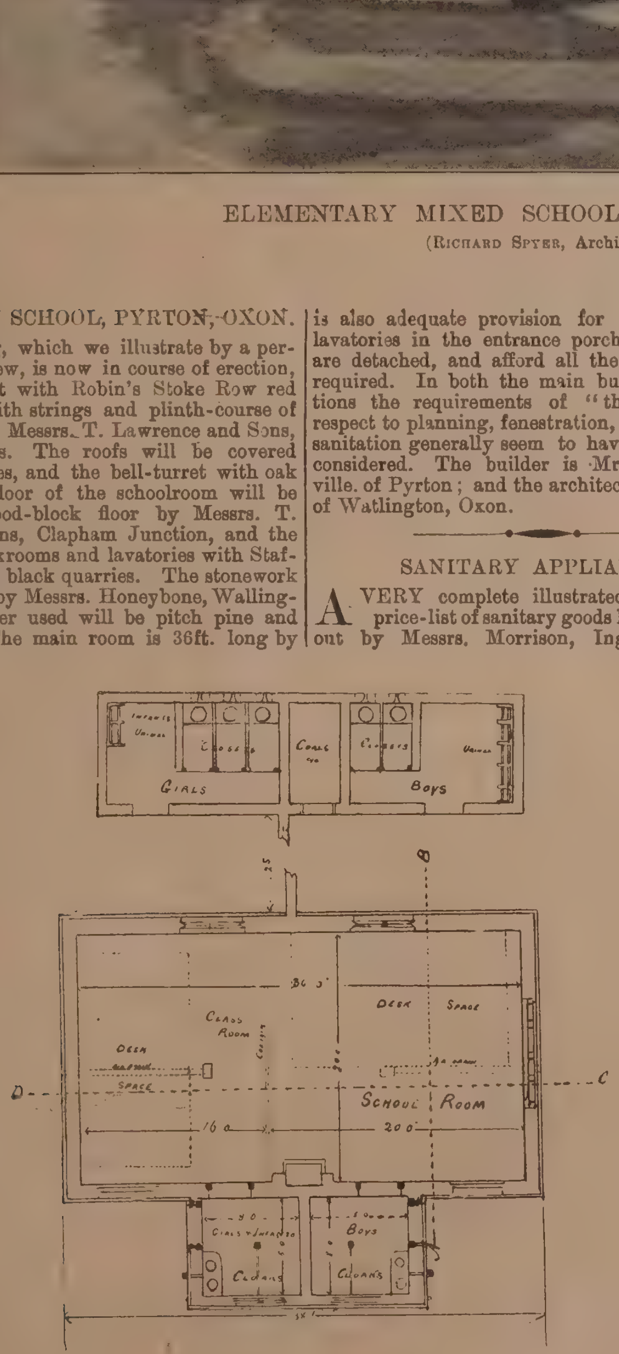
A special meeting of the St. George's vestry, Southwark, was held on Friday, for the purpose of considering the offer of a building for a free library made by Mr. J. Passmore Edwards, subject to a site being provided. Mr. Haynes moved that the offer should be accepted, subject to the decision of the parishioners to adopt the provisions of the Free Libraries Act. The resolution was adopted unanimously. The overseers were requested to take a poll of the inhabitants, and a committee was appointed to take such further steps as may be desirable.



ELEMENTARY MIXED SCHOOL, PYRTON, OXON.
(Richard Spyer, Architect.)

ELEMENTARY SCHOOL, PYRTON, OXON.

THIS building, which we illustrate by a perspective view, is now in course of erection, and will be built with Robin's Stoke Row red pressed bricks, with strings and plinth-course of red rubbers from Messrs. T. Lawrence and Sons, Bracknell, Berks. The roofs will be covered with Broseley tiles, and the bell-turret with oak shingles. The floor of the schoolroom will be laid with a wood-block floor by Messrs. T. Gregory and Sons, Clapham Junction, and the floors of the cloakrooms and lavatories with Staffordshire red and black quarries. The stonework will be supplied by Messrs. Honeybone, Wallingford. The timber used will be pitch pine and English oak. The main room is 36ft. long by 20ft. wide, with provision for subdivision. It will accommodate about 70 children, and is so constructed as to be also, at night-time, conveniently used as a parish meeting room. There is also adequate provision for cloakrooms and lavatories in the entrance porch. The latrines are detached, and afford all the accommodation required. In both the main building and additions the requirements of "the Code" with respect to planning, fenestration, ventilation, and sanitation generally seem to have been carefully considered. The builder is Mr. George Glanville, of Pyrton; and the architect, Mr. R. Spyer, of Watlington, Oxon.



* * *

SANITARY APPLIANCES.

A VERY complete illustrated catalogue and price-list of sanitary goods has been brought out by Messrs. Morrison, Ingram, and Co., Hygeia Works, Manchester, manufacturers of improved lavatories, baths, closets, sinks, &c. The illustrations are chromo-lithos, in a style which leaves little to be desired. The patent "D" lavatory, in which the arrangements of taps and inlet and the shape of the bowl are special points, is a great improvement on the usual fitting. A great variety of designs is shown. The patent steamless and noiseless "D" lavatories are noteworthy. The improved shape of the bowl affords every facility to the user, being wider in front. No loose fittings are inside, but each lavatory has hot and cold taps, quick waste, 1½in. central tube overflow, and 1½in. overflow. These are made in various designs in the finest ivory or white porcelain, and are either angular or square on plan, to suit the corner or side of room. Some are fitted with a swivel shampoo and eye-spray. Several designs are shown of decorated lavatories of very beautiful patterns. When we say that 57 pages are devoted to illustrations of lavatories of every class and description intended for mansions, hotels, clubs, schools, asylums, railway carriages, &c., some idea may be formed of the variety of purpose and of design represented. Many lavatory ranges of slate, cast iron, and fire-clay are shown, suitable for schools, &c. The next section is devoted to baths: cast iron for wood casings, Roman baths, fire-clay enamelled, and other kinds are illustrated. The "patented combination" in which lavatory and bath are combined seems a very economical arrangement where space is limited. Spray, shower, and reclining baths, needle, and other forms are given. Water-closets, &c., of several excellent forms, "wash out" and "wash down," form a useful section. Plumbers' brasswork, bath boilers, flushing tanks, sinks, slop-hoppers, &c., are fully illustrated and priced. Architects specifying these and other sanitary fittings will find Messrs. Morrison, Ingram, and Co.'s catalogue useful, as they can select their own pattern from its pages.

* * *

The Public Works Loan Commissioners during the financial year 1894-95 made 876 advances for sums amounting together to £1,612,143, as against 786 advances for £1,582,783 in the previous year, showing an increase of 90 in the number of advances, and of £29,380 in the amount advanced.

The rector and churchwardens of All Saints' Church, Southampton, are appealing for £1,000 to enable them to effect long-needed repairs and improvements to this edifice, the centenary of which is about to be celebrated. It is proposed to restore the cement work on the exterior, to replace the present windows with cathedral glass, and to effect repairs to the roof, the east end, the East-street entrance, and the tower.

AN AMERICAN DOUBLE COTTAGE.

We give on page 264 two interior sketches, together with plan and end elevation, of a simple, but interesting, arrangement for a double cottage. This plan, although it has its objections, is no doubt economical in various ways, and gives importance to both residences, the whole being under one roof, and from the outside presenting the appearance of one large house.

The window and fireplace show the treatment of the dining-room interiors. The window-sill is about 4ft. from the floor, and is wide enough to form a shelf for plants, books, or ornaments.

The height of rooms is 8ft. 6in. from floor to underside of beams. The wood used in the finish to be either Canadian ash or American oak, stained a greenish colour—or a "broken" colour of green and brown in the figure of the wood. The frieze is of coarse canvas, painted in colours. The firedogs and fireback are cast iron adapted from old English designs. Mr. R. Brown, jun., of Boston, Mass., is the architect, and we are indebted to the *American Architect* for the illustrations.

CHIPS.

The Supplementary Civil Service Estimates issued this week include £30,421 for the British Museum, the bulk of it being required for the purchase of the Malcolm collection of drawings, and the correspondence and papers of Lord Nelson; and £5,000 for the National Gallery.

Receiving orders have been made in the case of Henry Phillips, of Exeter and Taunton, builder; and in that of William Rowe, Fore-street, Marazion, Cornwall, builder.

At the London County Sessions, on Saturday, John Armstrong, a carman in the service of Messrs. Heather, Bailey, and Co., builders, Gravel-lane, was convicted of stealing a load of sand, the property of his employers, and William Henry Horswill, builder, Lant-street, S.E , was convicted of having unlawfully received the stolen property. Armstrong was sentenced to three and Horswill to six months' hard labour.

At a meeting held a few days back the committee of the Bristol School of Science and Art had under consideration the appointment of head-master. From among 26 candidates, they selected the Rev. E. J. Bush, a late master at the National Art Training School, South Kensington. Mr. Bush held one gold, seven silver, and eleven bronze medals, and won in 1893 two scholarships—those of the British Institute for Etching and the Travelling one of the National Art Training School.

There has just been sold by private treaty the freehold site of 170 and 172, Lavender-hill, Wandsworth, having a frontage of 96ft, and an area of 1¾ acres, for £5,000.

It is proposed to restore, at a cost of £600, the old cathedral church of Lismore, Argyleshire, built in 1220-40, and to that end a three days' bazaar has been organised in Oban to aid the fund. The bazaar was opened on Tuesday by Sir Donald Smith, of Glencoe.

The British Consul at Piræus has reported on the new trade in native magnesium carbonate and in fire-bricks manufactured therefrom which has sprung into existence in Greece. There are large deposits of nearly pure magnesium carbonate in Eubœa, near Corinth, and elsewhere in Greece. It is quarried from lodes, and exported either in the crude state or calcined, and has been used for extracting the resin from wood pulp, and for weighting calicoes. Now, however, it is being ground, and made into firebricks, which are capable of resisting a temperature of 2,150° (whether Fahrenheit or Centigrade is not stated) against the 1,800° which the ordinary firebrick will stand.

The Iron and Steel Institute commenced its autumnal sittings at Birmingham on Tuesday, Sir D. Dale presiding. In a paper on the iron industries of South Staffordshire, read by Mr. Daniel Jones, the statistics showed that for some years the production had steadily decreased; but the writer anticipated that the business of the district would revive. A paper by M. Emile Bonehill, of Belgium, upon a new method of puddling, for which a saving of 11s. 9d. per ton was claimed, excited much interest. At Wednesday's meeting papers were read by Professor W. N. Hartley, F.R.S., on "The Thermo-Chemistry of the Bessemer Process"; by Mr. H. M. Howe, of Boston, "The Hardening of Steel"; by Mr. R. A. Hadfield, "The Production of Iron by a New Process"; and by Mr. E. H. Saniter, "A New Method of Analysing Chrome Ore and Ferro-chromium." In the afternoon an excursion was made to Worcester by the members, and in the evening a reception and entertainment were given by the local reception committee in the Botanical Gardens, Edgbaston.

COMPETITIONS.

Chester Baths.—At the last meeting of the city council of Chester the report and award of Mr. Frank T. Baggallay, F.R.I.B.A., of Conduit-street, W., the assessor in the public baths competition, was received. Mr. Baggallay stated that, after a full and anxious consideration of the 27 competitive plans submitted, he advised the selection of the design bearing the motto "Plan" as the one which best combined simple and suitable arragements and an adequate mastery of the rather technical details of this class of building, with a due regard for the special necessity for a sightly building, and a similar regard for the important consideration that no part shall be nearer to the City Walls than 40ft. Among the good features of this design the concentration of the entrances and offices and the excellent arrangement for overlooking the corridor to the second-class baths throughout its length, were especially to be commended. So also was the arrangement of the men's slipper and vapour baths, enabling one attendant to manage both classes. The provision of an entrance from the women's baths to one of the swimming baths was also a good feature of the plan. The extra exits from the large bath and the public staircases from the gallery were well placed, and of sufficient width. The gangways and dressing cubicles to the swimming-bath, the slipper-bath cubicles, and the corridors were of adequate size, and the w.c.'s and urinals were well placed. The diving-board in the large bath should be at the deep end, but this was obviously an oversight; the author noted the proper position in his report. The laundry and boiler-house were well planned, though the space in front of the boilers was too cramped. Externally, the grouping of the building as seen from the City Walls, and the masking of the usually unsightly wall of the large bath were well managed. The extent of the space left available for ornamental garden between the building and the City Walls was decidedly a good feature, and the assessor did not see why this should not be somewhat increased by reducing the space on the east side. The method of approach from the City Walls was admirably conceived. The "Rosher" system of heating the water in the swimming-baths, the one adopted in this design, was a comparatively new one, and the assessor had no personal experience of it, but he was informed and believed that it had been used with most satisfactory results, and that it maintained both the temperature and the freshness of the water without waste. The steam and hot-water pipes and the drainage were very well arranged. The constructive details and the materials shown and described were satisfactory. There was no unnecessary extravagance or excess of ornament in the design, and the estimate for the engineering work ought to be sufficient. After a careful comparison and calculation of cubical contents of several of the designs, he did not think that any design which he could recommend as suitable for adoption would cost materially less. Before concluding he ought to point out that the concrete floor over the subway was not sufficient support for the thick north wall and the chimney-breasts of the second class waiting-room, and that this fireplace has no chimney, and presumably no flue. But for these incomprehensible oversights he should have even less hesitation in recommending the acceptance of this plan. Fortunately they could be remedied without difficulty or injury to the design. The boating and baths committee having considered the report, ordered that it be approved, and that the author of the plan be awarded the premium of £50. The author was discovered, on the opening of the identification letters, to be Mr. Harold T. Burgess, architect, 33, Palliser-road, Kensington, W. At a subsequent meeting the committee ordered that the foregoing proceedings be reported to the council, and that it be recommended to the council that the committee be now authorised to obtain tenders. Also that the committee be authorised to pay Mr. Burgess the premium of £50, and Mr. Baggallay the fee of £52 10s. A discussion followed, in which Alderman Gilbert suggested that an alternative site might be considered before the work was actually commenced—namely, that near the steps leading down to the Suspension Bridge, under the Hermitage. That site would obviate the erection of a large chimney near to the cathedral; they would have there an abundance of water, without cost. The Mayor said the suggestion should have the best consideration of the committee; but that should not delay the advertisements for tenders. The meeting unanimously decided to advertise for tenders for the erection of the baths.

Guernsey.—The St. Piesse du Bas (Guernsey) Parochial Committee have selected the designs sent in by Mr. Frank Whitmore, architect, Chelmsford, for new schools, and the same have been approved by the States Committee.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

British Archæological Association.—The members of this association have held their fifty-second annual congress this year in North Staffordshire, the scene of their meetings being the Town Hall, Stoke-on-Trent. The proceedings commenced on Monday week with a reception by the mayor and corporation of the borough. The mayor (Alderman J. Birks) extended a hearty welcome to the members of the association. Mr. W. S. Brough, on behalf of the North Staffordshire Field Naturalists' Club and Archæological Society, also offered a cordial welcome to the visitors. Mr. Thomas Blashill, of London, acknowledged the reception. The members afterwards paid a visit to the churchyard of the parish church, and the site of the ancient church was examined. Subsequently, under the leadership of Mr. W. D. Spanton and Mr. Charles Lynam, F.R.I.B.A., they visited Trentham, Bury Bank, and other places of antiquarian interest. In the evening the association were the guests of the North Staffordshire Naturalists' Field Club and Archæological Society, when Mr. W. S. Brough delivered an inaugural address upon the history and antiquities of North Staffordshire, and Mr. Scrivener illustrated, by aid of lantern slides, many of the places to be visited by the congress during the week. On the Tuesday the members made an excursion viâ Abbey Hulton and Milton to Leek. The foundations of the ancient Cistercian Abbey at Abbey Hulton, unearthed some ten years ago by the late Rev. Walter Sneyd, of Keele Hall, the owner, were first visited; Mr. Charles Lynam giving an interesting sketch of the history of the abbey and explaining its outlines and general arrangements. At Milton the party took train to Leek, where, under the leadership of Mr. W. S. Brough, they visited the parish church, which is full of archæological interest. The Cistercian Abbey of Dieu-la-Cress, Rushton Church, the "Bride Stones," and Biddulph Old Hall were likewise inspected. In the evening a meeting was held at the Town-hall, Stoke, when papers on Staffordshire Folklore, St. Chad's, Lichfield, and the Town and Priory of Stone were read. Lichfield Cathedral was seen on the Wednesday.

* * *

Last week's transactions at Tokenhouse-yard were very quiet. The aggregate realisation amounted to £55,423, for more than half of which the sale of the South London Music Hall was responsible. This week's chronicle is even more meagre. There have been only about half-a-dozen sales altogether, and the tide of business has been at its lowest ebb.

The urban district council of Tonbridge have under consideration a report and scheme prepared by Messrs. Hennell and Gould, of Westminster, for a river relief channel, 40ft. in width, to be constructed from Bailey's Weir to Child's Lock, for the prevention of floods. The estimated expense is £6,200.

Col. J. Ord Hasted, R.E., attended at Lincoln on Tuesday to hold an inquiry into an application made by the Branston Rural District Council for sanction to borrow £850 for purposes of sewerage and sewage disposal in the parish of Boultham, the sum sought to be borrowed being entirely for extras over and above the contract price, for which a loan had previously been raised. It was explained that the contractor claimed £350 extras on the ground that in the bill of quantities no reference was made to pumping in the excavations or for an ejector tank. Another extra was £133 9s. 4d. for excavations for a rising main, and £74 5s. 2d. in respect of a miscalculation in the ejector tank. Other small items brought up the extras to about £750. The surveyor to the council disputed the extras, asserting that only £142 10s. 2d. was due to the contractor, and that that was subject to a deduction of £78 penalties for non-completion of the work in the prescribed time. The council appointed Mr. Walker, of Nottingham, as the virtual arbitrator, and he certified that £906 1s. 3d. was due to the contractor. From this the council deducted £33 10s. allowed for interest, and the contractor had obtained judgment for the balance, £872 11s. 3d., and action with regard to the interest was pending.

Engineering Notes.

Lancashire, Derbyshire, and East Coast Railway.—At the half-yearly meeting of this company, Mr. R. Elliott Cooper, the engineer, described the progress of the works, remarking that those from Chesterfield to Warsop, with the several colliery branches, were rapidly drawing to a completion. The heavy cutting about two miles from Chesterfield and the Bolsover tunnel would be completed in March next year. On the second contract the railway was almost completed, including the colliery connections as far as Barlborough, and beyond that point to the junction with the Manchester, Sheffield, and Lincolnshire Railway at Beighton very good progress continued to be made. On the third contract, which commenced at a point twelve miles east of Chesterfield and terminated at the Great Northern Railway at Tuxford, the whole of the double line would be completed by the end of November. Here there were extensive sidings and a coal depot. Some delay had taken place in the section between Tuxford and Lincoln in awaiting the passage of the company's Bill, which enabled them to construct the viaduct over the river Trent at a lower level than originally intended. The work would now proceed without further interruption. The chairman, Mr. Bainbridge, M.P., said that the whole of the line would be completed and open for traffic between Chesterfield and Lincoln in June of next year, and the part from Beighton to the connection near Barlborough towards the end of 1896.

CHIPS.

The Right Hon. A. Akers-Douglas, the First Commissioner of Works, has given instructions for an examination to be made of the Duke of York's Column in Waterloo-place. It is stated that portions of the stonework need renovation.

The latest addition to the stained glass of Carlisle Cathedral has been placed in the east window of the north aisle, in memory of General C J. Mounsey Grant. It is of two lights, in the Decorated style, representing three military figures — namely, St. Michael and St. Longinus, and, in the tracery, St. George. At the base is shown St. Michael again with his angels, all with swords and shields.

The directors of the Kettering Waterworks Co., for the purpose of augmenting the quantity of water stored in Kettering, have purchased land and are proceeding with the construction of an additional service reservoir at Clover Hill, to contain 300,000 gallons of water.

The first mountain electric railway constructed in the United Kingdom, extending four and three-quarter miles, with a continuous gradient of 1 in 12, from Laxey to the summit of Snaefell, over 2,000ft. above the sea level, was inspected on Friday on behalf of the Manx Government by Colonel Rich, of the Board of Trade, and Major Cardew, of the Home Office, and having been passed by these officials the line was formally opened on Tuesday. Messrs. McKerrow and Fell were the engineers, and Messrs. Mather and Platt, of Manchester, supplied the electrical plant.

The chairman of the Hornsey District Council has obtained from the Ecclesiastical Commissioners the definite refusal of Churchwood Bottom Wood, Highgate, until December 31, 1896, at the price of £25,000. Time will thus be afforded for communication and conference with other local authorities.

A survey is being made by Mr. G. Wolfe Brennan, C.E., of Oban, of a projected extension of the West Highland Railway system to Lochfyne, with a terminus and railway pier at Cuil. At this place there is deep water close to the shore, and there is also good and safe anchorage. Cuil is situated near the head of Lochfyne, on the west side, about seven miles from Inveraray by road and four by water. Close by are the ruins of an ancient castle. The line, as proposed, will join the West Highland line between Ardluie and Tarbert, on the west margin of Loch Lomond. The length of the line will be about twenty miles. No serious engineering difficulties are anticipated.

A fund is being raised for the preservation and restoration of the temples of Karnak, the most impressive and historically the most important monuments of the whole Nile Valley. They have been in imminent danger of destruction from the action of the river water, but the danger is being faced, and the work of preservation is in a fair way to be successfully carried out. Some £900 is still needed, however, to place the necessary pumping and draining works on a satisfctory footing. When this has once been done, the Egyptian Government agrees to provide for the annual working expenses.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to The Strand Newspaper Company, Limited.

TERMS OF SUBSCRIPTION.

One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India, £1 6s. 0d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front-page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No Front-page or Paragraph Advertisement inserted for less than 5s.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page Advertisements and alterations in serial advertisements must reach the office by Tuesday morning to secure insertion.

Situations.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., LI., LIII., LIV., LVIII., LIX., LX., LXI., LXII., LXIII., LXIV., and LXV. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Received.—S. N. and Co.—R. Emerson.—C. J. W.—Rover.—B. R. and Co.—J. M.—Competitor.

Correspondence.

DURHAM COUNTY COUNCIL COMPETITION.

To the Editor of the Building News.

Sir,—Though, fortunately, I was not a competitor, I read with satisfaction "in your last week's issue" the communication of Messrs. Philip, Tree, and Price anent the above, and earnestly hope that every one of the gentlemen more immediately interested in this affair will support the action contemplated by the above-named gentlemen.

Surely, Sir, it is time that something should now be done to make an end of this sort of work. I have little faith in the honour of any body of men who can act as the Durham County Council have acted in this matter, and am fully persuaded that unless some more decided action is taken, not only will Messrs. Cooksey and Cox lose the work, which they have honourably won, but there will be added another to the long black list of *bogus* competitions.

Why not, therefore (having first afforded the D.C.C. an opportunity of doing right in this matter), make a test case of this, and bring the matter before one of Her Majesty's judges? I am well aware of the responsibility involved in such a proceeding, and know also that it cannot be done without money; but being one of those cases which very materially affects the whole of the profession, there ought not to be any difficulty in raising the necessary funds. The cost of bringing on the action would not be great; whilst, even supposing it should happen to be decided against us as a profession, the influence created would have, "more or less," a lasting and good effect. But from a personal experience of a very similar kind, I am inclined to think the case to be what lawyers would term "a good one."

Is the Royal Institute powerless to do anything in this matter? Nowadays we have associations and unions of all kinds, and in all trades and professions (excepting architecture), fighting for their rights and protecting their own interests. Why should not we? However, I would suggest that a committee be formed, subscriptions invited, and the case fought out thoroughly, and let us see where we stand. Had time permitted, I should have liked to put the matter more clearly, but am in great haste.—I am, &c.,

Newcastleton.

Sir,—There are two sides to every question, and while the wrongs, fancied or otherwise, of the unsuccessful competitors, and the firm who were so fortunate—though apparently they think differently—as to gain the first premium, are being freely ventilated, perhaps an outsider who was not tempted into this particular competitive whirlpool may be allowed to make a few remarks.

While deploring as deeply as anyone else, who cannot get what he wants, the undoubted unfairness and favouritism that obtains in so many public competitions, I fail to see the sense of so much indignation in this case, or the plaintively-worded protest whose earnest prayers are intended to save our down-trodden profession from eternal disgrace, and to force a presumably sane committee to accept a design they do not want.

What if an assessor, however capable, has selected a particular design? The committee in whose employ he is acting are surely not compelled by any law of necessity or etiquette—certainly not of precedence—to accept it.

They acknowledge his choice by awarding the first premium to the plans he has chosen; but, preferring another design to grace their city, are only within their rights when they elect to employ its authors.

It should also be remembered that an assessor, being mortal, is as liable to make mistakes as anyone else who has to work for his living.—I am, &c., One of the Profession.

Sir,—Could not the Durham County Council reply with some truth, "Physicians, heal yourselves"? Constantly great complaints are made in reference to the way in which competitions are conducted; committees are roundly abused, and no one is moral but those in the architectural profession. In the above matter I notice that Messrs. Tree and Price are taking a prominent part, signing themselves as architects to the King's Lynn Municipal Building, which they won in competition in such a way as to quite disgust me with competitions. In this competition a great deal was asked for at a comparatively small amount to be expended. This condition I, in common with probably most of the competitors, and certainly with Mr. Seger, who was placed second, kept carefully in view. Messrs. Tree and Price sent in a design elaborate and ornate in the extreme, and against which simple designs had no chance unless the condition of cost was adhered to, and I have ever since felt, rightly or wrongly, that a gross injustice was perpetrated by these two joint competitors. Reform in these matters requires to begin from within. If the Durham County Council, in dealing with Messrs. Tree and Price, would ask them how they reconcile their expensive elevation for King's Lynn building with the condition as to cost, I think they would prefer to let "well alone."—I am, &c.,

One Disgusted with Competitions through
His Experiences at King's Lynn.

BLUE LIAS LIME—A CAUTION.

Sir,—We append copies of a correspondence we have had with the London Chamber of Commerce on this matter, together with circular referred to.

[Copy.]

London Chamber of Commerce,
Botolph House, Eastcheap, London, E.C.,
July 18, 1895.
Messrs. Greaves, Bull, and Lakin, Paddington.

BLUE LIAS LIME.

Gentlemen,—I am in receipt of your circular dated yesterday. I presume that although you do not allude to the fact in your circular, the practices which you describe would be a distinct offence under the Merchandise Marks Act, procedure under which is facilitated—firstly, by the fact that expenses thereunder before a magistrate are inconsiderable; and, secondly, from the fact that the onus of proof lies upon the defendant. In the event of the practice continuing, you will have rendered a valuable service by the issue of your circular, inasmuch as no person who has received that circular will henceforward be able to plead ignorance. From this point of view, perhaps, it might have been better had the Merchandise Marks Act been alluded to in your circular, and I am writing you in case you should think it desirable later on to issue a second edition thereof, in which you might make this allusion, and so strengthen possible future proceedings, either by individuals or collectively, on behalf of the trade in this matter.—Yours faithfully,

(Signed) Kenric B. Murray, Secretary.

P.S.—I shall be obliged if you will forward me two additional copies of your circular.—K. B. M.

[Copy.]

13, South Wharf, Paddington, W.
July 20, 1895.

Kenric B. Murray, Esq., secretary,
London Chamber of Commerce.

BLUE LIAS LIME.

Dear Sir,—We inclose additional copies of our circular which has been sent to all architects and engineers in and around London.

We are obliged for your thoughtful suggestion with reference to the Merchandise Marks Act, which we will adopt should we issue a further edition.

Although clause 2, subsection (*d*), would, without doubt, bring the practice referred to within its provisions, the writer is of opinion that, under the pretence of custom the Act is evaded to a very large extent. In support of this opinion he would refer to the official work (Vol. III. 1893) published on the Geological Survey, where, under the head of "Economic Geology," reference is made to this very point. Further, in a correspondence which appeared in the *Contract Journal* in November or December last, it was openly advanced by interested parties that "a custom had grown up of describing all hydraulic lime as blue lias," also that "blue lias possessed a double meaning: (1) lime made from a blue lias stone, (2) lime possessing certain hydraulic properties."

Under such circumstances it is not surprising to find the deception practised on builders and architects and their clients, to which we allude in our warning.—Yours truly,

For Greaves, Bull, and Lakin.
(Signed) H. J. Harding.

[Copy.]

Botolph House, Eastcheap, London, E.C.
July 22, 1895.

BLUE LIAS AND MERCHANDISE MARKS ACT.

Messrs. Greaves, Bull, and Lakin, Paddington.

Gentlemen,—I am in receipt of your favour of the 20th, with enclosures, for which I am obliged. Doubtless if a custom of the trade can be shown to exist, it will make a difference; but, as I have said previously, the onus of proof would here again, I believe, be upon the defendant.—Yours faithfully,

(Signed) Kenric B. Murray, Secretary.
(per G. G. C.)

[Copy.]

Botolph House, Eastcheap, London, E.C.
Aug. 12, 1895.

MERCHANDISE MARKS ACTS.

Dear Sir,—Referring to previous correspondence, I shall be obliged if you will kindly advise me, at your early convenience, for the information of the special committee appointed by the Chamber to consider the above Acts, whether you desire to make any further representations in regard to the working of these Acts.—Yours faithfully,

(Signed) Kenric B. Murray, Secretary.

[CIRCULAR.]

We beg respectfully to call the attention of all interested in good building and engineering work to the following most important facts, the knowledge of which may be the means of saving disappointment and loss.

Since it has become generally recognised by architects and engineers that Blue Lias lime is the lime best adapted for reliable mortar and concrete, the increased demand has led to a practice amongst some merchants and lime-burners of selling as Blue Lias lime (and in bags marked as such) material which is not Blue Lias lime at all.

It has come to our knowledge that a large and increasing quantity of lime is daily arriving in London and neighbourhood, and being sold as Blue Lias lime, which comes from districts where the Blue Lias formation does not exist, and also that a quantity of material, consisting largely of refuse from Portland cement works, is now sold as Blue Lias lime or hydraulic lime.

This being the case, it becomes a matter of the utmost importance to engineers and architects who are responsible for work to see that no deception is practised in the supply of a material on which its stability mainly depends.

In large and important public works, such, for instance, as the Tower Bridge and Blackwall Tunnel, the greatest care is exercised to obtain the best Blue Lias lime; but in a vast number of smaller works, which, though they may not be public, are of equal importance to those who provide the money for carrying them out, anything is accepted as Blue Lias lime which comes so invoiced and in sacks so marked, and it is only after the work has progressed some way, or possibly been completed, that it is found that there is the most serious defect which can possibly occur—a defect in the mortar and concrete. Complaint is made to the merchant, who, in his turn, complains to the manufacturers, and it is only when the material is traced to its starting point that it is discovered that it is not Blue Lias lime at all, but lime of some other description altogether, or very possibly some refuse containing an admixture of lime.

Our object in bringing the matter before you is not to advertise Greaves's Blue Lias lime, but in some degree to check a practice which, though injurious to us as manufacturers of genuine Blue Lias lime, is far more injurious to those who unwittingly allow themselves to be misled in the manner we describe.

Engineers, architects, builders, and contractors should not be satisfied when they receive material invoiced as Blue Lias lime that it is what it professes to be, but should satisfy themselves that it is supplied by one or other of the well-known manufacturers of genuine Blue Lias lime.

We have looked very carefully into this matter, and have satisfied ourselves that the practice referred to exists to an extent little suspected by those whose business does not bring them into almost daily contact with cases of the kind, as ours does.—We are, &c.,

Greaves, Bull, and Lakin.
13, South Wharf, Paddington, W.

ASSISTANT SURVEYORS, WAR OFFICE.

Sir,—About the end of 1893 the advantages and disadvantages connected with the above were freely discussed in your columns. I have since heard that travelling expenses are now allowed surveyors in changing stations, and that, on the whole, the service is made much more tolerable. If you could kindly find space for this letter, perhaps someone will let us have the truths? It would be especially interesting at this time, as another examination is to be announced very shortly.—I am, &c., Prospect.

CHIPS.

Good progress is being made with the provision of sewage work for Rawdon at Cragg-wood. The works are being carried out for the district council from plans by Mr. W. H. Radford, of Nottingham.

On Saturday the first school erected by the Lancaster School Board was opened by the Mayor of Lancaster, who is also chairman of the school board. The present building is only for 300 infants, though the full plans adopted provide for a mixed school to accommodate 1,000 children. The site cost £1,744, and, with the buildings, £2,483, the total cost per head being £8 6s.

At the West London Police-court, on Monday, Mr. Lane, the presiding magistrate, refused to make an order compelling the London School Board to erect a wire fence above a playground to prevent damage by stones thrown by the children. The School Board, it appeared, declined to provide netting on the ground that, if they acceded to one demand, they would have to fence in all their playgrounds in like manner.

A field containing an acre of land has just been added to the Arboretum at Lincoln. The field had a considerable fall to the south, and a great deal of excavating and filling-in was necessary. Mr. H. E Milner, of Westminster, was engaged to furnish designs, and these have been carried out under the superintendence of the city surveyor and a foreman of Mr. Milner's, at a cost of about £1,000.

A range of brick and iron warehouses which are being erected at the docks, Manchester, by the Manchester Ship Canal Warehousing Company for the Ship Canal Company are being proceeded with by the contractors, and considerable progress has been made, notwithstanding that unlooked-for delays have arisen in connection with the foundations. It is hoped that some, at least, of the 19 warehouses will be ready in time to accommodate part of the coming season's cotton crop.

Mr. Vivian, from the General Builders' Co-operative Society, addressed a meeting of builders' workmen at the Fore-street Temperance Hall, Exeter, on Friday evening. Mr. Henry Loman presided. The objects of the society were to organize the workers in the building industry on a co-operative basis, to undertake public and private contracts, and to carry on the trade of general builders and contractors. The capital is raised by shares of £1 each, payable 6d. per week per share. It was decided to form a branch society in Exeter.

Extensive alterations and additions are being carried out at the gas works at St. Alban's. They have been designed by the company's engineer, Mr. A. Phillips, M.I.C.E., and are being carried out in accordance with the plans and specifications prepared by him, Mr. Charles Bedford acting as clerk of works. The work is let in several contracts; the buildings to Messrs. J. and W. Savage, St. Alban's; the retort settings to Messrs. Giltrow Bros.. of Dudley; the condensers to Messrs. C. and W. Walker, of Donnington; the engine and exhausters to Messrs. B. Donkin and Co., London. The boilers are supplied by Galloway, Limited, of Manchester; and the ironwork by Messrs. Westwood and Wright, of Brierly Hill.

Intercommunication.

QUESTIONS.

[11401.]—**Warehouse Floors.**—In designing a warehouse floor, what load should the beams be calculated for per square foot?—Zero.

[11402.]—**Mortar.**—Will a practical reader tell me what quantity of mortar is required for a rod of brickwork?—Beginner.

REPLIES.

[11395.]—**Concrete Arching.**—The experimental information "Sigma" requires is not accessible, as far as I know. There are, it is true, results recorded in treatises; but they are not reliable, owing to the difference of composition of the concrete, its age, and the exact conditions of loading. Mr. G. Sutcliffe's work on "Concrete" gives Mr. Colson's tests. Mr. Thos. Potter's book on concrete gives a few experiments in connection with slabs and landings made of concrete.—G. H. G.

[11395.]—**Concrete Arching.**—Comparatively few experiments on concrete arches have been recorded, and in many of those that have been recorded, one or more of the particulars desired by "Sigma" are not given. On account of the varying qualities of concrete, the subject is fraught with considerable difficulty, and a large number of careful and expensive tests would be required before an accurate formula could be calculated. An approximate method of ascertaining the strength of arched concrete floors is given in Sutcliffe's "Concrete: its Nature and Uses" (published by Crosby Lockwood and Son). It is based on tests made by Mr. C. Colson, full particulars and illustrations of which are given. The book also contains particulars of some arched concrete roofs and bridges, including a bridge near Erbach, which has a span of 95ft., and a rise of 13ft., the concrete being 2ft. 3½in. thick at the springing, and 1ft. 7¾in. thick at the crown, and being composed of "1 part Portland cement, 1 part sand, and 3 parts carefully washed and screened Danube gravel, varying in size up to the size of walnuts." "Sigma" does not say whether he wants information respecting small arches of low rise (as for floors) or larger arches of considerable rise (as for bridges, roofs, &c.)—H.

[11396.]—**Thickness of Arches.**—A simple formula is given by Hurst, as follows:—To find depth at crown, multiply square root of radius of curvature at crown in feet by ·3 for blockstone in mortar, by ·4 for brick, and the result gives thickness at crown in feet.—G. H. G.

[11396.]—**Thickness of Arches.**—Perhaps "A Builder" will find the following table and remarks serviceable:—

Semicircular Arches, Thickness of,

Span of		Block stone.		Rubble stone.
5ft. and less		0ft. 8in.	… ..	0ft. 10in.
„ „ 6	„ „	0 9	……	0 11
„ „ 8	„ „	0 10	……	1 0
„ „ 10	„ „	0 11	……	1 1½
„ „ 12	„ „	1 0	……	1 3

Between 12ft. and 24ft. 1in. extra depth to last dimensions for every 2ft. of extra span. The above table is given in full in Rivington's "Notes on Building Construction," Vol. IV. p. 343. Another authority gives slightly smaller depths. In practice such tables require using in the light of experience, and coursing and appearance generally have to be considered. I should take the above as minimum thicknesses. Segmental arches should be slightly thicker than above, the thickness increasing in ratio to the diminution of the rise. Stone arches have been constructed up to spans of 200ft., with proportionately lighter thicknesses of crowns. Gwilt, "Encyclopædia of Architecture," in chapter on "Piers and Vaults," p. 381, says that Rondolet found "that the least thickness which an arch of equal voussoirs ought to have, to be capable of standing, was 1-50th part of the radius." In the remarkable single-arch bridge across the Dee, at Chester, 200ft. in span, the thickness of the arch at the keystone is 4ft. Arches of such large span with minimum thicknesses at keystones are always increased in thickness towards the abutments.—G. J. Bridges, A.R.I.B.A.

[11397.]—**Ventilation of Rooms.**—The quantity of air required per head per hour, in a room, to obtain a healthful atmosphere, is authoritatively stated to be 3,000 cubic feet. Thus it requires a space of 1,000 cubic feet for each person if the air of the room is changed three times every hour. As the door of a room is frequently opened, the above quantity applies only to a room closed, and having an inlet and outlet.—G. H. G.

[11398.]—**House Drains.**—For house drains the inclination should give a velocity for sewage of not less than 4ft. per second. The minimum rate of fall for this velocity, for a 4in. drain, is about 1 in 60 according to Neville's formula. For a 6in. pipe 1 in 85 will give the velocity. These are for pipes flowing one-half full.—G. H. G.

[11399.]—**Rolled Joist.**—Hurst gives the following rule:—Multiply four times depth by area of part of web below centre of gravity of the whole section, and divide by length in feet, and the result is breaking weight. Take one fourth of this for safe dead-load.—G. H. G.

◆

Colonel W. Lanton Coke, C.E., Local Government Board inspector, held an inquiry at the Soothill Nether Urban C.C. offices on Friday, relative to an application for sanction to borrow £1,700 for sewerage works, and £450 for street improvements.

A Local Government Board inquiry was held at Tonbridge, on Tuesday week, by Mr. Thomas Codrington, M.Inst.C.E., relative to an application from the urban district council for sanction to borrow £3,450 for the High-street improvements. Mr. Hobbs, surveyor to the council, explained the scheme.

Legal.

CONTRACTS AND PENALTIES.

THE Public Health Act, 1875, provides in section 174 (2), that "Every contract shall specify some pecuniary penalty to be paid in case the terms of the contract are not duly performed." The very serious question whether the absence of a penalty in such a contract made it absolutely void and incapable of being sued upon, arose in the recent case of the Prescott Urban District Council (*Times*, July 30) in an action in which they were sued for £278 for money due to the plaintiffs, the British Insulated Wire Company, for quarterly payments due for the supply of electric light and extra lamps. It appeared that there had been a contract made between the parties in November, 1892, for the supply of light for five years, under which the plaintiffs had supplied electric light down to March, 1895, and were paid for it by the Council down to June, 1894. Now the point was taken, on behalf of the defendants, that, as the contract provided no pecuniary penalty, although there was a proviso for arbitration in case of dispute, it was void and unenforcible.

After argument upon the case stated, a Divisional Court, composed of Baron Pollock and Mr. Justice Wright, held that, under the sections of the Public Health Act quoted, and upon the authorities, the agreement was not binding, and they gave judgment for the defendants. They so held apparently upon the sole ground of the omission in the contract of any pecuniary penalty to be paid in case of its not being duly performed, and they gave judgment for the defendants. This certainly seems a somewhat surprising result. There is the Statute, it is true; but although the section says every contract shall contain a penalty, it does not go on to declare that it shall otherwise be void and unenforcible. Then we have the fact that the parties have acted upon the contract for over two years, and paid money in accordance with its clauses. Nor had the absence of a penalty anything whatever to do with the claim for electric light supplied, as there was no question of any breach or non-performance which would make a penalty applicable. It is to be hoped that this case will go further; for as it stands, it seems an unjust and a dangerous precedent.

FRED. WETHERFIELD, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "BUILDING NEWS," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

A proposal is on foot to erect a mausoleum in the gardens attached to the famous Wiertz Museum, in Brussels, for the reception of the remains of the celebrated painter after whom the museum takes its name.

The corporation of Ipswich, who recently purchased the central portion of the ancient and well-wooded park of Christchurch as an addition to the open spaces in that town, confirmed at their last meeting the action of a committee who had bought a further picturesque portion containing 1,008 rods, and lying between Soane-street and the Lower Arboretum. The purchase price is £6,300, of which the odd £300 was subscribed by private donors. At the same meeting the corporation voted £1,750 towards widening Stoke-street from 23ft. to 35ft.

An important scheme for relieving the overcrowding among the working classes at Plymouth, which, next to Liverpool, is the most crowded town in the kingdom, was inaugurated last week, when the mayor laid the foundation stone of a workmen's colony of houses which the Plymouth corporation have decided to erect under the Housing of the Working Classes Act. The dwellings will consist of cottages and flats, which are to be let at rents varying from 2s. 9d. to 5s. 6d. a week, and will accommodate over 1,700 persons. The total cost of this scheme, including land, will be £51,000.

Lord Abercromby, the proprietor of Ferntower Estate, adjoining the burgh of Crieff, is about to feu for building purposes Callum's Hill, a wooded eminence to the north-east of the town. The hill, which rises 510ft. above the sea-level, will be opened up by the construction of three roads running in various directions. The principal road will be 1,370 yards in length, and another runs along the crown of the hill. The extent of the feus will vary from a quarter of an acre to half an acre in extent, and the total area laid out for feuing purposes extends to about 55 acres.

LEGAL INTELLIGENCE.

BRADFORD WATERWORKS ARBITRATION AWARD.—Mr. B. S. Brundell, of Doncaster, who was umpire in an arbitration case brought againt the Bradford Corporation by Mr. William Ferrand, of St. Ives, Bingley, in June last, has given his award. Mr. Ferrand sought compensation for compulsory easement of a pipe line through his estate at Cottingley, and claimed £3,028 for the easement, damage to property and woods, depreciation of the value of the estate, and for the sale of a small portion of freehold land. Mr. Walter Middleton, of Bingley, was arbitrator for the claimant, and Mr. T. Fenwick, of Leeds, for the Corporation. The pipe line is a portion of the conduit from the Nidd Valley works, and for the Corporation evidence was called that the full compensation should be £697. The umpire has fixed the amount at £958.

MEESON V. SHURMUR.—NORTH LONDON POLICE COURT, AUGUST 9, 1895.—The defendant, in the erection of Millfields-road Board School, had constructed a staircase of wood, and had formed the entrance doors so that only two-thirds of their width opened out, the clear width of each doorway which could be considered available for exit in case of panic being only 2ft. 2in. The district surveyor had disapproved of this construction, and had, under section 45 of the 1855 Act, served a notice of irregularity. This notice not having been complied with, he issued a summons under section 46. Counsel for the defendant took a preliminary objection that the magistrate had no jurisdiction, quoting the case of "The Queen v. Carruthers." The magistrate, after perusing the case, decided that he had no jurisdiction. Summons dismissed.

DISPUTED STREET REPAIRS.—In the High Court last week, before Mr. Justice Wright and a jury, the case of "The Corporation of the City of London v. Barnes," came on for hearing. It was an action by the Corporation against Mr. Barnes, of Halse-street, Islington Cattle Market, to recover £140 for repairs to that thoroughfare, upon which the defendant had property abutting. The defendant disputed payment on the grounds that the work in question had been done in order to raise the level of the road, that it was not a regular repair within the meaning of the terms of his lease, and that his property was damaged through rainwater flooding thereby. The jury returned a verdict for the defendant, but notice of appeal was given on behalf of the Corporation.

FATAL GIRDER ACCIDENT.—At the Marylebone Coroner's Court, on Monday, Dr. Danford Thomas held an inquest on George Scott, 39, builder's labourer. James Stevens, builder's labourer, stated that he and the deceased were employed by Messrs. Clarke and Bracey, builders, Coleman-street, E.C., and on Tuesday they were working at Messrs. Liberty's, King-street, Regent-street. At 5 p.m. they were about to pull a steel girder, 22ft. long, and weighing 314lb., up to the third floor by means of a pulley and rope. The deceased directed the operations and tied the rope to the girder. With the assistance of two other men they pulled the girder from the ground, and although it became apparent that the girder was too heavy, they continued to hoist it. The upper end had reached the sill of the third-floor window, when the rope broke and the girder fell, crushing the deceased, who was immediately underneath. Witness had suggested to the deceased that they should use a double pulley, but he chose the single one, remarking that the job was very easy. Henry West, foreman to Messrs. Clarke and Bracey, stated that the deceased had worked under him nine years, and was looked upon as a thoroughly practical man. A juryman, after examining the broken rope, said it was rotten from end to end, and ought never to have been used. Mr. Humphrey J. Bracey, partner in the firm of Clarke and Bracey, was of opinion that the rope produced would carry 3cwt. or 4cwt. safely with a fair strain; but the use of a single block imposed a heavier strain than the rope could bear. That was the first fatality witness's firm had had during 22 years. Mr. Walter Stevenson, secretary of the Builders' Labourers' Society, of which the deceased was a member, said the contention of the relatives was that the rope was perished and should never have been used for the work. He proceeded to pull the rope to pieces in the witness-box, and added that such ropes were constantly being sent out without the slightest test being made. Besides that, the man ought never to have been sent to do the job without supervision. Charles William Hewett, clerk in the Union Bank, Argyle-place, stated that he saw the occurrence. The four men were standing immediately under the girder, which they raised with a series of jerks that nearly took them off their legs. Not only were the men in a very dangerous position, but no precautions were taken for the safety of the public who were walking underneath. The jury returned a verdict of "Accidental Death," and the coroner impounded the rope.

A receiving order has been made in the case of William Hesketh, of Birkenhead and Manchester, architect.

PARLIAMENTARY NOTES.

THE TWENTY-FIVE INCH IRISH ORDNANCE SURVEY.—In answer to Mr. Field, on Tuesday, Mr. R. W. Hanbury said: Maps of the whole of the county Dublin and portions of the counties of Kerry, Galway, and Roscommon have been published on the 25in. scale, and resurvey on that scale is now proceeding in Clare, Galway, Kerry, and Mayo, and in various towns of which plans are required by the Commissioner of Valuation. The total area surveyed up to the 31st of December last was 4,751 square miles, the area published being 1,646 square miles.

STAINED GLASS.

GREENHEAD, N.B.—Messrs. Stephen Adam and Co., of St. Vincent-street, Glasgow, have just completed the Tullis Memorial stained glass window for the parish church of Greenhead, N.B, a building which is at present in the course of renovation. The memorial window, the first of its kind in the church, is to be placed in the organ recess. The window consists of three lights, divided into six sections. The subject is a double one. In the lower panels the nativity of Christ is represented, while the upper lights show forth the glory of the Saviour, whose figure dominates groups of worshipping angels.

WATER SUPPLY AND SANITARY MATTERS.

ALDERSHOT.—The existing artesian bored tube wells at the waterworks, several in number, varying in depth from 220ft. to 300ft., drawing some million gallons of water per day from the chalk, proving inadequate to meet the increased requirements, the directors have instructed Messrs. C. Isler and Co., hydraulic engineers, London, to fix additional wells for the supply of the town.

CHIPS.

The new infirmary, Lancaster, is being erected from the designs and under the superintendence of Messrs. Austin and Paley, architects, Lancaster. The various wards and other rooms are being warmed and ventilated by means of Shorlands' patent Manchester grates, the same being supplied by Messrs. E. H. Shorland and Brother, of Manchester.

After a heated discussion, and by 18 votes to 11, the town council of Wigan resolved on Tuesday to apply for powers to borrow £62,669 for the purpose of carrying out a scheme under the Housing of the Working Classes Act.

A processional cross has been presented to Kettering Church. It is of massive oak, and was carved by Miss Lindsay from the design of Mr. J. A. Gotch, the architect for the restoration of the church.

A scheme for the award to pupils of all schools situated within the city of Birmingham, and receiving aid from the Education Department, of free admissions to branch schools of the Municipal School of Art has been issued.

A fire, caused by an overheated flue, broke out on Tuesday night in the residential portion of Appleby Castle, the Westmoreland seat of Lord Hothfield. The fire-engine, Lord Hothfield's own gift to the town of Appleby, quickly extinguished the flames, but not before considerable damage had been done to the castle. The east windows are considerably damaged, in addition to the roof, which is burnt away in places. The loss is estimated at £3,000. The ancient records and pictures in the castle were fortunately uninjured.

A memorial window has been erected at Revesby, Lincolnshire, in memory of the late member for the Horncastle Division, the Hon. and Right Hon. Edward Stanhope. It is the result of a county subscription. The centre represents our Lord in Glory, whilst right and left are figures of saints commemorating various phases of Mr. Stanhope's career. That of Edward the Confessor commemorates his Christian name; St. George, St. Martin, and St. Alban, his connection with the Army as Secretary of State for War; St. Jerome and St. Wilfrid his interest in national education; and St. Thomas his official connection with our Indian Empire.

The Theatre Royal, Dewsbury, which was partly burnt down on the 4th of May of this year, was reopened on Monday week, after having undergone partial rebuilding, comprising an entirely new and much enlarged stage, new circles, boxes, stalls, &c. It has been fitted with electric light, fireproof curtain, sprinklers, and all new working appliances, refurnished and decorated throughout. The building is owned by Mr. J. A. Love, of Birkdale, and Mr. C. Sydney Ingham, of Manchester and Southport, has acted as his architect, while all the contractors are local men.

Our Office Table.

For some time past the trustees of the estate of Earl Dysart, consisting practically of the whole of the land between Richmond and Kingston, and bounded on the other two sides by the River Thames and Richmond Park, have desired to increase the commercial value of the property. The estate, however, is intersected by footpaths, and includes a large amount of land over which there exist Lammas rights, which prevent the trustees building on the land. A few years ago the Dysart trustees offered the Richmond town council a site for an isolation hospital, on condition that they would consent not to oppose the closing of certain footpaths in the neighbourhood of Ham House. A suggestion was also made for a carriage drive along the river side from Richmond to Teddington Lock, and thence into the High-road from Richmond to Kingston, at a point about a mile out of Kingston. These proposals were rejected by the council, and the matter dropped. The trustees have now caused a Bill to be drafted, providing for an extinction of the Lammas rights, and for the closing of a number of footpaths, principally those in the neighbourhood of Ham House and near the river side. It is proposed to compensate all who have recently exercised Lammas rights. The trustees are willing also to make certain footpaths in exchange for those to be closed, and offer to hand over Petersham Meadows, at the foot of Richmond Hill (now advertised to be let for building purposes), to a local authority, without consideration, to be kept for recreation purposes, and also to vest Ham Common, without consideration, in the Ham district council.

Half of the proposed coach-road to connect Borrowdale with Wastdale, and open up the heart of the Lake District, has now been surveyed, and the remainder, from the top of Sty Head Pass to Wastdale Head, has undergone preliminary survey. The work has been done by Mr. Bell, the Cumberland county surveyor, who has marked out the line of the road with whitewash. At present people going from Borrowdale to Wastdale Head by conveyance must traverse a distance of 55 miles. The distance from Leathwaite, where the new road would commence, to Wastdale Head, where it would join the road to Seascale, is, as the crow flies, 3½ miles. The new coach road would be 6¼ miles in length. It would have a ruling gradient of 1 in 12, and some portions would be much easier, the gradients ranging from 1 in 14 to 1 in 17. The proposed new road follows the right bank of the Derwent, from Leathwaite to near the source of the river; it then turns round and goes under Airn Crag, and on to the top of the Sty Head Pass, keeping Sty Head Tarn on the right. Going down to Wastdale it runs along the side of Great Gable, at a considerable elevation above the existing pony track, and then sweeps into Mosedale, and finally turns and descends to Wastdale Head. The views from the road would be as fine as any that could be obtained from any existing road to the Lake District. The cost of constructing the road has been estimated at about £10,000. The proprietors of the land are willing to give the necessary leave, and there are no engineering difficulties to be overcome.

Mr. Howard Colls is to be congratulated upon his happy idea of combining instruction with pleasure. By his invitation, the foremen in the employ of Messrs. Colls and Sons, with several clerks of works, numbering about 50, had an enjoyable excursion on the afternoon of the 10th inst. Taking train to Swanley, brakes were in waiting, to drive them to the ancient church of St. Margaret, Darenth, where the courteous vicar met the party, and pointed out the most interesting features in the building, which dates from the 7th century, and in an admirable manner, explained the various alterations which had been made at different periods, which gave proof of its history. The party then proceeded to view the remains of the Roman villa, in the immediate vicinity, which have recently been discovered. Mr. Payne, F.S.A., who superintended the excavations, attended, by appointment, and explained very fully the various portions of the remains, which are in an excellent state of preservation, and well worth visiting. The drive was then continued through one of the prettiest parts of Kent, to the Lion Hotel, Farningham, where an excellent dinner was provided. After the usual loyal toasts were duly honoured, Mr. Howard Colls expressed the pleasure it gave him to welcome so many who had been in the service of the firm for many years. It spoke well for the character of the foremen, to find that from a paper which had been passed round, and signed by the 41 foremen present, the average length of service was 21 years; he thought also that, from that he might, perhaps, without egotism, consider he was not a bad master. The health of the firm was proposed by Mr. Davenport, the senior foreman; and the toast of the clerks of works, proposed by the chairman, was briefly responded to by Mr. Wheeler. After a short time spent in the grounds of the hotel, the party returned to Swanley for town, having thoroughly enjoyed the excursion.

The Newcastle-on-Tyne Society of Antiquaries' excavations at the Roman fortress of Aesica, on Hadrian's Wall, have now almost reached their conclusion for this season. The north, south, and west gateways have been examined, the junction of the wall with the fortress laid bare, and some of the interior buildings traced out. The west gateway, it seems, has been built up at two successive periods, first one half of it and then the other. The interior buildings contain some curious furnaces, possibly the workshops of the fortress. The junction of the wall with the north-west corner of the fortress is especially interesting. The lie of the masonry clearly shows that both were built at one time, and suggests that the fortress must be of the same date as the wall. Among the lesser finds are many iron tools, bones, glass, pottery, millstones, and so forth, and two very fragmentary inscriptions. The Newcastle Society of Antiquaries will continue these interesting excavations next year.

The roofing-tile industry seems to be not a very large one in the United States, according to *Brick*, which observes the number of manufacturers is quite inadequate to the requirements. We fully sympathise with our contemporary in their desire to see more burned-clay roofs in the country. A method of making roofing tiles is described. The silver-grey or "blue smoked" tile first made in Holland is advocated as being well burned and a waterproof tile. There are objections to a vitrified tile; it is apt to warp and twist in firing, to be brittle, and to conduct the heat; but the "silver-grey" tile is burned just hard enough, and is absolutely waterproof. It is a "burned clay tile carbonised throughout," and can be made of any shape. In this country tile roofs are increasing, and many of our best buildings are now roofed with it.

The foundation-stone of the National Monument to the late Emperor William I. was laid in Berlin on Sunday by the present Emperor. Some years ago a competition committee was appointed to select a design and to determine on a suitable spot for its erection. The neighbourhood of the Bradenburg Gate was chosen as a site, and the premium had been awarded, when, in 1890, the Federal Council demanded that a fresh and limited competition should be held for designs for a memorial to be placed on the Schlossfreiheit, a strip of ground lying between the Spree and the west front of the palace. The Government selected a design by Professor Begas, of Berlin, which, when exhibited in the lobby of the Reichstag last year, was unfavourably criticised. It is, however, to be carried out in bronze on the Schlossfreiheit site; but only four million marks —half the sum demanded by the Government— has been voted by the Reichstag, who declared that no supplementary supplies will be granted.

The administration report on the railways in India for 1894-95 states that the total length of railways open and sanctioned on the 31st of March, 1895, was 21,072¾ miles, being a net increase of 650¼ miles during the year. The total length of railways open for traffic on the same date was 18,855¼ miles, being a net increase of 355¼ miles, leaving 2,217½ miles still under construction or sanctioned for commencement. The mean mileage worked during the calendar year was 18,694 miles, being an increase of 487 miles over the figures of the previous year. Of the new lines, 284½ miles are of the standard gauge, the remainder being of the mètre gauge. The proportional mileage of the various gauges open is as follows:—Standard, 10,875¾; mètre, 7,712; special widths, 267½, making a total of 18,855½ miles. The statistical return on the capital expenditure was 5·69 per cent. against 5·46 per cent. in the previous year. Subsequent to the close of the year 1894-95 and up to date (May 30), the additional mileage reported to have been opened to traffic is that of the East Coast standard gauge (State) railway, from Palasa to Berhampore-Ganjam, 46 miles, and the Bína-Guna standard gauge (native State) railway, 73½ miles. The latter has been opened for goods traffic only. During the year sanction was given to the construction of additional mileage to the extent of 651¼ miles.

The employment of nickel steel for structural purposes is a question that is probably destined to receive the attention of engineers. The adaptation of this metal for warships and armour plates has indicated its possible value for bridges and other structures. Its ductility, elastic properties, and toughness appear to recommend it for such details as plates, angles, rivets, and wire. If it be true that specimens of nickel steel tested show an ultimate resistance equal to one-third more than ordinary steel, there is every probability that for special purposes of construction the nickel metal will force its attention on engineers, despite its higher price. The reduction in weight is an important consideration in this connection.

According to an interesting paper, by Prof. J. T. Rothrock, of Pennsylvania, reported in the *North Eastern Lumberman*, great waste is perpetrated in North American forests, which is productive of great changes in the people, upon rainfall, temperature, and climate. Thousands of people never see a fullgrown tree or one that has attained the largest size under the best conditions of growth. He says there are mills which turn off 400,000ft. of lumber a day, and from statistics furnished by the Government, if the population of the United States remains what it is to-day "all the timber in the country will be practically exhausted in 60 years." Allowing for the ordinary increase of population, he thinks it is not likely that the timber will last more than 40 years. A large portion of this lumber is actually wasted, the wasted lumber being used as fuel to start forest fires, which are a disgrace to our civilisation. The destructive fires of the North-West are appalling, and it is quite time the United States Government took the matter up and stopped this wholesale destruction, which could be done, as Professor Rothrock shows, if every State paid a bounty on every acre of trees that is planted irrespective of ownership.

The North-East Sea Canal is crossed by several high-level bridges of considerable span. One of the finest of these is the Grünenthal Bridge, which has an arched span of 513·5ft. The bridge is a high-level structure, located on the line dividing the watersheds of the Elbe and Eider. It rises 65ft. above mean canal level. The members of the arched girders are crescent-shaped, with a rise of 77ft., and are slightly inclined towards each other. The ratio of rise to span 7·3 or 6·1 : 1. The roadway cuts the arched members, and these are connected by vertical rods. The weight of girders and roadway rest on the pins and abutments; but the roadway does not interfere with the expansion or contraction of the tie which connects the girders and roadway. The arched members abut on two massive masonry towers. Full details and engravings of the Grünenthal Bridge (designed by Messrs. Eggert and Greve) and the Levenson Bridge, another example of an arched-girder bridge supporting an upper roadway, are given in *Engineering*.

Trade News.

WAGES MOVEMENTS.

Ramsbottom, Lancs.—The operative painters have obtained from the employers, after the threat of a strike, an advance of wages from 7½d. to 8d. an hour. A like increase was recently obtained in the neigbouring town of Bury.

M. Barrias, the sculptor, has completed the monument to Emile Augier, which is to be erected in October in the centre of the square in front of the Odéon at Paris. The monument consists of a bust of Augier, placed on a pedestal 18ft. in height, with three allegorical figures surrounding it.

At the last moment a petition has been presented to the House of Lords against the proposed extension of the Borough of Southampton. It had been proposed to take in Shirley and Freemantle, greatly adding to the area, population, and rateable value of the borough, and an amicable settlement had been arrived at. Unless an immediate compromise is arrived at, all arrangements made for next November must fall through, entailing great inconvenience.

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXIX.—No. 2121.
FRIDAY, AUGUST 30, 1895.

LONDON STATUES.

IT is not often that the British public troubles itself about art of any sort, and of all the arts the one it ignores most completely is sculpture. Yet, within the last week or two, it has directed an interested eye to the figure of the Duke of York in Carlton Gardens, and has even asked why the statue of Cromwell is no longer to be seen at South Kensington. All this looks like an indication of growing intelligence. Unfortunately, it has to be explained on lower grounds. Cromwell's absence was complained of for political or religious reasons, and the late Duke of York became an object of interest simply because it was rumoured that his column was unsafe. This is now denied. The Duke, it appears, is likely to remain one of the common objects of the sky, though the Protector is "stored," for want of artistic merit.

The column at the bottom of Waterloo-place was completed in 1834. Its height, apart from the figure, is the same as that of Trajan's Pillar at Rome—namely, 124ft. The foundation is 56ft. square at the base. The statue, in bronze, was by Westmacott, and was described at the time as "a splendid specimen of art, worthy of this country and of the eminent artist by whom it was modelled and cast." "It faces"—we wonder how many of our readers ever noticed which way it *does* face?—"it faces the south, the front of the statue thus receiving far more light than if it had been placed north." It was also thought becoming that this commander-in-chief should look towards the Horse Guards. The figure is 13ft. 9in. high, and its metal averages three-quarters of an inch in thickness. Judging from the views published at the time, the sculptor, or the architect, exercised a wise discretion in raising it beyond the limits of ordinary vision. It is consequently less offensive than many of its tribe. The usual criticism which the monument evokes is that there is a good deal of column to a small quantity of statuary, and profane persons have compared it to a tallow candle, in which his Royal Highness represents the snuff.

It must have been a curious type of mind which first conceived the idea of commemorating an eminent man by perching him up in the air like a pigeon just alighted. Perhaps the inventor of the memorial column agreed with Bacon in believing that greatness is seldom attained without the aid of vices as well as virtues. He remembered, it may be, the story of St. Simeon Stylites, who took up his abode on a column by way of penance; and, in placing some hero of the period in the same position, meant slily to suggest that he deserved the same penalty. But, even if this is so, insult should not be added to injury.

It is bad enough to be made a public spectacle, without being converted into a perfect laughing-stock; and Nelson, though he had his imperfections, was not so far inferior to his neighbour in Carlton Gardens that he deserved to be represented as a guy. This, however, or worse than this, is what was done with him. A more ridiculous statue than Nelson's can hardly be discovered, perhaps, in the world. That its sculptor made a great feature of the loss of an arm may be pardoned. It is so much easier to represent the absence of a limb than the limb itself, that the accident may have seemed to afford him the chance of a great success in portraiture with very little trouble. But there is not the same excuse for so arranging a coil of rope that, from many points of view, it seems part and parcel of the Admiral's body. Whatever Nelson was, he was far enough from being a ring-tailed monkey; but it is this animal, and not a human being at all, who might easily be supposed to have acted as the model for the great abortion of Trafalgar Square.

Many of the London statues, however, have not even the merit of being laughable. Sir Robert Peel, at the end of Cheapside, succeeds perfectly in what all Englishmen are said to aim at—namely, in having nothing, either in person, dress, or expression, to mark them off from their neighbours. The same may be said of Sir Rowland Hill, at the back of the Royal Exchange, and if his statue and Peel's took a midnight walk—as did that of the Commendatore in "Don Giovanni"—and then by way of a change stepped on each other's pedestals, few of the citizens would be likely to detect their frolic. But they are far too solemnly respectable for this. No thought of such levity will ever enter their heavy heads; no such movement will ever disarrange the perfect fit of their faultless frock coats. William IV., indeed, may fling off his blanket —which, in the recent sultry weather, seemed painfully hot for so stout a man—and may startle the 'bus-drivers, as they come off London Bridge, by appearing *in puris naturalibus*. He looks capable of it; but respectable statues, in modern costume, have to stand patiently through summer's heat and winter's cold. To see, for instance, the fortitude of Mr. Peabody—sitting bareheaded in his inclosure, like Mr. Pickwick in the pound, when snowflakes are settling on his hands, his head, and even the very tip of his nose—is enough to bring tears to the eyes of a stoic. The philanthropist who helped to shelter so many working men surely deserved some kind of shelter for himself.

We might go all through London noting failure after failure. The public admit it, and say, with a kind of pride—the pride of people who excel in so many great matters that they can well afford to confess their incompetence in a small one—"We are not an artistic nation." But the faults of London statues do not often rise to the dignity of being artistic faults. The greater part of them are faults which indicate the absence of ordinary intelligence—not so much in the sculptor or the modeller as amongst the people who give the sculptor or the modeller his directions. The process is after this fashion: A committee is appointed and subscriptions are asked for to commemorate some eminent man. This committee settle, before consulting any artist, what form the memorial is to take. They are guided by precedent. Other committees have put up bronze statues on pedestals, therefore, they decide to have a bronze statue on a pedestal. They see what has come of the previous ones; but they are too insensible, too unconcerned, too unimaginative to aim at anything better. Common-sense would tell them that an outdoor statue in a cold, dull, smoky town like London is an absurdity—a thing that for two-thirds of the year simply makes one shiver to look at it. Common-sense would tell them that if they must have an outdoor statue where sunshine is so scarce, the very worst thing they can do is to have a black one. Common-sense would tell them further, not only that bronze with us soon turns black, or nearly black, but also that it is a material chiefly adapted for figures with a great deal of action and very little drapery. It is an excellent substance for displaying extended limbs and energetic attitudes; it is the heaviest and deadest of all things when a mere expanse of coats and trousers has to be represented.

But in dealing with matters which pertain to art, committees take leave, not only of common sense, but of all their senses. They only ask what the previous committee did, and straightway do the same —just as a runaway sheep sees the sheep before him leap over a precipice and break his neck, and with the result in full view, leaps at the same place, and does the same thing.

The London statue, therefore, is predestinated to failure, even before it gets into the artist's hands. What can he make of it, under such a sky, in such an atmosphere, and, with modern dress, in such a material? He cannot represent a prime minister as a dancing faun, or a corpulent chancellor of the exchequer as a *discobolos*. He is bound down to ordinary clothes, or, at most, robes of office, and either of them imply a great shapeless mass of bronze as the bulk of his figure. All that remains to him is to put what expression he can into the head and the hands. How far he succeeds there, few of us know. His statue's countenance soon gathers blackness—in a very literal sense. A negro, accustomed to watch the indications of the human face divine under such conditions, might see gleams of intelligence in it; but to the average European a dozen bronze figureheads have as strong a family resemblance as a dozen sweeps. If a memorial committee want to realise what sort of thing it is that they are really going to set up, let them blacken their own hands and faces, and stand by turns on the top of the nearest garden-wall. They will then be of the same hue as their proposed casting, and would be seen in much the same position —that is, dark against the sky. If, after trying the experiment, they are filled with mutual admiration, then let them go on and prosper.

The sculptors, however, deserve some of the blame. It is not their fault that their works turn out badly under these senseless conditions. But it is their fault, in the past, if not in the present, that such conditions have become common. It is chiefly they who have set up the works of Greece and Rome not only for universal admiration—which is right—but also for universal imitation, which is absurd. Outdoor statues were reasonable enough in a warm, bright climate like that of Italy. Bronze statues were reasonable for the lightly-draped class of figures which, in many attitudes, require something stronger and tougher than marble. But it shows a want of consideration, worthy of committees themselves, to advise the use of bronze in London, simply because the ancients used it in Southern Europe. The question is not what the Greeks did at Athens, but what they would have done in modern London if they could have been set to produce a memorial here, and we may be very sure they would not have produced a Peabody, or a Peel, or a Duke of York at all like those which greet us in the City and the Park.

It is time we gave up detached statues standing, miserable and unprotected, in the open air. It is time we gave up making any outdoor statues of bronze, unless, at the very least, fashions change enough to let something of the human form be seen throughout them. We have had two centuries of costly experiment, and if experience can teach us anything, it is time we took its lessons to heart. Indoors, in halls and museums and galleries, detached figures can be appreciated. Out of doors we have made almost uniform failures of them, and our nearest approaches to success have been alto-reliefs like those at the Albert Memorial. There is much more to be done in that direction, in the combination of boldly-designed figures with architecture as a setting and a background, and in that direction, we may hope, the belated intelligence of committees will, before long, permit us to move.

IS A CONTRACTOR DESIRABLE?

WHETHER it is better to carry out a building by contract, or to become one's own builder, is a question which still occupies the attention of many people, especially building owners who have spare time and aptitude, and who imagine they can save, and also municipal bodies, who think the latter plan is more economical, and the work done is better. We have known a few proprietors who have carried out their own buildings without a contractor with some advantage to themselves. A large landed proprietor, for instance, who burns his own bricks, or owns a quarry may erect a house or build farm buildings or labourers' dwellings on his estate by employing labour and purchasing the necessary materials in the open market. Or an employer who engages regularly a large number of hands, bricklayers, carpenters, and other workmen, and who can keep them continuously employed may very profitably erect dwellings on his estate. A corporation has facilities for doing work in the same manner when they have workshops and plant, and proper agents or surveyors; though in some cases corporations have not found the system lucrative, and, if we are rightly informed, the London County Council have tried the plan with doubtful results. The success or non-success of the plan will invariably depend on the competence of those who are intrusted with the work. It is not merely buying materials in the cheapest market, but the mode in which they are converted and used; how to set about the work, to utilise the labour to the best advantage.

The engagement of men suitable for the work, choice of methods, and the superintendence are vital conditions. Any defects in materials or workmanship on this system have to be made good at the cost of the owner or corporation; they cannot be thrown on the contractor. Two important conditions seem necessary. The men employed ought to be continuously engaged upon similar work, and the workshops ought to be sufficient, and well equipped with the necessary apparatus and plant. In a paper on this subject, a writer, Mr. H. A. Elton, speaking of the two modes of carrying out works in the Royal Engineer establishment, says:—"The carrying out of works under this system is practically impossible, except for public bodies, as workshops must be erected, machinery set up, and materials purchased in large quantities, if economy is to be considered at all; and a large staff of permanent employés is necessary for the efficient execution of the work." The same authority says, it is extremely difficult when works are scattered, as they would be in those of a corporation, to prevent robbery of material; old men get taken on works who are unable to do a full day's work, and much time is wasted in waiting for jobs and materials. These are considerable drawbacks to public bodies carrying out their own building. No less objectionable is the temptation to charging an excess in one work to another, or of equalising the expenditure on different works for the sake of appeasing the corporation or the ratepayers, so that it is very difficult to find out what has been the cost of any particular work—a proceeding which often leads to charges of favouritism and corruption. For these reasons, Mr. Elton thinks it desirable that "the execution of works through a contractor is desirable in all cases, except where the work is very extensive, and likely to be carried on at a uniform rate for a great number of years." He goes on to say allowance is rarely made for interest on sums paid for materials kept in stock, depreciation of machinery, plant, waste of time and materials, loss due to employment of infirm workmen, and for these reasons he says:—"I am convinced that the actual cost of works carried out on this system is greater than that of similar works executed by contract when care is taken that the information furnished to the competitors is definite and exact."

But there are evils also in contracting. Every architect knows that it is very difficult to maintain the standard of good materials and workmanship; how irresistible is the temptation to evade the specification when a low tender is chosen. Again, the workman does not get his fair share in the profits of the business. Besides, a general opinion prevails that it is better to get one's own materials than to trust to another whose chief business is to make a profit. No doubt; if one can be sure of selecting with judgment and of getting it converted or used with skill, but not otherwise. Where the contractor is a skilled tradesman himself, or a competent and responsible man of business, the contract system ought to produce satisfactory results. It is because people regard cheapness first, and workmanship as a secondary consideration, that they have to endure the speculative element with all its drawbacks. If only the building owner was satisfied with obtaining a reasonable price, he would have little to find fault with. For this purpose the competing builders must be provided with quantities and specifications that are definite and complete. Any uncertainty introduces the speculative into their calculations. The question of schedules is a material consideration. Sometimes the contractor takes work under a schedule the prices of which have been fixed, and he puts a percentage on these prices. There are advantages in this plan when the class of buildings has been considered, and the prices adjusted to the locality and to the circumstances. The surveyor who prices knows perhaps better than the contractor the real requirements, and a more exact tender is obtained.

For repairs and small items, this form of schedule has one merit: it prevents guessing, and any elaborate kind of work is more exactly estimated than it would be if each contractor had to affix a price. But the usual form of quantities on which the prices are filled in by the contractor himself is more suited for works of an extensive kind. The contractor is enabled to take advantage of any special facilities and machinery or plant he possesses, and therefore to estimate certain items at a lower rate, to the manifest gain of the employer. If the actual quantities of materials and workmanship are put down and priced, neither party ought to be a loser, as the actual work is paid for, no more and no less. But it is not always possible to determine beforehand the exact quantities; for example, the number of yards of excavation or concrete for foundations, and in such a case a priced schedule has the advantage, the actual quantity being obtained by measurement. The lump-sum tender is therefore better adapted when the actual quantities can be taken pretty accurately. When they cannot be so ascertained, the contractor must either be paid for too much or for too little. In the latter case he sometimes endeavours to recoup himself by evading the terms of the specification. If, however, the superintendence is efficient, we do not see why the contract system, with all its faults, should not be quite equal to the plan which makes every man his own contractor.

BUILDING AIDS.

THEY say it is a poor workman who quarrels with his tools; yet, admitting the force of the old adage in one sense, it is equally true that to the instrumental agencies, materials, and means he employs the artist must look for much of the success of his work. The architect seldom troubles himself much about those facilities and mechanical aids which are of the utmost concern to the builder and contractor. To take, for example, the simple matter of facilities for carriage of goods and transport—say, for instance, the conveyance of materials, like stone or brick—to a building site; what a vast difference it makes to a contractor in his tender whether the carriage is easy or difficult, whether the quarry is within access, or the transit of materials can be accomplished without delay or expense. Or, in the matter of conversion or handling, how much depends on machinery for conversion, and appliances for haulage and lifting, pumping, and other operations? The "scaffolding"—to use the term in a wide and figurative sense—is becoming a very important item in building operations, and one which the architect, no less than the builder, ought to know something about. All the aids and agencies, mechanical and otherwise, which are external to the building, or which are used as temporary expedients by the builder, may be included under the phrase. The last quarter of a century has added greatly to the number of those mechanical aids which are now so much used on our larger buildings. The development of scaffolding for the lifting and handling of heavy masonry and ironwork is worth notice. A timber-framed scaffold in the shape of a huge tripod, for carrying a steam-crane, is placed in a central position, so that all parts of the building can be brought within the radius of the jib. By its means the heaviest material can be lifted and handled with the greatest nicety, and swung round just where it is wanted. Beside the giant arms of the steam-crane the old crab and tackle is a pigmy operation. Overhead travellers are now used very extensively for a similar purpose, and one of the latest developments we hear of is a hydraulic field-riveter, which is in use in France and America, by means of which a large proportion of the rivets in a bridge can be driven by a machine suspended from a trolley that travels transversely across the bridge upon girders, which also are moved longitudinally on a track. Thus, the riveter-traveller commands the whole bridge. In these and like aids the architect has a special interest, for they not only facilitate building operations, but enable the work to be performed with greater accuracy. Building plant is becoming so multifarious and scientific, that it is beginning to form an important branch of the builder's art, and it may be of interest if we cast our eye over a few of the many appliances which are employed. Of course, there are those who will assert that these mechanical aids have rather hindered the artistic impulse, and have brought about a mechanical mode of execution detrimental to real handiwork. "Look at the great works," they will exclaim, "which were erected hundreds, aye, thousands of years ago, without those appliances—have we beaten them?" In some respects aids of this kind have been prejudicial. For example, machine labour in joinery has interfered with artistic craftsmanship by cheapening labour; but in other departments, as in lifting, handling materials, pumping, excavating, these aids have been helpful. We may not have surpassed our forefathers in architectural skill; the fault is not, however, ours, but the system which places the mechanical facilities we possess in the forefront, in encouraging cheap labour. Labour-saving plant is not used as it should be, to save time and reduce manual labour, for cutting stone and timber in bulk, but for the purpose chiefly of competing with the trade, of encouraging cheap repetitions, and of enabling the contractor to underbid. Thus, in a large work, in which excavation forms a considerable part of the labour, the contractor who has certain mechanical aids can compete advantageously against the man who has an inferior plant; but, if he likes, he can employ them to reduce the price for excavation far below what it should be, allowing for interest on capital invested. So, again, the large machine-joiner can compete ruinously against others in the trade who have no plant.

Many of the trades connected with building have been almost revolutionised by mechanical apparatus. In excavating and foundation work on a large scale, we have now various machines for pumping, for excavating by hydraulic drills and otherwise, for hoisting materials, for boring rock, breaking stone, &c. To lay foundations at great depths below water for bridges, or other structures, the pneumatic caisson has taken the place of other methods. Many of the piers of our great bridges have been constructed by the aid of the compressed-air or pneumatic process. By this method the air is compressed into a box or cylinder, which drives the water out, enabling the material inside to be excavated and removed from the interior. The ingenious invention of the "air-lock" has enabled the men to enter and leave the working-chamber with comparative safety. As our readers know, the air-lock is simply a contrivance by which the excavators can enter the working chamber under air-pressure; it is an air-tight box with two doors opening inwards towards the pressure in the shaft which connects the caisson with the outside atmosphere. A section of the shaft, or preferably the top of it, may be used as an air-lock. The doors are made to close against rubber gaskets, so as to exclude the air, the pressure of which keeps them shut. Materials, such as sand, mud, and gravel, can be removed by the sand or mud-pump, or by blowing it through pipes, and various patented machines are used for this purpose. Then there are "grabs" used in sinking cylinders for removing hard deposits, rock drills for rock-boring, pumping apparatus, and sundry other plant which the large contractor employs. All these improvements have rendered it possible to execute large engineering works with ease and despatch. They form, in fact, quite a distinct branch of the trade, in which the resources of machinery—hydraulic and pneumatic—have been called into exercise. Their great merit is that they have economised manual labour in the execution of foundation work, and have in some instances reduced the cost 20 to 30 per cent.

The assistance rendered to other trades by mechanical appliances has been considerable. We have referred briefly to the improved scaffolding, hoisting gear, and means for handling heavy materials. Bricklaying and masonry may be said to have developed in proportion to the means of moving and lifting. With the improvements in crane construction and their erection on gantries to command a building, a great saving of labour must have been accomplished. To what extent these facilities of hoisting have developed our architecture in which larger materials have been used it would be hard to say; but there is no doubt greater masses of stone, larger monoliths of concrete, and heavier girders are employed than formerly. These aids have also favoured the erection of higher buildings. One advantage of these modern modes of raising and adjusting materials is that the building is not obscured by a forest of scaffold-poles, through which a very imperfect view of the edifice is obtained, for all the staging and tackle rise, as it were, with the walls, and it becomes possible for the architect to correct any defect which may appear as the work proceeds. With the ordinary bricklayer's or mason's scaffold, with its number of standards placed close and braced and its succession of putlogs and plank platforms, little can be seen of the building as a whole. The modern "gantry," which one sees over the foot pavement of buildings in towns, is now all but the exception. The frames of squared timber resting on sleepers on the pavement, with uprights and braces, can be placed at any convenient distance apart, and upon the heads of the frames joists are laid for the platform of scaffold-boards. Upon frames of this kind "travellers" are also placed, these running on iron rails spiked to the heads of the frames, and the trolley, which is really a trussed carriage upon wheels on cross-beams on which a crab rests, completes an arrangement that affords every facility to the workmen. Of late years improved modes of imparting motion to the traveller by means of cog-wheels have been devised, and the methods of constructing the gantry itself are also worth attention. Instead of frames, the trussed beams which carry the traveller are supported on framed legs, which in turn travel on railed sleepers resting on the ground. In this manner two opposite motions are given to the traveller, one longitudinal along the front or length of the building, and the other transverse to it. A steam-winch completes the apparatus. A more advanced kind of scaffolding is that we have described as a large tripod or three-legged erection situated over the centre area of the building, and carrying a triangular platform which supports a derrick crane. It is well for the architect to make himself familiar with the construction of these erections, and how they should be put together. For large operations, the legs are really square towers of timbers, braced together in several stages, and of any height to command the whole area of the building. One of these forms the support of the crane. The towers at the top are connected by trusses of timber which carry the joists and platform; the crane is above one of the towers, and the stays are fixed to the other two. The base of the towers should be weighted with masonry to a weight of twice the load to be raised, and the derrick must be securely anchored to the ground at the bottom of each tower. The improvements made in the derrick crane, the wheel at the top of jib, and the safety appliances to prevent accident, are matters which deserve attention by those who write specifications for these structures.

Architects ought to make themselves acquainted with these and other appliances, and not leave too much to the contractor. A well-constructed scaffold or gantry is of the utmost importance to the work, as it insures a more careful supervision of the building; but a weak and shaky scaffold will deter the architect from inspecting the upper portions of the work, and the workman will use it with less confidence. In these matters a great deal is left to chance. A properly constructed scaffold is some guarantee at least that the building will be creditably performed, and that the work will not be scamped when the preliminaries and instruments of its erection are well selected and skilfully devised.

CAST IRON IN BUILDER'S AND CONTRACTOR'S WORK.—II.

By Joseph Horner.

I DO not propose to describe the methods by which cast iron is smelted, since that would be outside the scope of these papers. Cast iron can be obtained to-day in all conceivable grades, from the best cold-blast down to the cinder-pig, the veriest rubbish conceivable. Foremen and furnacemen have learned by long experience to mix different brands in such proportions that any desired result can be obtained. Practical men know how to design the forms of castings so that their several parts shall be subjected to equal and uniform strains, and so that neither at the time of cooling nor subsequently will they be liable to fracture within the safe-working load. So that we may say that there is no essential obstacle in the way of the permanent use of cast iron for a large number of purposes in constructive work. And, as regards bad design and inferior workmanship, one is just as liable to find that in wrought iron and steel as in cast iron.

In treating of cast iron we take up a metal which is the crude basis from which all wrought iron and the many classes of steel are produced, and yet the chemical differences are but slight. If we take a piece of average cast iron and fracture it, we find that it breaks very readily with a short, entirely crystalline fracture. The colour is a bluish grey, not very bright, unless it happens to be what is called in the foundry white iron. This will contain from 2 to 4·5 per cent. of carbon, with a variable admixture of other elements. The same cast iron puddled and freed from some of these elements, and deprived of practically all its carbon, containing only a trace per cent., becomes so tough that it cannot readily be broken by hammer-blows, but must either be nicked first, or bent a good deal before fracture will take place. And when the fracture takes place slowly, the ruptured surfaces are wholly, or almost wholly, fibrous. The addition of a little carbon, say to the amount of one-tenth per cent., will produce mild steel, one-third as strong again. The fracture of this will be fibrous or silky, but the colour will be much brighter and the grain finer. Successive additions of carbon, up to, say, a maximum of from about one to one and a-half per cent., increases the strength, nearly doubling that, but diminishes the ductility, and then the fracture again becomes highly crystalline and short, but the grain is much finer, and the fractured surfaces are very lustrous. In addition to this, the steel has acquired the capacity of being hardened and tempered, properties not possessed in any degree by the cast iron, or its other products, wrought iron and mild steel.

When a contractor orders work from a founder, he does not trouble himself much about the chemical composition of the iron. To tell him that the iron contains certain percentages of carbon divided in certain proportions between graphitic and combined, so much silicon, phosphorus, sulphur, and so on, would not tell him much about the quality of the resulting castings. And although a good deal has been written about the chemistry of iron, notably by Lowthian Bell, Turner, Keep, and others, it is a fact that scarcely any foundrymen understand anything about it, that is in the sense of its affecting their daily practice. A foundryman will tell you the quality of a piece of iron by simple inspection, and seldom be at fault; but if you talk of percentage proportions of elements, he will shake his head and advise you to go elsewhere. I must confess I am with the foundryman rather than with the chemist. I know a good casting when I see it, and I know that many other matters besides chemical composition have to be borne in mind in the production of that casting. It is to this aspect of the subject that attention will be given in these articles—the practical side. In order to render these papers useful to students, as well as to others, I shall allude by-and-by to the effects of certain elements on the productions of the foundry; but, in the main, I shall write as a practical man for practical men.

There are several varieties of foundry iron, and each broad class has well-marked characteristics of its own; so that a practised eye can distinguish one from another by inspection. These varieties are known as grey, mottled, and white; but they merge imperceptibly one into the other.

The grey iron contains the maximum of carbon in an uncombined state. That is the carbon present is not chemically combined with the iron, but is mainly in the free or graphitic state. About one per cent. will represent the quantity in combination. The visible carbon occurs in black shiny flakes, which are clearly visible when the iron is fractured, if the light be shaded by the hand so that it does not fall directly upon the fractured surface. If such iron is machined, some of the graphite becomes separated in the form of dust. If such iron be pounded and levigated in water, the carbon will separate out from the iron. Such iron is soft, its tensile strength is low, it is fluid in the ladle, and quiet, throws off few sparks, becomes rapidly covered with scum, runs freely into the finest castings, and is therefore used for ornamental articles. It is also employed for the general run of founder's work, as columns and pipes, structural castings, and work for which exceptional strength, closeness, and hardness of grain is not required. The bulk of the grey iron used comes from the Scotch furnaces. But it is not so much used alone in the form of pig, being "open" in the grain, as when mixed with scrap of all kinds.

The second class of iron is the mottled, and the name well denotes the appearance of the fractured surface. It is neither grey, nor white, but partakes of both characteristics. In this the carbon is partly graphitic, but also largely combined. The appearance of the fractured face is fairly bright; the crystals are not so coarse as those in grey iron, but have a much cleaner appearance. The mottled iron is very tough, and is used for the best class of castings, those, namely, requiring great strength and good wearing surfaces. Mottled iron is produced by the judicious mixture of grey pig with best selected scrap. For the best castings it is often specified that the mixture shall be remelted. That is, the mixture will be made, cast into rough pigs, broken up, and remelted for pouring into the actual mould.

In reference to the coarseness or fineness of crystals of cast iron, it must be borne in mind that their size depends much, or even more, on the mass of the casting in which they occur, than on that of the quality of the metal itself. Iron which cools slowly, such as that in the heart of a large casting, will contain crystals much larger than that which cools rapidly on the exterior of the casting, or throughout the entire mass of a thin section of the same casting, or in a small casting. In the heart of a large casting the crystals are always coarse; in a thin plate they are always small.

The third class, the white iron, is not used for builders' purposes. It is employed only in special classes of work, chiefly for those which have to be chilled, in some cams, or tumblers, and in some parts of structures subject to the attrition of sand. It is too hard to be machined, and, though strong, it is too brittle for structural purposes. A large portion of its carbon is in the combined state. The aspect of a fractured surface is silvery white, and the crystals needle-like. It is poured with difficulty into the mould, and will not do at all for fine castings, being too thick and viscous. It is readily recognised in the ladle by its violent ebullition, throwing off of quantities of sparks, with little scum. Under different treatment these irons change their characteristics with chameleon-like readiness. But of this more anon.

There are three ways in which the quality of cast iron is tested. One is by fracture and inspection, another by means of test-bars, the third by actual tests of castings. When a founder wants to judge of the quality of pig and of scrap, he just calls a labourer and makes him break a piece or two under the sledge, and looks at the fractured surface, noting also the way in which the iron breaks, whether readily or with difficulty. The engineer gets test-bars cast from the same ladle of metal as that used for the casting the quality of which it is desired to ascertain. Sometimes in big contracts it is specified that a certain proportion of the actual castings supplied shall be selected at random and broken, in order to judge thereby of the quality of the whole. Let us look at these in turn.

In reference to the method of testing by fracture and inspection of the broken surfaces, it is obvious that this is only practicable in the hands of practical men. A man accustomed to this can judge the quality of an iron as well, if not better, than any test-bar will show. He can not only tell whether it is strong, but also whether it is likely to draw when cast, and whether it borders too closely on other qualities of iron which it is desirable to avoid; whether it would be better for a little more admixture of scrap or pig or not, and whether it would be better for remelting or not. Most foundrymen judge their iron in no other way than by inspection. A good deal is noted at the time of breaking. Some iron takes a lot of breaking, blow after blow being delivered before any sign of fracture occurs. Very tough iron, if not very thick, will bend sensibly before breaking. I once saw an old clock face, only about $\frac{3}{4}$in. thick, become quite dished before it would fracture under hammer blows. That, however, is very exceptional, but it is quite usual to see the best scrap become indented with bruises from the sledge, or ball, before any sign of cracking occurs, and one may be sure that is good tough iron before the fractured face is inspected. In reference to the inspection of the fractured face, that I cannot describe beyond what I have done when noting the essential differences between grey, mottled, and white irons. Experience alone can render one familiar with these appearances, and, of course, such appearances, though familiar enough to the founder, cannot be used by the purchaser. The founder too can tell the quality of a casting, after it is made, by looking at the fractured runner, or ingate, but the purchaser could not, even if the identical runner were handed to him. Hence the reason why test-bars are resorted to.

Test bars are generally made 3ft. 4in. long, by 2in. deep, by 1in. thick. When laid upon knife edges 3ft. apart, the 2in. depth standing vertically, and gradually loaded at the centre, they should stand a load of from 30cwt., to 32cwt., and deflect from $\frac{3}{8}$in. to $\frac{1}{2}$in. before fracture. 28cwt. is the minimum load at fracture usually permitted. These test loads and deflections are recognised measures of the strength of good iron for average structural work. Higher breaking results are sometimes obtained, but they are exceptional, and are perhaps of less practical value than the mere figures would seem to show, because of this; that very strong iron is liable to "draw," and thus become a source of weakness in another way.

In reference to the best methods of obtaining test-bars, it it obvious that it is not sufficient to take a founder's word that a given test-bar is made of the same metal as that poured into a given casting. That might be safe with honourable firms, but it cannot be relied on as a rule. It is usual to send an inspector at the hour of casting, to see the test-bars run from the same ladle of metal as the castings. He then stamps the bars with his initials or other mark, and reserves them for testing. Another way is to run bars on the castings themselves, to be removed only in the presence of the inspector. This is a safe way, and one or other of these methods should be adopted; since without such precautions test-bars are liable to be "faked." Sometimes they have been cast from metal quite different from that put into the castings of which they were represented to be a sample, instead of bar and casting being poured from the same ladle. To be sure of them, they must either be cast under the eye of an inspector, or cast on the work itself.

For the general run of work, the practice of casting test-bars under proper conditions is sufficiently indicative of the quality of castings. But there are some classes of work for which even these do not adequately represent the soundness of the castings. As we proceed, I shall explain some of the causes which produce this unsoundness, or uncertainty. The causes are "draws," and shrinkage stresses, blow-holes, unequal thicknesses of metal, scabs, and general porosity. These have no relation whatever to the strength of the test-bars; but are caused by bad design and bad workmanship. For these reasons it is sometimes specified in some classes of work in which absolute soundness is considered essential, that a certain percentage of the actual castings, perhaps one, or two per cent., shall be selected at random, and broken up for inspection. The cost is slightly increased thereby; but such a method of testing is perfect. It guards the purchaser completely, because the founder will not allow any one casting known to be faulty to be passed, since that particular one may happen to be selected for the purpose of inspection. Such fracture shows not only strength, but soundness and closeness of grain, the presence or absence of draws and blow-holes, the accurate setting of cores, thickness of metal, and also whether the casting has been doctored in any way, by filling up blow-holes with "beaumontague." Having now taken a general survey of the nature and characteristics of cast iron, we shall be prepared to make a minute study of the same, and of its applications.

NOTES FROM PARIS.

ONE of the first matters to be decided at the next session of the French Parliament is that of the metropolitan railway. The Ouest Railway Co. will have rights to construct a new line from Courcelles to Passy and the Champ de Mars, and also a line from the Invalides to the Cluny-square, passing under the Boulevard Saint Germain. These lines should be in full working order by 1900. Permission will be given to the Orleans Railway Co. to prolong the Sceaux line as far as the Grande Augustins quay, passing under the Boulevard Saint Michel, and to construct a line from the Cluny-square to the Orleans Station, forming, thus, the prolongation of the new Ouest line from the Invalides to the Cluny-square. This line will pass under the prolongation of the Sceaux Railway, under the Boulevard Saint Germain, regaining the town level at the Pont Sully, and following the Saint Bernard quay as far as the terminus.

In view of the above important work, the Municipal Council are considering the following questions in the interest of the landholders and house proprietors having property along the proposed lines. The Prefect of the Seine is required to carefully look after the interests of the inhabitants of the Boulevard Saint Germain, and to take all measures necessary to enforce a proper respect of their rights by the railway companies. The work of constructing the underground tunnels should be done in short lengths, having close intervals, allowing proper public circulation and traffic. As far as possible, the work should be done by means of perforations, similar to those made for the work of the Clichy siphon, in order to avoid as much as possible the upsetting of the public roads. In cases where it is absolutely necessary to make cuttings from above, the half of the roadway must be left free for traffic. In no case may the pavements and the traffic thereon be interfered with, and no deposits of materials will be allowed on the roadways or boulevards.

The Paris Town Council will do well to take strict measures for enforcing the respect of public and private property during the construction of these new lines, for much dissatisfaction was expressed by the landlords and tenants of the buildings on either side of the Boulevard St. Michel during the construction of the lately-completed prolongation of the Sceaux railway.

A very interesting article appears in one of the Paris papers concerning the past and present value of land and buildings of the capital. The present value of the land and buildings of Paris, not, of course, including furniture and such-like property, has been calculated as nearly as possible as being £680,000,000, the number of houses being 83,000. Referring to the past value of land, it is stated that under Henri IV. certain ground bordering the old streets of Seine and Jacob was sold from 6d. to 3s. 6d. per square mètre (nearly 11 super. feet); in 1606, Queen Marguerite de Valois bought, in the Rue des Saints Pères, a portion of the celebrated Pré-aux-Clercs, at $1\frac{1}{2}$d. the arpent, or acre and a half. In 1623, Marie de Medicis bought 20 acres of land at a little less than 1d. the mètre for the Luxembourg Gardens; in 1630, the ground of the now immensely valuable faubourg Montmartre was worth 5d. the mètre. In the beginning of the 17th century, a large quantity of land planted with vines, and now forming the centre of Paris, was sold at one-tenth of a 1d. the square mètre. The average price of houses in the old faubourgs of Paris was a hundred years ago about £220 each; to-day the average price is £2,700. In the 14th century, a large number of houses in the centre of Paris were sold at about £4 to £8; under the reign of Louis XIII. the value increased very fast, owing to the establishment of commercial quarters. The book from which these particulars are taken, "The History of Property Since the Year 1200," by Comte d'Avenel, contains a quantity of the most interesting information regarding the sale of property since this date, and that of various historical buildings and dwelling-houses still existing at Paris.

The Holy Women weeping over the body of Christ at the foot of the Cross was the subject given to the competitors for the Grand Prix de Rome, for painting. The subject, offering great facilities, and by no means liable to the reproach generally made that the programmes often obliged the students to depict personages almost unknown, did not, however, bring out much remarkable work; several of the competing pictures contain very noticeable errors, and the painters of others seem to have fallen into realism of very bad taste in their painting of the face and body of the dead Christ. One picture shows the Virgin as a very old woman, the artist seeming to have forgotten that the mother of Christ had scarcely reached fifty years of age at the time of the death of her Son. The Grand Prix is awarded to M. Gaston Larreé, pupil of M. Bonnat. His canvas contains three figures, those of the dead Christ and the two Holy Women; these are very cleverly treated, the painting showing the solid qualities of drawing and painting always noticeable in the work of the pupils of M. Bonnat. The picture does not contain much originality or much sentiment, but is quite in keeping with the traditions of the Grand Prix. The second prize is awarded to M. Paul Albert Laurens, pupil of MM. Cormon and Benj. Constant, and son of the well-known painter, M. Jean Paul Laurens. The execution of the picture is exceedingly clever; the young artist has already shown many proofs of great talent in pictures exhibited at the Salon since a few years; the last one, a Pasiphaé, attracted considerable attention. It is expected that M. Laurens will, before the end of the five years during which he may compete for the Grand Prix, carry off this prize. The third prize is awarded to M. Jules Guinier, pupil of MM. Jules Lefebvre and Benj. Constant. The work of this young artist is very clever, and the expression of his faces exceedingly truthful. The general tone of the painting is, however, open to criticism.

The subject given to the competitors for the Prix of Architecture was a palace for exhibitions and festivals. The Grand Prix is awarded to M. Auguste Patouillard, pupil of M. Ginain, and second prize of last year, for a building of a certain character, with a very effective dome and important principal entrance. M. Eugene Duquesne carries off the second prize for a building of rather pleasing silhouette. This young architect is pupil of M. Pascal. The third prize is awarded to M. Tony Garnier, pupil of M. Blondel. His design is one of the most original, but the details are somewhat complicated. This competition, although of a certain interest this year, owing to the programme being one which will occupy the attention of a large number of architects, who will shortly compete for the buildings destined to replace the Palace of the Champs Elysées for the year 1900, does not result in any work or design calling for special remark.

It is proposed to restore the original aspect of the Pont de la Concorde under the Empire and the Restoration, by replacing the statues of celebrated men on the immense pedestals of the parapets, which have remained unoccupied since Louis Philippe. The ten or twelve colossal statues erected on the Pont de la Concorde by the Restoration in 1827, replacing the immense statues of generals raised under the Empire, were taken down under Louis Philippe, and placed in the Court of Honour at Versailles, for it was the opinion of the architects and engineers of that time that their enormous weight was sufficient to compromise the solidity of the remarkable work of Peyronet. This bridge was commenced in 1787, and finished in 1790, and constructed in its upper portion with stone coming from the demolished Bastille; the heavy statues placed on the parapets by Napoleon and Louis XVIII. threatened to bring about the ruin of the bridge, and were taken down in 1841. It would, therefore, be very absurd to-day, when the traffic over the bridge is increased tenfold, to re-erect the old statues with their enormous dead weight. It is, however, necessary with regard to harmony and proportion that the statues should be of very large dimensions. It will, therefore, become the duty of chemists and metallurgists to unite themselves with the sculptors, and furnish a light and malleable alloy, such as aluminium, combined with some other metal, for the construction of the fine statues with which it is proposed to ornament the Pont de la Concorde before 1900.

The monument raised to the memory of the late President Carnot has been inaugurated at Nice. It consists of a semi-spherical base of native stone, surmounted by a marble pedestal and shaft, on which is sculptured a young child holding a garland of flowers, a bronze bust of Carnot crowning the whole. The monument is the work of M. Tournaire, architect, Prix de Rome, and M. Convers, sculptor.

The competition for the erection of a monument to Carnot at Lyons is now open, the programme having lately been made known. The competition will be a double one, the preliminary work asked for being a general plan and sketch on a small scale, and a plaster model of one-twentieth full-size. The date for sending in is December 14th next. A sum of £120 will be divided amongst those who are admitted to the final competition. These successful competitors will be required to produce a plaster model of one-tenth scale, a plan and elevation on about 1½in. scale, a section at the same scale, a sheet of full-size details and a perspective view of the monument, together with a specification and detailed estimate of the cost, with indications of the materials to be employed. The total cost of the work should not exceed £10,000. Three prizes of £120, £80, and £40 will be awarded to the first three chosen designs in order of merit. A further sum of £80 will be distributed amongst those competitors whose work is judged to be of sufficient merit. The premiated designs will remain the property of the town of Lyons, with the right of intrusting the execution of the work to one of the successful competitors or to any other person who may be chosen.

An interesting experiment is being made for the wood paving of the Faubourg Montmartre. Six sorts of wood have been laid: the pine of Landes, which up to the present is generally employed at Paris; pitch pine, which is considered excellent as allowing a good footing for horses, owing to the gravel which is very easily forced into the wood; the karri, a kind of eucalyptus coming from Australia, very strong and of a bright-red colour. This wood, which appears to be the most suitable for wood-paving, is about twice as dense as the Landes pine; wear makes it smooth and bright, giving it the appearance of mahogany. A number of Paris streets have already been paved with this wood. It compares most favourably with the before-mentioned wood, and with the lime, teak, and Borneo wood which are also being tried in the Faubourg Montmartre.

There is a great deal of talk about piercing further roads through the Bois de Boulogne at Paris, and the construction of lines of tramways and electric or steam railways through the wood at different points. The controversy is over the question whether this fine wood—the holiday resort of Parisians, should be left in its present more or less wild state, or whether the making of roads and lines leading well into the thickest portions would be to the interest of the Parisian public. The Bois de Boulogne is the last remnant of the immense forest of Rouvray, which once extended far along the plains and hills bordering the Seine, and which, so the legend says, was the favourite hunting place of King Dagobert and his attendant, Saint Eloi. At the commencement of the 12th century it had already undergone a certain amount of destruction, and, changing its name, was called Bois de Saint-Cloud. In 1319, several pilgrims having erected near St. Cloud a small church similar to that existing at Boulogne-sur-Mer, the wood was called Bois de Notre-Dame-de-Boulogne, which became simplified into Bois de Boulogne. Setting out from the 13th century, most of the sovereigns and their followers established their residences in the Bois de Boulogne. The oldest of these residences was the Abbey of Longchamps, founded in 1256 by Isabelle of France, sister of Saint Louis, and inhabited later on by Philippe le Long, Blanche of France, and Jeanne of Navarre. This monastery, once a place of pilgrimage, became at length the place of festivities for the Court and town and the celebrated pilgrimage during Holy Week, which provoked so much scandal. In 1530 the Château de Madrid was built by Francis I., and was successively inhabited by the reigning monarchs from Henri II. to Louis XVI. Amongst other historical souvenirs of the Bois de Boulogne, may be mentioned the Château de la Muette, at Passy, the favourite residence of Louis XV., and of Marie Antoinette. Ranelagh was built by order of Marie Antoinette, after the model of the celebrated Chelsea Ranelagh. Under Louis XIV. the first rules and regulations for the proper preservation of this wood were edited; under Napoleon I. a great transformation took place: numerous roads and alleys were formed, a large quantity of new kinds of trees were added, and the body of forest guards, for looking after the proper keeping of the woods was organised. During the campaign of 1814-15 the wood suffered much devastation; under the Restoration the trees, roads, and alleys were restored, and, except for the short occupation by the enemy in 1870, causing a certain amount of destruction, remain at the present time as they then existed. It is probable that the Parisians will prefer to have their favourite holiday and Sunday resort left in its present rough state as regards certain portions, rather than see its wild beauty destroyed by noisy tram-lines and smoky railroads, despited the greater convenience which would thus be given for rapidly arriving at the places of amusement or wooded glens.

A great cry of alarm is being made over the historical monuments of Paris, which, it is said, are fast menaced with ruin or destruction for want of efforts for their preservation or restoration. M. Charles Normand, the general secretary of the Society for the Protection of Parisian Monuments, is of opinion that the cause is less on account of lack of money than on account of its bad employment. He says that portions of the various buildings or monuments threatened with ruin are completely renewed instead of being looked after and cared for progressively before any real deterioration becomes apparent. The former method, in his opinion, is most costly and dangerous, for there is nothing which destroys more effectually any masterpiece than its distortion by a too complete renewal. Besides, in the opinion of M. Normand, the Committee of Historical Monuments contains too many incompetent members, and is too partial for one epoch or another. In spite of the pressing demands of architects, this committee has abandoned the oldest church in Paris—Saint Pierre of Montmartre, erected on the site of a Roman building whose columns may still be seen in the nave of the existing church. The apse of Saint Martin des Champs, a superb Romanesque monument, is falling into ruins; the Hotel de Sens and that at Cluny are the only two buildings of the Middle Ages still existing at Paris; the loss of the remarkable Hotel de la Tremoille was due to the lack of zeal in a committee which might easily have saved it from destruction. On the other hand, M. Viollet-le-Duc, chief of the service of historical monuments, is of an entirely different opinion. He says that the reproach of incompetence can hardly hold good, the committee being formed of a large number of the best known architects and archæologists in the country. M. le Duc says further, that the total budget for the maintenance of all the numerous historical monuments in France is only just over £50,000. These funds are so small, that it is most necessary to act with the greatest circumspection, and employ the money only in cases where it is judged absolutely necessary. "At Paris it is a most difficult matter to find extra moneys for such purposes. The town very often does its own work of restoration, sometimes even without informing us of its doings; or, again, it often refuses, in exchange for the sum of money we offer to put at its disposal, to allow our architects to direct the work, or even to authorise its own architects to follow our advice. This love of independence in the matter of art and archæology is most prejudicial to the preservation and maintenance of our historical monuments, and it is thus that our masterpieces are distorted or ruined. The work at Saint Germain des Prés, at Saint Germain l'Auxerrois, at the Church of the Sorbonne, and at Saint Martin les Champs was done without our aid; that now being done at Saint Eustache is likewise undertaken by the town of Paris, then when certain difficulties arise they come to us to request our advice and money. At Saint Pierre de Montmartre a preliminary scheme of restoration was submitted by us to the town council; the town would, however, not share in the expense, and we are not rich enough to undertake the work. At Saint Julien le Pauvre, considered a unique example of Romanesque architecture, we were fortunate enough to be able to do the work of restoration without the help of the town of Paris. This year we are undertaking the work at the Saint Chapelle, additional work at Saint Julien le Pauvre, and that at the Cluny Museum. We were desirous of buying the Hotel de Sens, but the proprietor demanding £40,000 for its purchase, our budget being scarcely more than this sum, the town of Paris offering us no aid, we were obliged to give up the idea. If we do not accomplish all that we ought, we, at least, do all that we can." The reply of Viollet le Duc appears perfectly reasonable. It is evident that a lack of funds is a great drawback to the proper maintenance and restoration of the fine examples of ancient architecture which Paris still contains. It is to be hoped that the State and the authorities of the various towns containing examples of old work will decide to be more lavish in providing funds; otherwise the ravages of time and the exigencies of commerce will soon do much to rob France of her most interesting masterpieces.

The work of rebuilding and enlarging the Lyons Railway Station at Paris is now commenced. The first portion of the work consists in the enlarging of the central hall, which will now have a length of 720ft., formed of two bays of 140ft. span each. This work is being done under under the direction of the Paris-Lyons Railway Co. The train service will be in no wise interrupted during the whole course of construction.

The Service of Architecture for the Exposition of 1900 is preparing the programme of the competition for the two palaces of the Champs Elysées. It will be submitted to the town council early in October. The time allowed for the preparation of the drawings will probably be three months.

The Exhibition of Work, although opened on the 25th of last month, is only now complete as regards the installations and exhibits. The building section contains very interesting exhibits as well as plans, drawings, models, and details of work already executed or in course of construction. As soon as the installations are perfectly complete an account of the most interesting exhibits will be given.

The Union Centrale des Arts Decoratifs has lately formed a large committee chosen from the ranks of men most distinguished in the theory and practice of decorative art, in view of the important competitions to be organised for the Exposition of 1900. Each of the five sub-committee is preparing its special programme for each industry—wood, metal, glass, clay, paper, and tissues. Each competitor will be perfectly free to choose the object which he desires to send in as representing his special industry. This liberal system of competition appears to give much satisfaction to all interested.

The Musée Social, inaugurated a short time ago, is already doing much good work in the organisation of competitions and awards to workmen. Two missions have been organised for September and October next, one in England and the other in Germany. The first will study the labour question in Great Britain, and chiefly the organisation, working, and results of the system of trade unions; the second will study the question of socialism in Germany. The founder of the Musée is about to recompense with a life annuity of £8 each 25 deserving workmen. These will be chosen from among workmen of at least 60 years of age who should prove 30 years of employment in the same works, or justify exceptional services. Two competitions are opened, the first having as subject the origin of the participation of workmen and employés in the profits, its actual state, and the existing results, the advantages of this participation as regards the relations between employés and workmen, and as regards the proper remuneration of capital and work. The second competition concerns the co-operation of workmen, syndicates, and co-operative societies, of demand and supply, construction, economy, and credit. Writers of all nations are admitted to these competitions, the prizes for each are fixed at £1,000. The work should be written in French, and sent in to the offices of the society, 5, Rue Las-Cases, where all particulars may be obtained, before Dec. 31st, 1896, for the first competition, and Dec. 31st, 1897, for the second.

ARTHUR VYE PARMINTER.

CLASSIC DETAILS AND THEIR APPLICATION.[*]

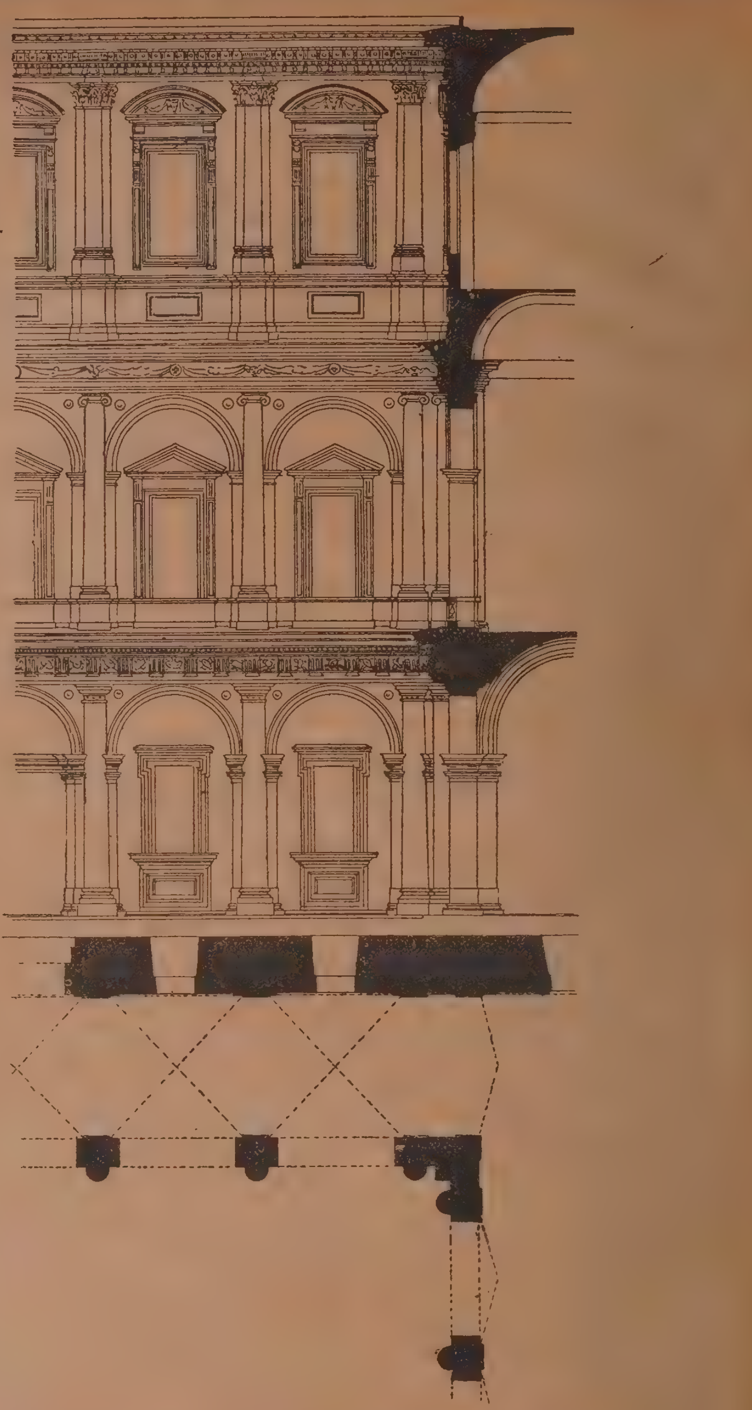
By G. A. T. MIDDLETON.

IX.—ITALIAN RENAISSANCE: SUPERIMPOSED ORDERS.

THE use of superimposed orders was so common in ancient Rome that it would naturally be looked for in the Renaissance period; but it does not seem to have become customary until a somewhat late period. Then, too, it occurs, as does all enrichment, in the courtyards and cloisters—the internal façades, as they may be called—before it does on the exteriors; and, in fact, superimposed orders are but rarely seen, externally at least, in the Renaissance work of Florence, and comparatively seldom at Rome, though their use is frequent enough in Venice and the neighbouring cities.

There are also two very different systems for their employment to be noticed. Bramante, and also the members of the Venetian School, seem to have understood that the superimposition of orders was permissible, and was always to be consistent, in so far that the Doric was to be the lower or most prominent, then the Ionic, and then the Corinthian; but they exercised freedom in treatment, dealing with them, as with all other features, as elements for use in building up a Renaissance design. On the other hand, some of the Roman architects, possibly over-influenced by the great examples of the Colisseum and Theatre of Marcellus close at hand, held to the ancient precedent with an almost excessive devotion.

A marked example of this method is the courtyard of the Farnese Palace at Rome, of which the general scheme was probably by San Gallo and the detail by Michael Angelo. The ancient precedent is followed here in the general outline, with the usual result of an absence of life; and if it had not been for the genius which introduced vigour and originality into the details, the whole effect would probably have been tame. It forms a sermon upon the unwisdom of following precedent too closely, when the original conditions have been changed; in this instance a design intended originally for a convex exterior has been employed for the flat side of a courtyard.



Courtyard of the Farnese Palace, Rome. By Michael Angelo and San Gallo.

Bramante had already treated the cloister of Sta. Maria Della Pace, at Rome, in a much more correct spirit, superimposing a Composite upon an Ionic order, both as pilasters of slight projection, as ornaments only, without having the slightest pretence to helping the construction, and introducing small Corinthian columns constructionally in the upper story in an original, subdued, and wholly artistic spirit.

Turning now to the employment of superimposed orders externally at Venice, we find a development from what had gone before in the immediate past, not a following of ancient precedent. In the Carnossa Palace at Verona is to be seen very much the same treatment as in Raffael's Cafforelli Palace—a rusticated lower story, with an order attached to the upper; the fact that the order is Corinthian, and that pilasters are used instead of columns, not seriously affecting the point at issue. The same architect, Michele San Micheli, who designed the Carnossa Palace, then develops his scheme, by the superposition of orders, into the Bevilacqua Palace at Verona, in a very simple way, and allowing himself entire freedom, produces a rich work of great beauty. The rusticated Doric pilasters applied to the face of the rusticated lower story, and the fluted (straight and spiral) Corinthian columns of the upper, are pure developments in a Renaissance spirit, while the deep balcony and the large use of sculpture are also new features, such as add richness to many buildings of the Venetian school.

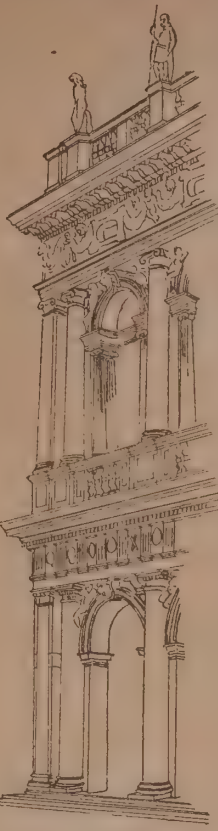
Sansovino's Library at Venice is a combination of this natural development, and the close following of precedent evidenced at the Farnese Palace; for here are the orders superimposed in a very Roman manner, each strong and perfect according to the Roman standard; while the great use of sculpture, the use and coupling of the columns in the window jambs of the upper story, and the use of a balustrade above the crowning cornice, are all evidences that a real architect, and not a mere copyist, was at work. As a matter of fact, Sansovino occasionally carried his desire for novelty too far, being rather fond of employing

---

[*] All rights reserved.

Bevilacqua Palace, Verona.
By Michele San Micheli.
(From Schütz.)

Carnossa Palace, Verona.
By Michele San Micheli.
(From Schütz.)



Library at Venice. By
Jacopo Tatti Sansovino.
(From Schütz.)

detached orders upon the face of his work, as if constructionally, but with no constructional function being apparent—or, rather, with the falseness of the device prominently displayed to even the most casual observer. The result in his hands was beautiful enough; but it was obtained by taking liberties, giving precedents for work on faulty lines which some of his followers, endowed with less skill than himself, adopted without achieving his success. It was, in fact, the first step towards a subsequent deterioration.

Cloister of Santa Maria della Pace, Rome.
By Bramante.

◆

PROTECTION OF IRONWORK FROM FIRE.

WHEN it becomes necessary to observe that due and proper regard which should always be paid to æsthetic principles, the substitution of columns of wrought iron for those of cast iron is not always practicable. The latter material does not lend itself with the same ease and facility to the delicate mouldings, and often almost minute changes in form and dimensions required, as the former. This reason does not apply to examples of construction in which the columns and piers are all underground, or wholly concealed from view. Instances of the latter description are to be seen every day in the building of warehouses, business premises, shops, and even of dwelling-houses. It may be asked, Why in such instances is wrought iron employed—as it nearly invariably is—to the exclusion of its older rival? It is true that the cost of wrought iron and steel has of late years—especially that of steel—very considerably diminished. But so also has that of cast iron, and in reality the balance is pretty much what it ever was. On the score of mere cheapness, the advantage would still lie on the side of iron, and yet the stereotyped method employed in constructing the façade part of the carcase of a large building consists in using stone or brick piers and side walls carrying spans of wrought-iron or steel girders, which are subsequently completely hidden from sight by wooden or plaster coverings and decorations. It is not a question of cost, nor of strength, nor of appearance, since any amount of ornamentation can be applied indifferently to both materials. It becomes, in fact, a question of which material offers the best security for the safety of the public in the event of the occurrence of certain unforeseen contingencies. To one of these we intend to more particularly refer.

So far as the strength of iron columns and girders enters into consideration—that is, the adequacy of the resistance they oppose to the forces and stresses acting upon them—it is rare now that they evince signs of weakness, much less of failure. The days are gone by when the only conception of strength and resistance was embodied in the accompanying ideas of mass and weight. Under certain conditions, the old theory still holds good, but the conditions are somewhat exceptional. There is no doubt that to a certain extent—but to a certain extent only—the solid or massive style of construction was sufficient for its day. The semicircular, or nearly semicircular, arch of the Early Norman period is an example. It was speedily discovered that an increase in the span of the arch demanded a corresponding increase in the versed sine or rise, and to continue to construct stone, or even brick, arches of large span, with a rise equal to the semi-span, was practically an impossibility. Stone arches, whether of the semicircular form or of the segmental, elliptical, or any other of the numerous contours, such as ogee, trefoil, or cinquefoil, into which the original outlines have been contorted, enjoyed an immunity from a cause of destruction which has been frequently fatal to their slenderer and more modern metallic successors. It is alleged against cast iron, as one reason for its having to cede the *pas* to the wrought material, that it does not behave, when exposed to the action of a fierce conflagation, in so satisfactory a manner as the latter. So far as the actual effect of the flames is concerned, there is probably not much difference between them; but when water is poured in copious streams upon the red, and even white, hot metal, the wrought material possesses a decided superiority over the cast. Owing to its greater toughness, tenacity, and essentially fibrous nature, it will never break, although it may bend and deflect to a more or less serious degree. Cast-iron columns and girders under similar circumstances behave very differently. They are especially liable to become cracked, split, and fissured under the combined influence of the two elements to an extent which, if it does not entail the collapse of the building, very gravely imperils its safety and stability. It may be a matter of opinion whether wrought-iron columns and girders should be employed again in building construction after having been subjected to a great "fire"; but the same doubt hardly exists with respect to those of cast iron. These latter are seldom fit for much else except the melting-pot, after having undergone a similar fiery ordeal.

In order to ascertain the amount and nature of the protection which iron requires to obtain immunity from the action of a fierce fire, some very valuable and interesting experiments were recently undertaken by the engineer-in-chief to the city of Vienna. In addition to an investigation respecting the effect upon iron, the inquiry included in its scope the determination of the different resistances to fire which building materials generally were capable of affording. It will be admitted, as a rule, that this subject concerns the architect and builder more than the engineer, as the works of the former two are necessarily more exposed to the action of fire than those of the last mentioned. A railway bridge on fire, even when built wholly of timber, as in America, is a rare occurrence, and a similar spectacle in the case of an iron bridge still rarer. In the experiments referred to a space 12ft. by 8ft. by 12ft. in height was inclosed by a brick chamber. The inner surface of the walls of this chamber, or furnace, as it might be termed, was faced with stones and other materials used in ordinary building construction. In the middle of this furnace a built-up open iron pillar was erected, resembling, as will be described, one of the vertical braced struts or compression bars which are to be found in the majority of the large open-web girders and trusses of modern times. This pillar or vertical strut was composed of a pair of channel irons, 5½in. by 2½in., placed *dos-à-dos* about 3in. apart, and riveted together through their lateral projections or webs by small lattice-bars interlacing in the centre of the space, and thus forming a complete system of diagonal cross-bracing. In the interior of this hollow pillar were placed a dozen bars of cast alloys, each of which consisted of a different composition, and possessed its own point of fusion. These latter varied from, approximately, 160° Fahr. to 1,700° Fahr. The alloyed bars, which were intended for the purpose of testing, having been inserted in the core of the hollow vertical pillar, it was incased in an inclosure of brickwork. The brick casing was built in ordinary mortar, was 6in. in thickness, and assumed the form of a pier 12ft. in height by 1ft. 6in. square. Nothing now remained but to put on the roof, light the fire, and observe and record the results.

It was considered desirable for the full success of the experiment that the roof itself should also be, similarly to the wall, fireproof. Wrought-iron joists were therefore laid across the longer walls of the building, and upon them were placed tiles, the whole being flushed up with concrete. Omitting the description of the mechanical details, which are not necessary to the result at issue, it may be stated that by means of a properly adjusted lever a weight of 15 tons was imposed upon the vertical hollow pillar. Combustible materials were then heaped up uniformly over the whole area of the floor to a height of a little over a yard, and the fire briskly maintained at full blast for nearly three hours. It should be mentioned that a couple of flues had been inserted in the fireproof roof to assist in keeping up the combustion of the fuel. At the end of the three hours it was assumed that the fire had done its work, and the services of the other or extinguishing element were called into requisition. After the whole chamber had been thoroughly drenched with water, both inside and outside, the heat was nevertheless so great that all examination of its effect upon the contents had to be postponed for another twenty-four hours. It must be borne in mind that this experiment is one of a very crucial character, and far more severe in the influence exercised upon the different materials than what could possibly occur in an actual ordinary conflagration. Summing up, the walls were found to have fairly retained their original perpendicularity, and the brickwork was but very little injured. With respect to the first of these results, it may be pointed out that the height of the walls was comparatively insignificant. It is very doubtful whether, under somewhat similar conditions, the walls of the giant buildings of New York and Chicago, fifteen and sixteen stories high, would escape with the same impunity. The arrises of the brickwork in the square pier were chipped and disintegrated to a trifling extent, and a few of the roofing tiles cracked and split, as might be expected. All the various building stones lining the interior of the side walls suffered very considerably, and proved themselves quite unfit to be employed as fireproof building materials. The sufficiency or adequacy of the brick casing, although only 6in. in thickness, to withstand the intense heat was amply demonstrated by the fact that the iron pillar underwent not the slightest injury, remaining perfectly intact. An additional proof of the security of the protection was afforded by the circumstance that only one of the twelve bars of alloy evinced any signs of fusion, and that was the one which had the low melting point of 160° Fahr. On the other hand—and this is a result worth recording and noticing—it was shown most unmistakably that plastering or plaster-work of any description was utterly useless as a protector of iron, or, in fact, of any other work or material, against fire. It is a little curious that, although the brickwork stood so well, it was completely penetrated—that is, thoroughly wet through—by the water. It would be interesting to ascertain whether brickwork set in cement would behave in the same manner under the same conditions.

P. S. S.

◆

THE INSTITUTION OF JUNIOR ENGINEERS.

THE Belgian summer meeting of this Institution, which took place last week, passed off very successfully. Assembling at Harwich, the party, consisting of nearly sixty members, crossed by the G. E. Ry. s.s. *Ipswich*, and arrived at Antwerp on Saturday morning, 17th inst. Here they were welcomed by M. Royers, engineer-in-chief to the Municipality, who conducted them over the extensive docks, and explained the numerous features of interest in connection therewith. The Musée Plantin and the station of the Compagnie Hydro-Electrique Anversoise were also specially open for inspection.

On Monday the members proceeded to Ghent, where MM. Carel's engine works, M. Van Houtte's nursery gardens, and M. de Hemptinne's cotton spinning mills were seen, the respective proprietors showing the visitors round. In the evening Brussels was reached, and the central electric-light station there was visited, under the guidance of Mr. Phibbs.

Tuesday was left open, so as to afford the opportunity of visiting the various places of popular interest for which the city of Brussels is noted; in the afternoon most of the party made an excursion to the field of Waterloo. Leaving Brussels on Wednesday morning, the members arrived at Liège about noon, and were received by M. Gillon, President of the Association of Engineers from the University of Liège, and by M. Firkets, President of the Liège Section. The afternoon was devoted to visits of the Vieille Montagne Zinc Works, at Angleur, under the direction of M. Gillard, secretary of the company, and other gentlemen; and the St. Leonard Locomotive Works, where the chief engineer, M. Shoest, showed the members over. In the evening, at the Hotel de Suède, a banquet was given in honour of the Institution by the Liège section of the Association of Engineers from the University, M. Gillon presiding, faced by M. Firkets.

On Thursday, an excursion was made to Verviers, on the invitation of the Chamber of Commerce. Arriving at the Est Station, the president, M. Garot, M. Mullendorff, M. Soubre, secretary, and other gentlemen of the town, met the members, and, entering carriages, drove to the wool-washing, combing, and dyeing works of MM. Peltzer et Fils. The wool-card manufactory of M. Duesberg-Debrez was next visited, after which the party were entertained at luncheon at the Société de l'Harmonie, M. Garot presiding. The wool-spinning, weaving, and finishing works of MM. Peltzer were seen afterwards, and train was then taken for visiting, under the guidance of the engineer, M. Mahwood, the Gileppe reservoir, which supplies water to Verviers and Liége. In the evening, the Liège electric-lighting station was seen, Mr. Hickson conducting the members through it.

Friday's programme comprised a visit to the extensive works of the celebrated Society Cockerill, where the party were welcomed by M. Delloye Matthieu, chairman, and M. Kraft, chief engineer to the society. Luncheon was subsequently served, and in the afternoon the Val St. Lambert glass works were visited, with M. Duprez, general manager, as guide. In the evening, the summer dinner of the Institution was held in the Salle des Vitraux of the Hôtel Mohren, Liège, the chairman, Mr. H. J. Young, presiding. On Saturday, sectional visits were paid to the Small Arms Works, the Liège Electric Tramway Installation, the works of the Compagnie Internationale d'Electricité, the Liège gas-works, and M. Foulon's iron foundry. The party returned to England in the afternoon. At each place visited throughout the week, the Belgians were exceedingly cordial in their welcome, evoking from their visitors expressions of the liveliest appreciation.

◆

COUNTY LUNATIC ASYLUMS.—XXVII.

By George H. Bibby, F.R.I.B.A.

MEDICAL STUDENTS' TRAINING WARDS.

WHILE the asylum system now existing shows a very great advance upon the condition of matters half a century since, yet it does not appear to have kept pace with the progress of medical science in other departments. For instance, high authorities upon the subject of the education of medical students have approved of the establishment of an asylum building which would practically combine with a hospital for the insane, special facilities for the education of resident and other medical students, giving them opportunities of studying the subject of insanity from the appearance of its earliest symptoms to its latest development.

The question as to whether hospitals for the insane should be maintained (with special facilities for students and lecturers upon the subject of insanity) has been recently a matter for considerable discussion. The general opinion appears to be strongly in favour of supplying further means for the education of medical students in a department of science that has been somewhat neglected. At present many medical men may be called upon to give certificates as to the sanity or insanity of persons, without perhaps having had any opportunities of much special instruction upon the subject; and Dr. Stephen Mackenzie has expressed the opinion that it is "very difficult for every hospital to be affiliated to some institution where men will get the information they want, and therefore it is important that the knowledge, which physicians connected with those hospitals can to a certain extent impart, should be supplemented by the more accurate knowledge and more complete experience which may be gained at institutions for the treatment of patients suffering from insanity."

Therefore buildings are admittedly requisite for the purpose of dealing with those classes of the insane who, while affording special subjects for study and investigation by medical men, would, if possible, be cured by the assistance of the resident staff, and who would, more or less, afford material upon which the lecturers on insanity would discourse to a *limited* number of students. It has been proposed by medical authorities that clinical assistants should be appointed in the proportion of one to every ten patients, to observe the cases and report to the physicians and surgeons (visiting or resident), these student-assistants being appointed for terms of three or six months, and occupying the period as a portion of the time allotted to their general medical training. By this arrangement the patients would probably benefit, and scientific research would be promoted.

The buildings intended to form a *hospital* for the treatment of insanity, with suitable provision also for lecturers and students, would obviously be far more conveniently situated in or near to a large town, so as to be easy of access to the medical profession, were it not for the difficulty in caring for patients in districts more or less thickly populated, and where exercise grounds would be limited in extent for economical reasons; but against the latter difficulty may be set the fact that a hospital asylum even in a town may be expected to be far more advantageous for the patients than the homes from which many of them are drawn.

Assuming that it be decided to add to a county asylum (situated within a reasonable distance of a large city) a block of buildings for the use of those who not only have the care of patients, but also the necessity of providing for the requirements of scientific inquiry, and for the study of insanity by the younger medical men and students, it would for some reasons be desirable that this special hospital-asylum should be near the blocks of buildings for recent cases.

The hospital-asylum, if connected with the main asylum and upon a full scale, might include provision for the following apartments, there being separate pavilions for male and female patients:—

Lecture-room, 35ft. by 20ft.
Lecturer's private room, 18ft. by 15ft.
Museum, 40ft. by 20ft.
Laboratory, 30ft. by 20ft.
Chambers for *five* resident medical students.
Administration buildings (exclusive of laundry, general stores, &c., included with main buildings of asylum).
One pavilion for male patients, with two day-rooms, dormitories, ten single rooms, and usual offices.
One pavilion for female patients, with similar accommodation.
Residences for medical officer in charge, and for attendants, matron, and nurses, &c.

The cost of an entirely detached hospital-asylum, whether erected in the town or in the suburbs, would necessarily be greatly in excess (per patient) beyond that incurred usually for either borough or county asylums, as many portions of the main asylum, including some of the administrative buildings and the chapel, could be jointly used. The following is an approximate estimate by Mr. Burford Rawlings, of the National Hospital for the Paralysed and Epileptic. These figures are only conjectural, and are for the cost of an *independent* institution for 100 patients; but they clearly show that the cost is expected to be much greater (probably double) than that incurred for ordinary asylum buildings.

The following estimate was given exclusive of site, and is the "approximate cost of erecting a hospital for the study and treatment of insanity, to contain 100 beds for patients, with a day-room attached to each dormitory, a sufficiency of isolated rooms for special cases, and needful accessories":—

	£	s.	d.
Building of, say, two pavilions of 50 beds each, an administrative block, lecture-room, and chapel ..	24,000	0	0
Engineering work, including hydraulic lifts for passengers and food, heating apparatus, baths, service of hot and cold water, &c.	2,500	0	0
Fittings for kitchen, dispensary, &c.	700	0	0
Architect's fee, at 5 per cent. on above items	1,360	0	0
Clerk of the works	250	0	0
Furniture and general equipment ..	2,690	0	0
	31,500	0	0

In this scheme no rooms are specially mentioned for pathological purposes, but these may be presumed to form a portion of the administrative buildings. What is now wanted by the medical superintendents of asylums, both here and abroad, is a greater means of promoting scientific research as to the causes and best modes of treatment of insanity, and for this purpose suitable buildings and equipments are greatly needed. It would appear desirable in some districts to erect one hospital-asylum to be worked in connection with two or more ordinary asylums, more especially if these be not very large ones, for by such an arrangement higher salaries could be paid to the lecturers and pathologists, and the services of highly accomplished men secured. With regard to the medical superintendent and assistants of most English, Irish, and Scotch asylums for pauper lunatics, their duties are already so varied beyond medical

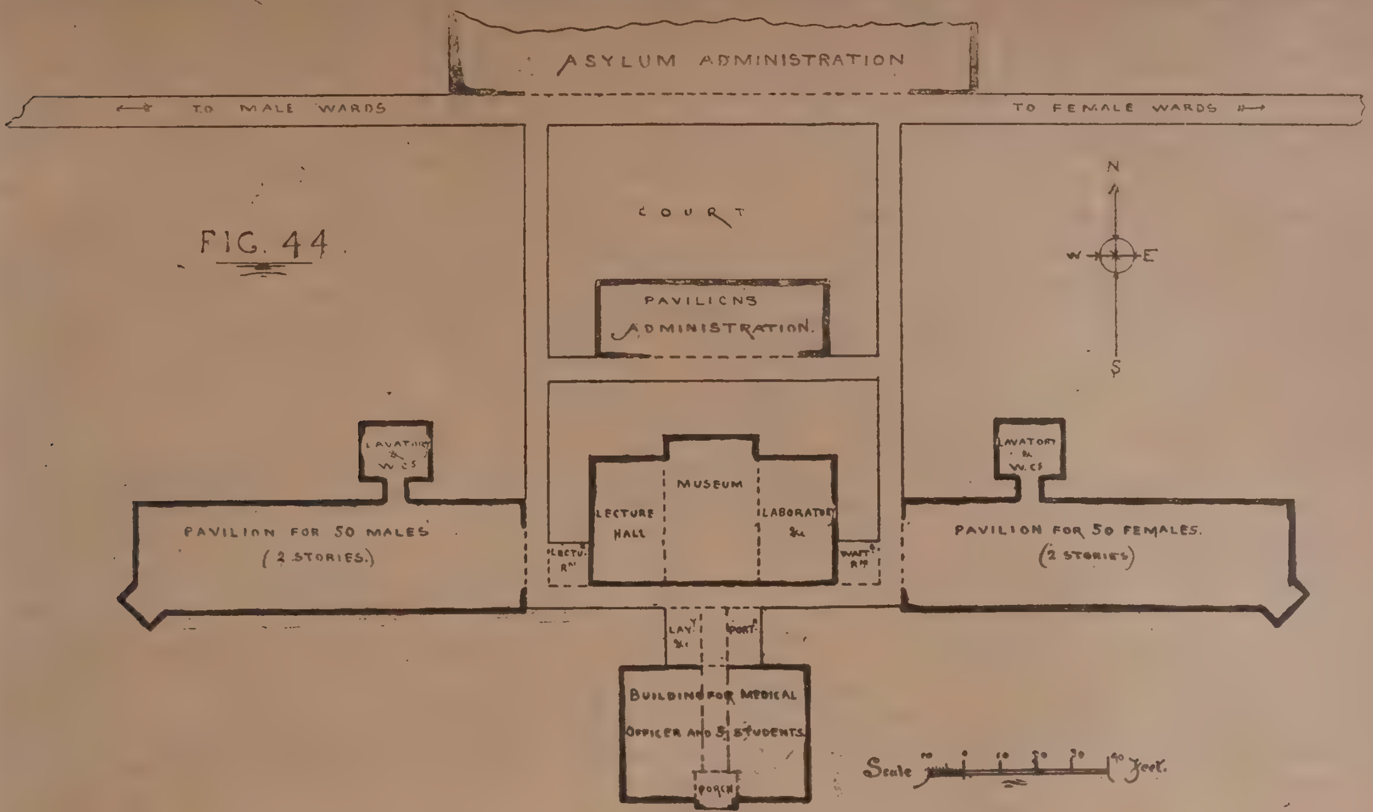


FIG. 44
ASYLUM ADMINISTRATION
TO MALE WARDS
TO FEMALE WARDS
COURT
N
W
E
S
PAVILIONS ADMINISTRATION.
LAVATORY & W.CS
PAVILION FOR 50 MALES (2 STORIES.)
LECTURE HALL
MUSEUM
LABORATORY &c
LECTU. RM
WAIT. RM
LAVATORY & W.CS
PAVILION FOR 50 FEMALES. (2 STORIES)
LAV. &c
PORT.
BUILDING FOR MEDICAL OFFICER AND 5 STUDENTS.
PORCH
Scale 10 0 10 20 30 40 Feet.

duties, and include business transactions connected with the reception, retention, recovery, discharge, and removal, death, escape and recapture, mechanical restraint of patients, also duties concerned with the correspondence of patients, the admission of their visiting friends, and the preparation of numerous statistics, accounts, &c., that it would be difficult for them to give adequate time to their purely medical duties, much less find opportunities for lecturing for the benefit of students upon the subject of insanity, or for making pathological inquiries.

Laboratories appear to be provided to a very considerable extent in many asylums in Belgium, Denmark, France, Germany, Holland, Italy, Russia, Switzerland, and the United States of America, and particularly in Germany, where it appears to be a rare exception for an asylum to be without one or more laboratories. This is more than can be said for the asylums of this country. Possibly the medical superintendents of those countries may not be required to give so much attention to general adminstrative matters, and the preparation of statistics and reports, &c., and have therefore more time at their disposal for laboratory and pathological work. An asylum superintendent has stated that, in his opinion, "it is unquestionable that the study of insanity is one of the most abstruse and difficult—perhaps the most abstruse and difficult subject that can occupy the mind of man." If this be true, it would appear to be desirable that asylum superintendents should not so frequently unduly encroach upon the special province of the architects who may be engaged in adding some new annexe to their asylum buildings, or engaged upon the alteration of asylums which have ceased to be up to date; neither would they appear to have sufficient time at their disposal to interfere with the numerous details of construction, heating, ventilation, and engineering, which are surely more advantageously left to the discretion of capable engineers and architects who may have made these subjects their life-long study.

In confirmation of this, I venture to quote evidence given by Sir James Crichton Browne, the Lord Chancellor's Visitor in Lunacy, and the former superintendent of several asylums. He said: "As a matter of practical experience, the medical superintendents of England have found that the committees of magistrates, who are their masters, are very much better able to appreciate the way in which they carry on the farm and attend to the finances or the general administration of the establishment than the way in which they do their medical work. This latter the justices are scarcely capable of judging of, and it used to be not an uncommon thing in county asylums for a young medical assistant, fresh from the schools, to be put into one department and given entire charge of it, many hundreds of cases being put completely under his medical guidance, while his chief, the superintendent, devoted himself to *building* or farming, and sometimes did not visit the wards for long periods together. I remember a case in a large asylum in the North where a woman who had been in the asylum for *four months* asked, when the medical superintendent came into the ward, 'Who is that gentleman?' She was told he was the medical superintendent. 'Indeed!' she said, 'I thought he was the *architect;* he only comes in when the chimney smokes, or the walls want papering, or something of that kind.'"

To return to the subject of medical students' training wards in connection with hospital asylums. There can be but little doubt that better provision for the purpose of giving instruction on the subject of the treatment of the insane is much required, and that special buildings will be eventually added to the larger county asylums with this object; the asylum architect will probably have to arrange his plans upon a more costly basis than for other parts of the asylum—say, £300 per patient, instead of the £150 to £200, which appears to be a usual amount as matters exist.

Fewer ordinary attendants would probably be required on the *male side,* as if *resident* medical students were introduced, these might, to a moderate extent, occupy the position not only to their own advantage by reason of the opportunities of obtaining an intimate knowledge of questions connected with insanity, but also to the advantages likely to be enjoyed by patients brought into contact with persons of a higher education, and advanced considerably in their knowledge of medical and surgical matters.

It would almost appear that more attention is directed in some foreign countries than in England to the necessity for a full complement of buildings for the training of medical men to asylum work. Dr. Giandri, of the asylum at Cuneo in Italy, states that *all* Italian asylums have good laboratory accommodation, and I have before me a lengthy list of asylums in other European countries with similar provision, with elaborate equipments and great facilities for scientific investigations into the causes of insanity.

(*To be continued.*)

HOUSE SANITATION.

IN an elaborate paper on "Origins of Sanitation," by Dr. J. Spottiswoode Cameron, medical officer of health to the city of Leeds, &c., delivered at the recent Congress of the British Institute of Public Health at Hull, the author goes back to the earlier conditions of sanitation and the prevention of disease. Remedial measures were at one time regarded as the main source. Even pathology was looked upon mainly as morbid anatomy—the classification of disease; but after a time medicine began to look "rather to the causing than to the resulting factors as the basis of classification." Dr. Cameron shows that, though the countryman might have an immense advantage over the denizen of the town, he was not free from various complaints, such as ague from his undrained land, outbreaks of fever from polluted water, and many other things. It was in the towns that the necessity of sanitation was first recognised. A class of maladies, such as relapsing fever, typhus fever, and small-pox, flourished best in crowded neighbourhoods. Overcrowding and foul air, polluted drinking water, were conditions favourable to disease other than zymotic. Speaking more particularly of accumulations of spent matters and house drainage, the author referred to the old-fashioned cesspool as a source of danger. "Nor was the danger greatly, if at all, lessened when the idea was suggested of placing traps in the course of drains to intercept effluvia generated in the sewer. These traps, it was soon found, were themselves effluvium producers close at hand, and a system of relieving all pressure in our drains, and disconnecting all house wastes from them, as well as of rapidly removing all solid accumulations, came to be regarded as essential to the well-being of a community." The separation of the sick in properly equipped hospitals and the notification of the existence of communicable diseases soon followed. After sketching the progress in sanitary legislation, the mapping out of the country into districts for health purposes, the obstruction offered by members of local boards, the employment of inspectors, and the desirability of a systematic examination of districts imposed by the Local Government Board, Dr. Cameron speaks of the importance of the Notification Act, which enables medical officers to give notice to the authorities in case of any communicable disease. This Act has enabled many serious sanitary defects to be discovered, and the author mentions that in one town every house is systematically examined; the number of occupants, of rooms, means of ventilating them, the water supply, drainage, &c., are all inquired into and tabulated, and he asserts that, without claiming the whole or chief part of the health improvement to be due to such examination, the yearly death-rate, which had averaged for the five years preceding this house-to-house visitation 22·3, has averaged during the last five years only 18 6, an improvement of more than 10 per cent. He also dwells on the fact that many new houses built under by-laws and inspected are yet faulty. In some cases, houses are found which still have connection with the sewer, even when every waste-pipe is supposed to be cut off from the sewer. A strong-smelling chemical introduced into the sewer penetrated one house of a row of new houses built under modern by-laws and inspected. But thousands of our houses have wastes which are not disconnected with the sewer. In a recent examination in the outskirts of a large town of recent erection, two-thirds had their wastes cut off and the other third not, and he found that the smell of a chemical entered the house through the drains in 18 per cent. of the former and in 60 per cent. of the latter. These facts all indicate—as he pointed out—that even modern by-laws, carefully carried out under able inspectors, will not necessarily guarantee, a few years later, the healthiness of a house.

SEWAGE DISPOSAL IN FRANCE.

THIS subject is now receiving some attention in France. Last year, at the Boulogne Exhibition, M. Howatson showed a small installation in demonstration of the efficiency of the ferozone-polarite system of sewage treatment. Two commissioners, MM. Genis and Rebouffel, were appointed to visit England to see the process in question in operation, and also other processes of sewage treatment. In the course of their visit, amongst other places, they inspected Royton, Hyde, and Huddersfield, seeing the International process at work. They also visited Manchester, Salford, Sheffield, Lincoln—(where they were received by the chairman of the sewage committee and the city engineer, Mr. McBrair, who explained that though the sewage farm at Lincoln was, by nature of soil, arrangement of filter areas, and size of tanks, theoretically more than sufficient for the treatment of a much larger place than Lincoln, the actual result was that the Lincoln sewage farm, like so many others, was a failure, and they were under threats of an injunction; in order to secure an efficient system the Lincoln Corporation were then engaged putting down polarite filters)—Birmingham, and, finally, Crossness. The result of this visit was evidenced by the Award d'Honnour of the Boulogne Commission.

As a sequel to this demonstration at Boulogne and the report of the distinguished engineers who acted as commissioners, the municipal council of Rouen, by a vote of 22 as against 2, have decided in favour of a scheme submitted by M. Howatson, C.E., on lines very similar to those adopted at Huddersfield—viz., precipitation by ferozone and filtration through polarite; but before carrying out this, it was decided to visit England.

In accordance with this decision the Mayor of Rouen (M. Laurent) and a numerous deputation reached England, and on Monday, the 19th inst., commenced their tour of inspection. In the morning they visited the Royton sewage works, where they were received by the chairman of the council, Mr. Walter Evans, J.P., and the clerk, Mr. Bleasdale. During this visit full details of the process were given by the chairman and by Mr. T. S. McCallum, C.E., Manchester, the engineer of the scheme.

The deputation were evidently impressed by the purification effected by the ferozone and polarite. The special method of cleansing the polarite filters by means of the "upward wash" was demonstrated. After lunch at the Railway Hotel, Royton, the mayor's party proceeded to Chorley to inspect the extensive new works designed by the borough engineer, Mr. Leigh, C.E., for the treatment of the sewage of Chorley by the International process. The chairman of the sewage committee, Mr. Alderman Hibbert, J.P., and the vice-chairman, Mr. Councillor Stones, received the distinguished visitors on arrival at the Chorley station, and thence drove them to the sewage works, where a close inspection of the various details was made, including a visit to the Chorley sewage farm, where the mayor's party had ample demonstration in favour of the treatment of sewage other than by sewage farms. Alderman Hibbert, at the conclusion of the visit of inspection, invited his visitors to join him in drinking the health of the President of the French Republic, in response to which the mayor, M. Laurent, proposed that of Her Majesty the Queen. Ere leaving the works, the Mayor of Chorley invited the deputation to visit him at the Town-hall, which they did after visiting the Chorley fire station *en route*, where the honorary captain of the brigade, Alderman Hibbert, explained the arrangements, concluding by having the horses put to the engine. Ere leaving the Town-hall, M. Laurent, the Mayor of Rouen, speaking on behalf of himself and the deputation, expressed their profound appreciation of the arrangement shown to them, and of the hospitality extended to them, inviting the mayor and the chairman to visit the forthcoming Rouen Exhibition as his guests. On Tuesday, the 20th inst., the deputation visited the Wigan sewage farm, where they were received by the mayor and other gentlemen of the corporation. After a careful inspection of the various parts, they had luncheon with the mayor, and left for Huddersfield, reaching that town on the evening of the 20th. During their stay in Huddersfield they were the guests of the mayor. The borough engineer, Mr. R. S. Dugdale, C.E., met the deputation on Wednesday morning, and conducted them to the sewage disposal works at Deighton, where they were received by the chairman, Alderman Jessop, and Alderman Walker. The mayor was detained by the Licensing Sessions, and so deputed the chairman to welcome M. Laurent and his colleagues in his name. The Huddersfield sewage works, designed and carried out under the direction of Mr. Dugdale, are well calculated to impress the visitor, alike from beauty of situation and arrangement of works, and from the admirable results obtained. As may be well imagined, the sewage of Huddersfield, receiving the refuse liquors of so many dye-works, &c., is very foul, and yet, after precipitation by ferozone and subsequent filtration through polarite, an effluent is obtained of such a nature as induced some of the deputation to taste it! In the course of their visit they were able to see a tank fitted with the Candy patent arrangement for the automatic removal of the sludge whilst the tank is working on the continuous flow. Ere leaving the works, M. Howatson was satisfied with the approval expressed by the various members, and ere long Rouen may have as efficient a sewage purification works and on the same lines as the Huddersfield works. Subsequently the delegates were driven to the Town-hall, and cordially welcomed by the Mayor of Huddersfield, by whom they were entertained to luncheon, along with several members of the council.

ARTISANS' DWELLINGS IN LIVERPOOL.

THE Corporation of Liverpool have under consideration a recommendation from their Artisans' Dwellings Committee that the provisions of Part III. of the Housing of the Working Classes Act, 1890, shall be adopted. The committee report that the Liverpool Corporation have erected the Victoria-square Dwellings, which were opened in 1885, and the Juvenal Dwellings, some of which were opened in 1888, and the remainder in 1890. The whole accommodation thus provided consists of 371 dwellings, of which 66 are single rooms, letting at from 2s. to 2s. 9d. per week; 217 are of two rooms, letting at from 3s. 9d. to 5s. per week; and 88 are of three rooms, letting at 5s. and 5s. 6d. per week. Gas is included in the rents of the Victoria-square Dwellings, and in a portion of the Juvenal Dwellings. The average number of unoccupied dwellings is about eight. For 1894, the Victoria Dwellings returned an income at the rate of £2 8s. 4d. per cent. upon the cost, including the value of the land estimated at 22s. 6d. per yard. The Juvenal Dwellings returned an income for that year of £3 8s. 2d. per cent. upon the cost, the value of the land being estimated at 24s. per yard. Indirectly the Corporation have been the means of housing the working classes by selling land which came into their hands through the operations of the committee, to builders for the erection of small self-contained cottages, of which no less than 627 have been erected since 1889. Most of these consist of four rooms, 579 of such having been built. Of these four are letting at 4s. per week, one at 4s. 9d., 21 at 5s., 251 at 5s. 6d., 110 at 5s. 9d., 185 at 6s., and seven at 6s. 6d., the average rent being about 5s. 8d. per week. In addition to these, 27 three-roomed dwellings have been erected, letting at from 4s. 6d. to 5s. 6d. per week, 12 five-roomed cottages letting at 7s. and 7s. 6d. per week, five six-roomed cottages letting at 7s. and 7s. 6d. per week, and four houses let with shops. Land has also been sold in Alexander Pope-street, Chisenhale-street, and Fisher-street, upon which 17 more cottage houses are to be built. Nearly all the cottages are let. A sub-committee are, however, of opinion that the results of the practice of selling vacant sites to builders for the erection thereon of cottages for the labouring classes are not entirely satisfactory, from the point of view of providing accommodation for the class of people accustomed to live in court houses, the houses erected being let at rentals too high for these persons to pay. The usual rent of a court house is from 2s. 6d. to 3s. per week, and of those fronting streets, and with their backs to the courts, from 3s. 6d. to 4s. per week. The sub-committee, therefore, recommend that the corporation should retain some sites in their own hands when they become vacant, and erect thereon suitable tenement dwellings or cottages to produce such low rentals as will give a fair return to the corporation upon the cost of the buildings and the value of the land, and provide a sinking fund for the repayment of the moneys borrowed, the value of the land being taken at the price it would fetch if sold to builders of cottage property. The sub-committee have had submitted to them by the city engineer and deputy surveyor several plans of houses, most of which possess many excellent characteristics; but it is impossible to make a definite selection until the extent and size of the available plots of land are known. With regard to the powers which the corporation have for the erection of houses, the Liverpool Sanitary Amendment Act, 1864, does not empower the corporation to erect houses on the sites of demolished premises, but that such powers can be obtained by the council adopting Part III. of the Housing of the Working Classes Act, 1890, relating to Working Class Lodging Houses. While it is desirable that the persons displaced should be re-housed, as soon as possible, in sanitary dwellings erected upon the sites of the houses demolished or adjacent thereto, owing to the crowded state of the land upon which the insanitary houses stand, it is quite impossible to provide upon any given site accommodation for the same number of persons displaced therefrom, having regard to the due requirements for light and air, as this class of dwelling should not exceed three stories in height.

CHIPS.

The first school erected by the Lancaster School Board was opened by the mayor, who is chairman of the board, on the 17th inst. This comprises the infants' portion only for upwards of 300 children. The entire school when completed will give accommodation for 1,000 children. The school has been built by local contractors from the design and under the superintendence of Mr. Robert Walker, F.R.I.B.A., architect, Windermere, and Church-street, Lancaster, whose plans were selected in public competition.

The new hospital, Pittenween, Fife, is being warmed and ventilated by means of Shorland's patent Manchester grates, the same being supplied by Messrs. E. H. Shorland and Brother, of Manchester.

The Stratford-on-Avon Rural District Council have instructed Mr. J. E. Willcox, C.E., of Birmingham, to submit schemes of water supply for the parishes of Alveston, Tiddington, and Moreton Morrell within their district. The council have also decided that the whole of the house drainage works in connection with the new sewerage scheme of Henley-in-Arden shall be carried out by the contractor to the works, Mr. Griffin, of Henley-in-Arden, under the supervision of the engineer, Mr. Willcox.

Archbishop Croke has recently presented a very fine chiming clock to Thurles Cathedral, Ireland, which strikes the hours on a 35cwt. bell, chimes the Cambridge quarters, and shows time on three large dials. The whole of the work has been carried out by John Smith and Sons, Midland Clock Works, Derby.

The authorities of the British Museum have, for financial reasons, been unable to purchase for the nation the collection of upwards of a thousand old Japanese colour prints made by Professor William Anderson during his long stay in Japan. The collection, which contains a series illustrative of the handblock colour printing of the old Japanese artists from the earliest date up to the middle of the present century, has been in the hands of the authorities of the Museum for nearly two years, but has now been acquired by Mr. Ernest Hart, who intends, after the collection has been catalogued and classified, to place it in one of the national museums.

CONTENTS.

London Statues ... 289
Is a Contractor Desirable? ... 290
Building Aids ... 290
Cast Iron in Builder's and Contractor's Work.—II. ... 291
Notes from Paris ... 292
Classic Details and their Application ... 294
Protection of Ironwork from Fire ... 295
The Institution of Junior Engineers ... 296
County Lunatic Asylums.—XXVII. ... 296
House Sanitation ... 297
Sewage Disposal in France ... 298
Artisans' Dwellings in Liverpool ... 298
The Building News Directory ... xi.
Our Illustrations ... 299
Competitions ... 299
Building Intelligence ... 318
The New Main Line to London ... 320
Books Received ... 320
Obituary ... 320
Correspondence ... 321
Intercommunication ... 322
Legal ... 322
Legal Intelligence ... 322
Water Supply and Sanitary Matters ... 323
Our Office Table ... 323
Tenders ... 324

ILLUSTRATIONS.

OLD HOUSES, FRIAR-STREET, WORCESTER.—COUNTY HOUSE AT BEDFORD.—NEW MARGARINE WORKS, SOUTHALL.—CATHOLIC CHURCH AND PRESBYTERY AT HEBDEN BRIDGE—DESIGN FOR A WATERGATE.

Our Illustrations.

OLD HOUSES, WORCESTER.

Friar-street, or Grey Friars, has remained without change in name, which it derived from the Franciscan Grey Friars, who had a house on the site of the old city gaol. Hadington informs us that there was a gate opening from the friary into the city, and that without the city wall, which passed near there, was the church of St. Lawrence, and within the wall was St. Lawrence-lane, which, between Needlers-street (Pump-street) and Lich-street, made a passage into High-street. That lane is not in existence, nor any memory of its whereabouts. The timber house to the right of the picture is one of the most remarkable still standing in the city of Worcester. The drawing which we reproduce to-day is by Mr. H. P. Weaver, and for which he was awarded a National prize by the Science and Art Department last year.

COUNTRY HOUSE AT BEDFORD.

On May 10th we illustrated the hall of this house, from Messrs. Scott and Morris's drawing at this year's Royal Academy. To-day we give an interior of the dining-room and two external views, showing the garden front and entrance side of the same building. The architects have furnished us with no precise details of the work, but we understand that an endeavour has been made to realise modern convenience in conjunction with an Old English character and simplicity of treatment. The plan would have explained the interior contrivances more advantageously; but an objection to its publication prevented its appearing with these views. They show sufficient to enable one to estimate the eminently picturesque character of the work, though the wooden balustrade on the garden front to the eaves hardly enhances the effect.

NEW MARGARINE WORKS, SOUTHALL, MIDDLESEX.

The above works have been erected for Mr. Otto Mönsted on a site adjoining Southall Railway Station. The Great Western Railway runs past the land, from which there is a private siding to the works. As another means of communication, a new road has been formed from the premises to the main road. On the north side of this road, at the entrance to the works proper, are arranged the offices, and on the south side the dining or recreation hall. The offices have been carried out in the Renaissance style, freely treated, and are built of red Ruabon bricks, the ornamental portion being in pink terracotta from the works of Messrs. Doulton and Co., of Lambeth, the whole being roofed in with green Westmoreland slates. Inside this building there is a general office 55ft. long by 25ft. 6in. wide, capable of accommodating sixty clerks, along the west side of which are arranged manager's, type-writers', and sale manager's offices and laboratories, &c., the entrance consisting of an inquiry hall, conveniently arranged for the general offices, and manager's private and cashier's offices. A corridor connects this part of the building with the works. On the south side of the road is situate a room 70ft. long by 24ft. wide, to be used as a dining and recreation hall, and for the purpose of entertainments, &c. On the easterly side of this are arranged the lavatories, timekeeper's office, and spacious kitchen for the cooking of the food, which is done by electricity. This building is carried out in a treatment of the Jacobean style, the base being built of red bricks with pink terracotta dressings, the walls of rough cast, with the gables and friezes modelled in Parian cement from the architect's design by Messrs. Hammond and Sons, artistic modellers, of Manchester, the windows, cornices, and ornamental woodwork being of oak, the whole roofed-in with red Ruabon tiles. Between these two buildings are situated wrought-iron gates, forming the entrance to the works. These and all the ornamental ironwork generally have been executed by Messrs. J. Jones and Sons, art metal-workers, Manchester. Inside these gates, and on the westerly side of the works, is the principal entrance leading into the main workroom, which is 148ft. in length by 100ft. wide, round which are situated the various workshops, store-rooms, milk-rooms, shipping-rooms, &c. On the south-easterly side is situated the engine-hall, which is 92ft. in length by 80ft. in width, roofed-in in two light spans and lighted from the top, close to which are situated the boiler-house, blacksmith's shop, machine-repairing shop, &c., loading dock and joiner's shop, which is 100ft. by 60ft., and a chimney 180ft. high. The works generally are carried out in a style similar to the offices, but plainer in character. The materials used are yellow stock-brick facings for the walls, with dressings and bands of red bricks, with red terracotta for the gables and doors. The whole of the works are roofed-in with blue slates, and a north roof-light is provided to all the rooms. Ample means of ventilation have been provided for all rooms. A conspicuous feature in the works is the tower rising from near the centre of the buildings, in which is placed an elevator for the various floors. The whole of the general works, offices, and dining-hall, together with the new road, &c., have been carried out by Messrs. A. and B. Hanson, builders, of Southall; the chimney and work connected with the boilers, &c., by Messrs. Warrington and Sons, of Hyde, Manchester; the whole of the concrete work and fireproof floors throughout, together with the constructional ironwork, by Messrs. Homan and Rodgers, of London and Manchester; the mosaic tiling, &c., in engine-hall, office-entrance, lavatories, &c., by Messrs. J. and H. Patteson, Manchester. The clerk of the works was Mr. William McMillan, and the architects were Messrs. Bird and Whittenbury, Manchester.

CHURCH AND PRESBYTERY, HEBDEN BRIDGE.

This group of village buildings at Fairfield, Hebden Bridge, is now in course of erection. The chapel accommodates 400 persons. The walls are of random blocked insides, with local stone dressings. The plan shows the arrangements and connection between the priest's house and the sacristy, under which is a boys' vestry. Messrs. Walsh and Wrigley are the architects.

DESIGN FOR A WATER GATE.

This design, which was executed in the Royal Academy School, and sent in for the lower school premium, 1894, was set as a subject by Mr. T. G. Jackson, A.R.A. The fundamental idea of the design is not only to give it solidity for the purpose it is meant for, but to give it simplicity, as well as a decorative effect. The room placed over the gate, and which leads off from the terrace, is an essential item; it not only serves for the accommodation of guests, but could with advantage be used in cases of accident. The medallions hung round the frieze, and placed on all sides, together with the lower frieze, are intended not only to enrich, but to give the building a sculptural as well as an emblematical feeling.

G. J. J. Lacy.

◆

The market committee of the Edinburgh Town Council have recommended the acceptance of an offer for heating apparatus for the Corn Market amounting to between £600 and £700, and an offer for carrying out additions and alterations to the slaughter-house amounting to about £2,000.

COMPETITIONS.

Newcastle-on-Tyne.—A selection has just been made from the plans for the proposed new building for the Newcastle Young Men's Christian Association. Three sets of plans had been sent in for competition; and the committee, after consultation with Mr. G. G. Hoskins, F.R.I.B.A., of Darlington, as specialist, have selected those tendered by Mr. J. W. Taylor, F.R.I.B.A., F.S.I., Westgate-road, Newcastle. The site is that occupied by the existing building in Blackett-street, with additional space which has recently been acquired. According to the selected design, there will be a basement and three floors above. The basement will be devoted to a café, bicycle stable, ventilating machinery, and w.c.'s. On the ground floor there will be six or seven shops. The floors of the shops will be level with the pavement, with a drop to suit the fall of any of the street levels. The principal entrance to the Y.M.C.A. rooms is in the centre of the façade in Blackett-street, and is 13ft. wide. The vestibule has double swing doors with glazed upper panels. Inside, the hall is divided into arched bays with panelled ceilings. Under the stair-landing provision has been made for a bicycle stable, with stands for 36 machines. The porter's room is situated at the side of the stairs facing the vestibule, so that that official can command the entrance to the rooms, bicycle stable, and the ground floor, and the heating chamber in the basement. As it is intended to let off the large hall, a separate entrance has been given from Blackett-street, with wide staircase and ticket lobby, and also back entrances from High Friar-street, which could be used for exit only if thought desirable. A separate staircase is also continued to the gallery. The first floor will contain a reception room, buffet, secretary's offices, lavatories and w.c.'s, cloakroom, Bible-class leader's office, reading-room, amusement-room, and hall. In the hall sitting accommodation is provided for 700 persons, including platform and gallery. On the second floor are a committee-room, young men's parlour, honorary secretary's room, small hall, ante-room, cloak-rooms for ladies and gentlemen, kitchen, and scullery. The chief feature of the third floor is a gymnasium over the large hall, a space of 12in. being left between the floor and the ceiling. On the same floor are two dressing-rooms, photographic dark-room, printing-room, and class-rooms. The elevations fronting the Monument and Blackett-street will be of polished Kenton stone, and the back wall facing into High Friar-street of glazed bricks and Kenton stone dressings. The style is English Renaissance of simple treatment, and unnecessary ornamentation has been avoided. The total cost is estimated at £16,500.

◆

CHIPS.

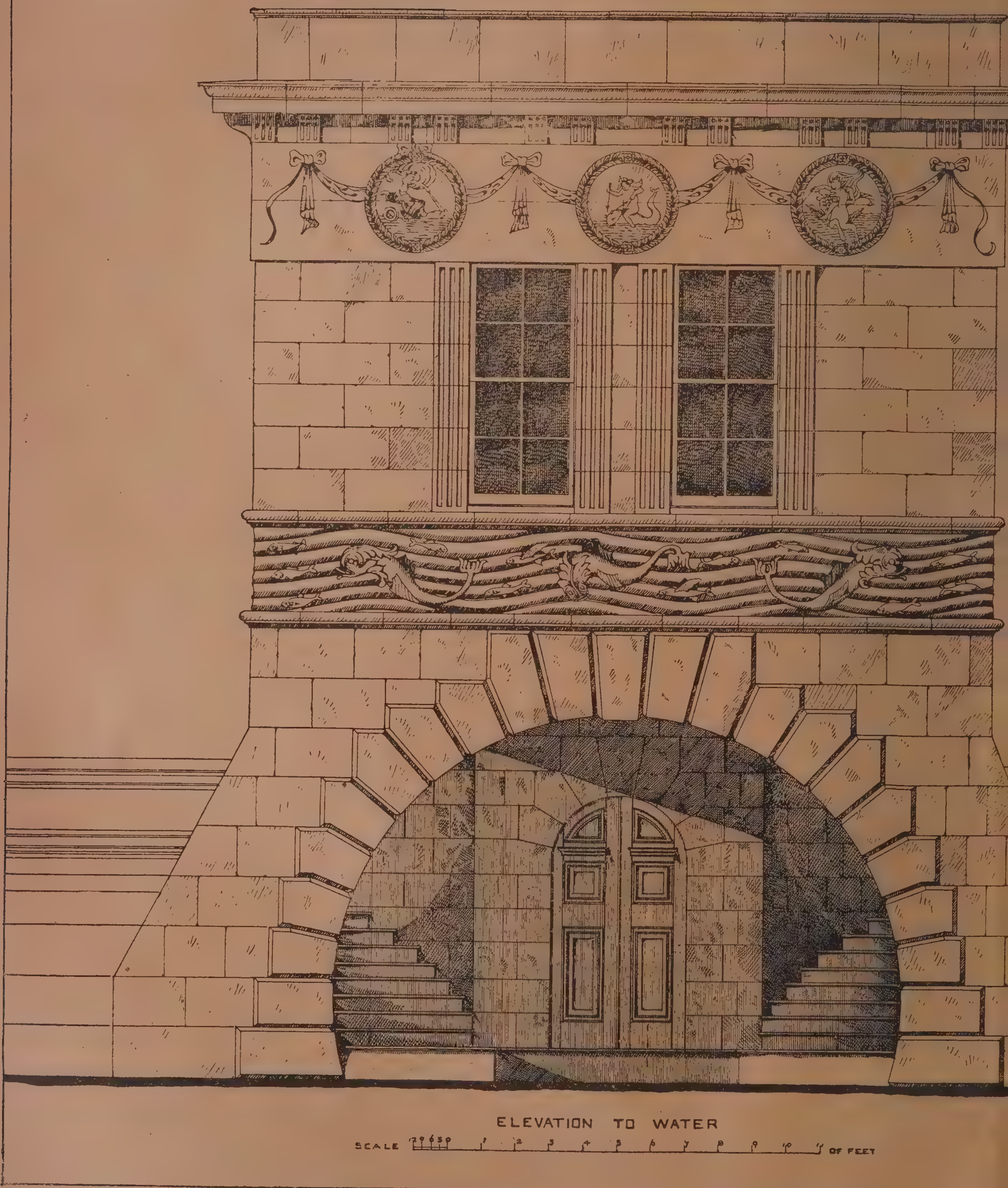
The corporation of Cape Town have ordered a plant for producing electrolised sea water, with a view to the Hermite process being applied to the sanitation of Cape Town.

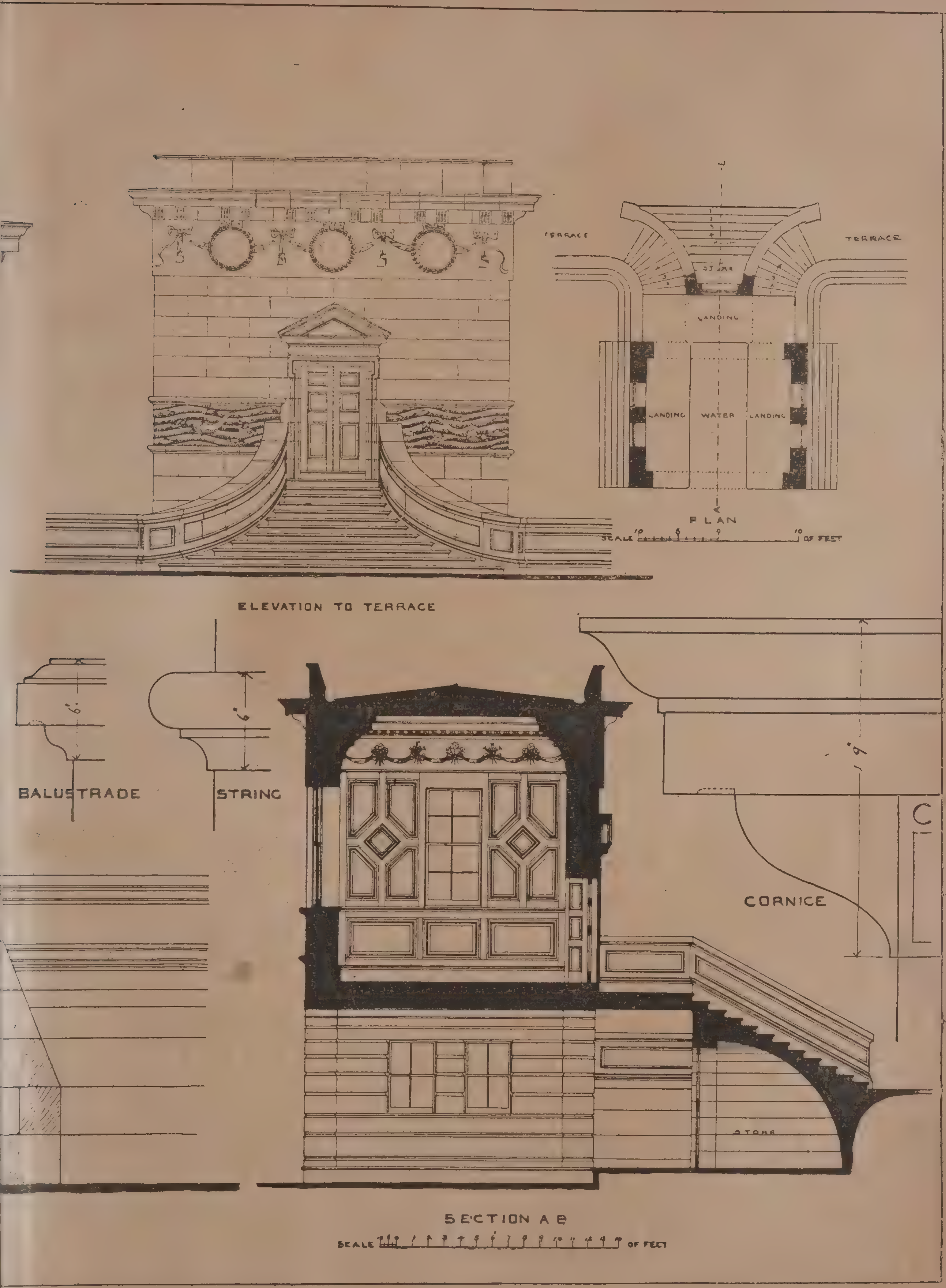
At the last meeting of the Leeds City Council the Markets Committee asked for leave to advertise for designs for the reconstruction and extension of the Kirkgate covered and open markets. The matter was referred back to the committee for further consideration, and the committee met on Tuesday, and discussed the question for nearly three hours. It was resolved to instruct the city engineer to prepare a rough sketch plan of the proposed reconstruction and extension. It was also decided that the committee should visit the markets at Halifax, Newcastle-on-Tyne, and Carlisle.

At the half-yearly meeting of the Croydon Tramways Company held on Tuesday, the chairman reported that the Board of Trade had granted a renewal of the company's powers for a further period of a year, to enable them to complete the extension to Norbury, and when completed they would have a continuous line of tramway of about 13 miles in length, stretching from Westminster and Blackfriars Bridges to South Croydon.

The present means by which female witnesses attending the Law Courts can gain access to the rooms set apart for their use below the court corridor having been found inconvenient and difficult to find, the first of four proposed new openings from the court corridor to these rooms is now in course of construction, and will be ready for use when Courts reassemble in October next. This new opening, which is situated between Queen's Bench Court IX. and Probate Court I., has been effected by cutting an archway through the solid masonry of the wall of the court floor, thereby giving direct access to the rooms below.

DESIGN FOR A WATER GATE BY GEORGE J.J. LACY




TERRACE
TERRACE
STAIR
LANDING
LANDING
WATER
LANDING
PLAN
SCALE 10 5 0 10 OF FEET
ELEVATION TO TERRACE
BALUSTRADE
6"
STRING
6"
CORNICE
1' 9"
C
STORE
SECTION A B
SCALE OF FEET

Building Intelligence.

Douglas, I.M.—At Douglas, on Friday, the Lieutenant-Governor of the Isle of Man, Sir Joseph West Ridgeway, laid the foundation-stone of a new church for the parish of St. Matthew, in which parish is situated the oldest and most densely populuted district of Douglas. The new church will take the place of a commonplace building in Douglas Market-place. The old church has undying associations with the great Bishop Wilson, but it is rapidly falling into decay, and is inadequate in accommodation for the requirements of the parish; also it stands in the Market-place, which requires enlargement, and its fabric and site have been secured by the Douglas Town Commissioners, whose object is to demolish the church and thus increase the market space. The new site is at the corner of North Quay and Ridgeway-street. The church will be built from designs by Mr. J. L. Pearson, R.A., at an estimated cost of £8,000, and the sum of £1,845 is required to pay for the present section of the undertaking.

Hull.—St. Wilfrid's Roman Catholic Church, which is being erected on the Boulevard, Hessle-road, has been designed in the Early Decorated style, and will consist of nave, 76ft. long by 22ft. wide, with north and south aisles, 10ft. 6in. wide. At the east end of each aisle is an octagonal-ended side chapel, 22ft. long by 14ft. 6in. wide, the roof of which will be groined. One chapel is to be dedicated to the Blessed Virgin, and the other to the Sacred Heart. The aisles will be lighted by ten large three-light traceried windows, the clerestory of the nave by the same number, but rather less in size. The sanctuary will have four lofty two-light traceried windows, whilst the roof over the sacrarium will be so groined as to suit colour decoration in the future. The nave is divided on either side from the aisles by arcades of five bays, with moulded arches resting on clusters of polished red granite shafts, with moulded bases and carved capitals. The choir gallery is at the west end, above the main entrances, with an organ chamber and belfry at the side. There is a large working sacristy, with heating vault below, from which it is proposed to warm the church with piping on the high-pressure system. The accommodation provides for about 600 adults, and the contract for the building has been let to Messrs. Colley and Levitt for the sum of £2,895. The walling will be of red bricks with stone dressings. The church has been designed by and will be carried out under the superintendence of Messrs. Smith, Brodrick, and Lowther, architects, of Hull. The foundation-stone will be laid by the Right Rev. Dr. Lacy, Bishop of Middlesbrough, to-morrow (Saturday).

Leeds.—The new baths, erected by the Leeds Corporation in Union-street, were opened on Saturday evening. The building is situated in the midst of a densely-populated neighbourhood, upon the site of the old "midden." In construction and design the baths are almost a replica of those recently provided by the Corporation in Kirkstall-road, the architect being the same—Mr. W. Hanstock, of Batley. The interior fittings are practically identical. The water area in the first-class bath is 60ft. by 24ft., and in the second-class bath 75ft. by 30ft. There are in the first-class room the same marble-lined dressing-boxes on one side of the bath, and in the second-class the same open boxes, slate-lined, all round, forming an arcade, which supports a gallery, for the convenience of spectators. A row of vapour, needle, and slipper baths combined is provided in second-class department. A laundry also forms a feature of the institution, which has cost £7,000. Mr. Ainsley was the clerk of the works. Five sets of public baths are being provided in the city at the total cost of £50,000, the Union-street group being the second of the series.

Port Elizabeth, S.A.—The collegiate church of St. Mary, Port Elizabeth, is the oldest parish church in the eastern province. The foundation-stone was laid in 1825, and the building was open for Divine service a couple of years before the completion of St. George's Cathedral, Cape Town. Alterations and enlargements of the structure were completed in 1842. The tower was built in 1849, and since then many alterations and improvements had been effected, notably the reredos by Norman Shaw, R.A., and east windows, which were erected in 1880. The disastrous fire of March 9th totally destroyed the reredos, windows, and organ, and the building was completely gutted. The bare walls alone remained, and fortunately were uninjured. The difficult problem of the restoration of the bare walls was placed in the hands of Mr. Sydney Stent, of Cape Town. Mr. Stent's plans have been approved by St. Mary's Vestry, and have been on view in Port Elizabeth. The building and fittings were insured for £6,000. Mr. Stent's plans, include raising the walls 4ft., doubling the height of the tower, extending the chancel to a height of 58ft., and building an organ-chamber, cloisters, and new vestries. The lowest tender amounted to £8,600, and the work of restoration has begun. The memorial stone of the new portion of St. Mary's chancel will be laid with Masonic honours by Dr. C. J. Egan, the District Grand Master of the Eastern Division, on September 11. The Right Hon. Cecil Rhodes, the Premier, has headed the subscription list with a donation of £250, which is an encouragement that the remaining deficit of £3,000 may be speedily raised.

Royalty Theatre.—This theatre has been entirely reconstructed and redecorated, and the numerous alterations required by the London County Council have been carried out in their entirety. The seating capacity has been largely increased, and the whole of the ornamental portions have been removed and entirely new decorations of a novel character have supplanted the old. The system of colouring adopted for the auditorium is entirely in autumn tones, varying from the palest primrose to a deep copper bronze, the hangings being an amber brocade and bronze plush. An asbestos fireproof curtain has also been executed, and is so arranged as to be used in place of the old green baize, while a new act-drop has been painted in imitation of tapestry by Mr. Henry Emden. The theatre has also been entirely refurnished. The whole of the house is lighted by electricity, while a new stage has been constructed. Mr. Walter Emden, L.C.C., is the architect for the work. The carton pierre decorations are executed by Messrs. George Jackson and Co., the painting by Messrs. Campbell, Smith, and Co. The general contractor was Mr. Roffey, of Putney.

Rugeley.—A vestry meeting was held at the town hall on Tuesday week, for the purpose of considering the proposal to erect a new parish church. Plans were submitted of a church to be erected on the site of the present building. The tower would remain practically untouched, as well as the old chancel, while the old nave and north aisle would be rebuilt, and on the south side a new and spacious nave and chancel, with south aisle, organ chamber, shallow transept, and porch would be added. The proposed length is 110ft., and the width into the transept 79ft. The cost was estimated at between £8,000 and £9,000. After some discussion, the motion to proceed with the scheme was carried with only two or three dissentients. About £2,300 was promised towards the rebuilding.

St. Mary-le-Bow.—During the past month Wren's church of St. Mary-le-Bow, Cheapside, has been redecorated, and cleaned and repaired at considerable cost. The repairs, which have been executed by Messrs. Campbell, Smith, and Co., comprise no structural alterations; but an improved system of ventilation has been introduced. The old ventilators were almost useless, and four large hopper ventilators have been placed in the clerestory windows. Ventilators have also been fixed in the porch. The scheme of colouring consists of two tints of cream and cinnamon. The panels of the ceiling have been painted a strong buff, and the enrichments are in duck-egg green. Stronger tints of cream have been used for the walls and arches, and the large columns are painted a dull low-toned red. The church and ornaments have been generally cleaned and renovated; the reredos and old iron standards have been repainted, and all the old oak has been cleaned and varnished. Reopening services will be held on Sunday next.

Stoke Prior.—The church of St. Michael, Stoke Prior, was reopened on Friday after restoration. The east end, which was giving way through failure of the foundations, has been underpinned. The walls of the north aisle were so much bulged and out of upright that it was found necessary to rebuild them, and new windows, with traceried heads, have been put in. A vestry has been added. The parapet of the tower has been restored, and the timbers of the spire strengthened and reshingled. The wooden porch on the south side has been removed, and a new stone porch erected in its stead. The old wooden porch has been re-erected as a lych-gate on the south side. The pews have been removed and chairs substituted for them, and the floors of the church have all been taken up and the surface concreted. The modern nave roof has been much improved, and the roofs of the chancel and south aisle have been repaired. A new open timber roof takes the place of the modern plaster ceiling of the tower, and provides a ringing chamber for the bellringers, who hitherto have had to ring the bells, six in number, from the floor of the chancel, by the side of the organ, which is now removed to the other side. The 14th century font has been placed upon a step, and a new pulpit of oak, upon a stone base, has been provided. The whole of the work has been carried out from the plans of Mr. J. L. Pearson, R.A., architect, by Messrs. Cornish and Gaymer, of North Walsham. The cost has been between £4,000 and £5,000, nearly the whole of which will be borne by Mr. John Corbett, Impney, who expended about £1,500 upon the former restoration and repairs of the church in 1864.

Thrybergh.—The dedication of the rebuilt tower and spire of St. Leonard's Church, Thrybergh, took place on Friday. The foundation-stone of the work of restoration was laid on December 11, 1894. The architect has been Mr. C. Hodgson Fowler, F.S.A., of Durham, and the contractor Mr. R. Snell, of Rotherham. The cost of rebuilding has been about £800. The demolition of the old tower settled a point which was previously obscure, as regard the Norman church on whose western gable that tower was partly reared. That western gable was known to have been, previous to the restoration of 1871, a solid wall; the work of cutting the lofty tower arch was felt at that time to be one of great risk. Behind the jamb of the modern arch the old bolt hole, into which the wooden bar was shot when the door was opened, was recently discovered; the little Norman church had thus, in close proximity, a northern, southern, and western door. The date of the lower stages of the tower had been known to be Early English, and not Saxon, previous to their demolition, by the fact that the eastern wall was built on the gable of the previously-existing Norman church; but this proof was clinched by the bits of broken Norman carving which were found used up in the lower walling. The spire had a marked inclination, explicable by the fact that the tower had no foundation; and at the south-western corner the plinth had sunk to some extent. The new tower is of increased width, and the total height of the spire is now 86ft., the old one having been only 74ft.

CHIPS.

An infectious diseases hospital is in course of construction for the Blaby Rural District Council. Mr. Simpson is the architect, and Mr. Jewsbury the builder. The outlay will be about £4,000, inclusive of site.

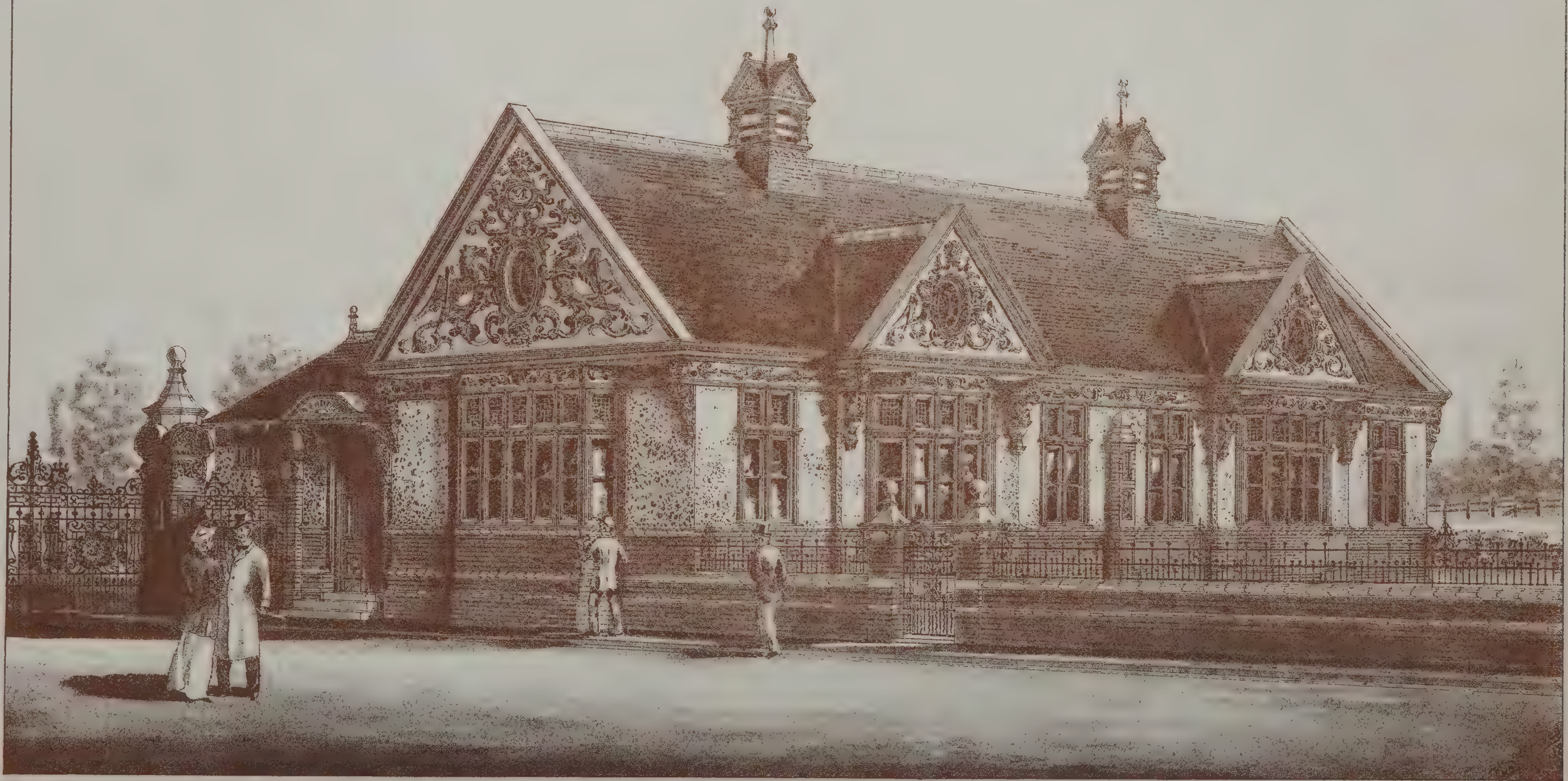
The Roman Catholic church of St. Nicholas, in Pennywell-road, Bristol, will be consecrated on Thursday in next week. The nave was built in 1850, and the chancel, Lady-chapel, and sacristy, with the adjoining rectory, were added in 1873. An altar and other works have now been carried out, the style of the group of buildings, including church, rectory, and schools, being Early English.

The contract for the extension of Plas Mawr, Conway, the home of the Royal Cambrian Academy, has been let to Mr. Thorpe, Llandudno. The works are being carried out from the designs of Messrs. Baker and Hughes, London and Bangor, the honorary architects to the institution. The sale of pictures has been good, and the number of visitors shows a marked excess as compared with this time last year.

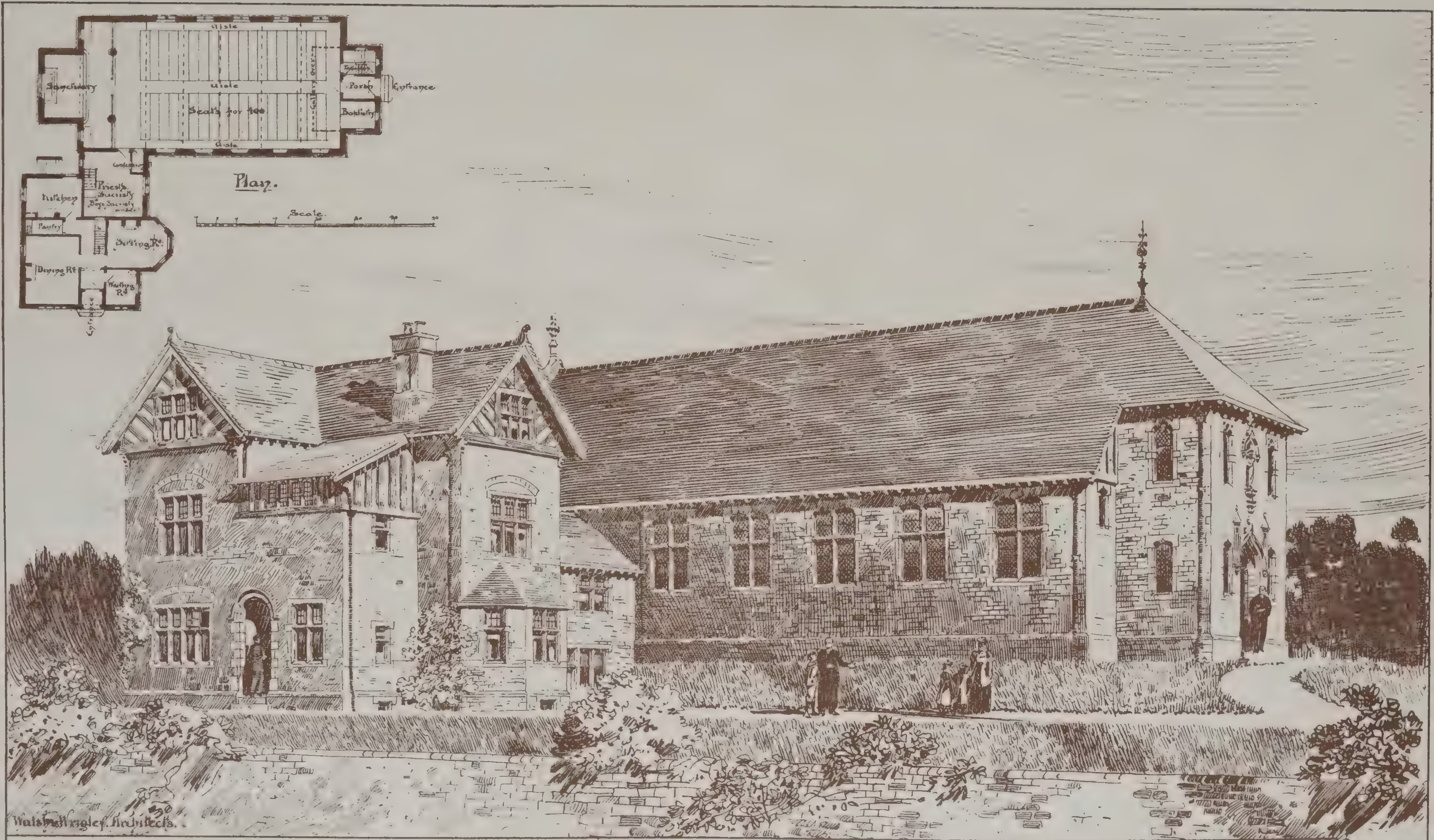
A public fountain has been erected on the parade at Lostwithiel, in commemoration of the opening of the corporation's works of water supply. Inclosed within a concrete basin, and having its rim coped with various coloured stones, the fountain stands on a rockwork of white and tinted local spar stones, with a Portland stone base, inscribed on it its four sides. On this is fixed the fountain, some 5ft. high, of glazed coloured imperishable Doulton ware, in relief. There are two basins, the lower supported by a column, circular in shape, and the whole work stands over 7ft. high. Mr. A. E. Skentelberry was the architect, and the contractors were Messrs. Whetter (plasterer), Bassett (mason), and Bennett (plumber).

NEW · MARGARINE · WORKS · SOUTHALL · MIDDX · MESSRS BIRD & WHITTENBURY · ARCHTS

VIEW · OF · DINING · HALL ·

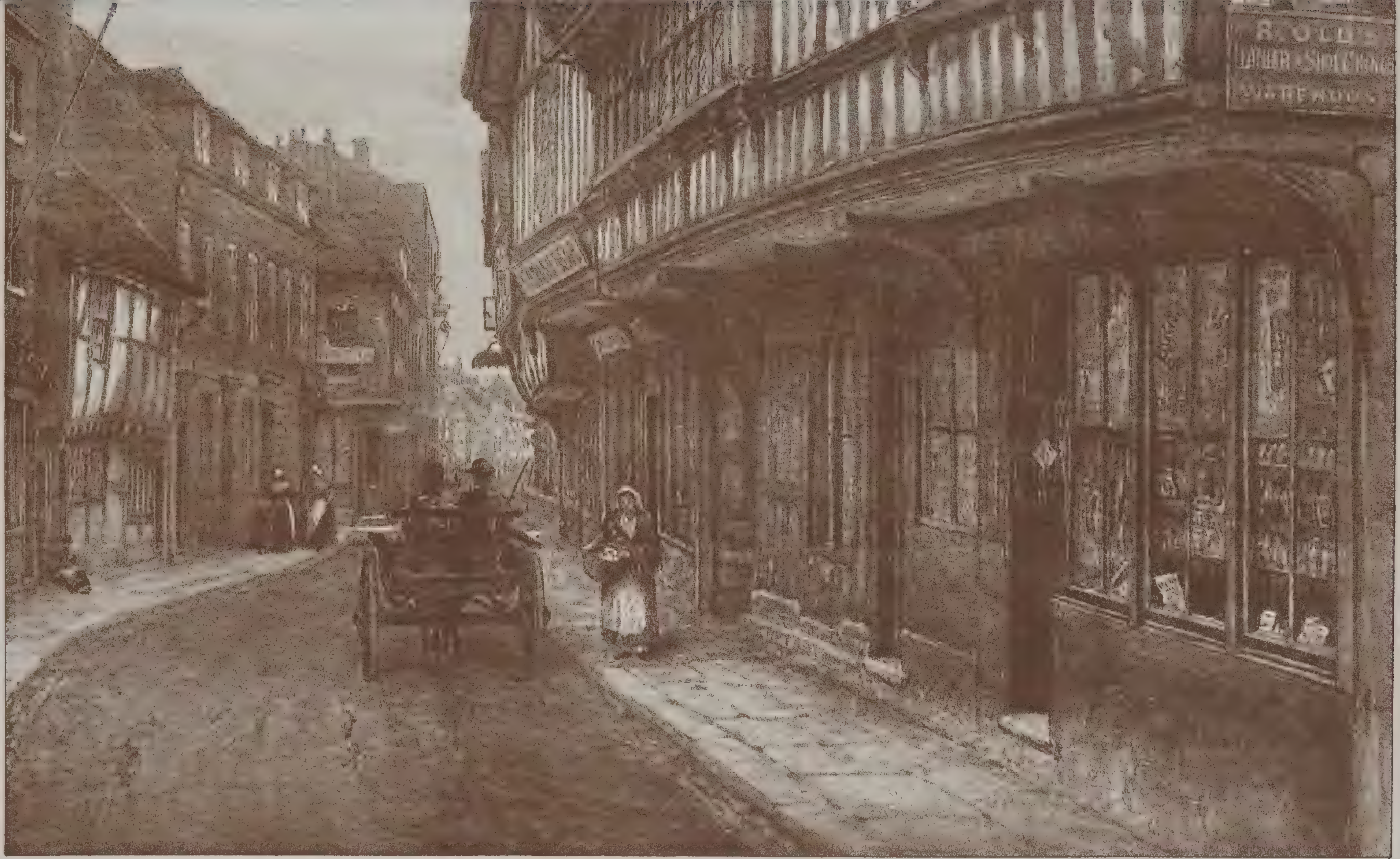


"PHOTO-TINT," by James Akerman, 6, Queen Square, London, W.C.



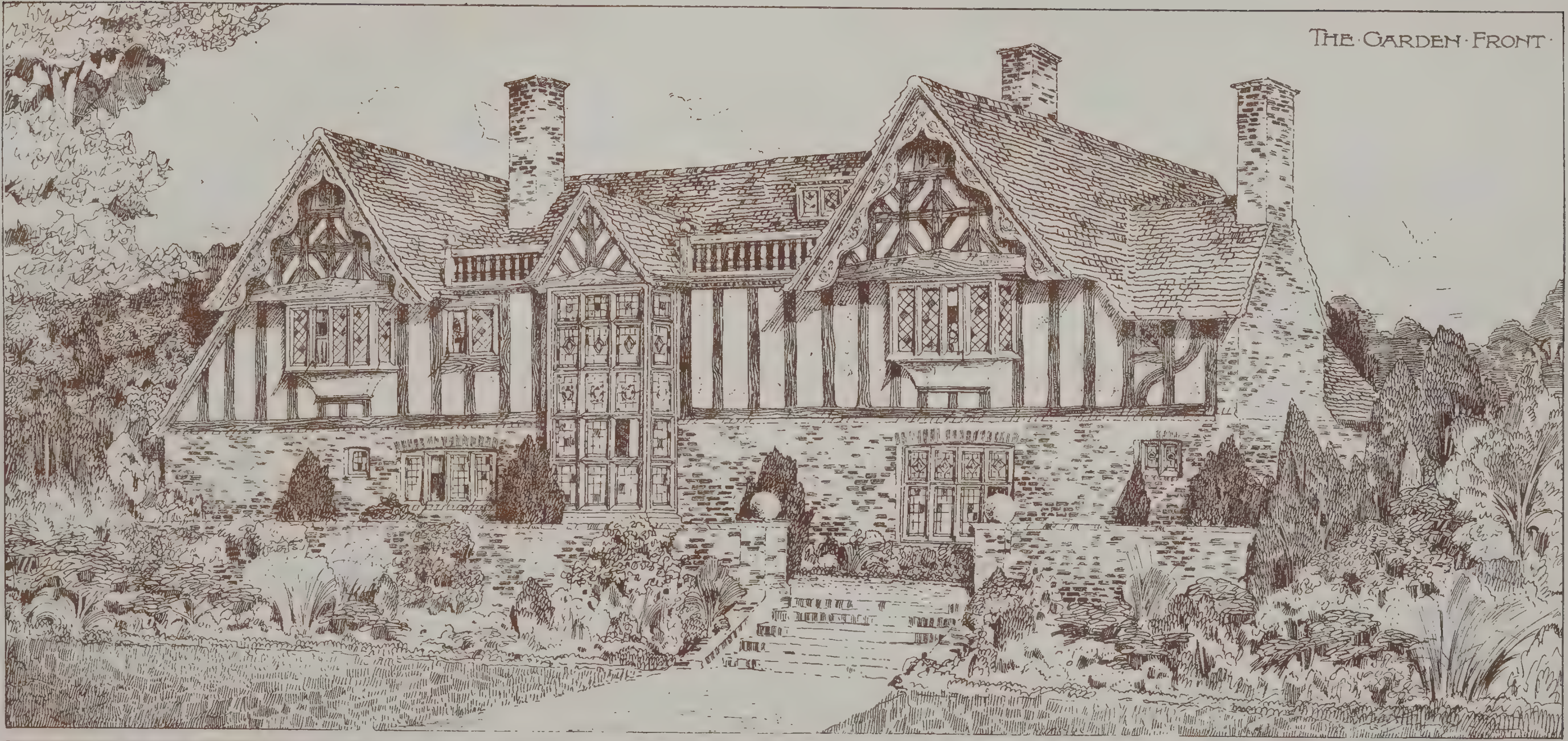
PROPOSED CATHOLIC CHURCH AND PRESBYTERY, FAIRFIELD, HEBDEN BRIDGE, FOR REV. FATHER TILLMANN.

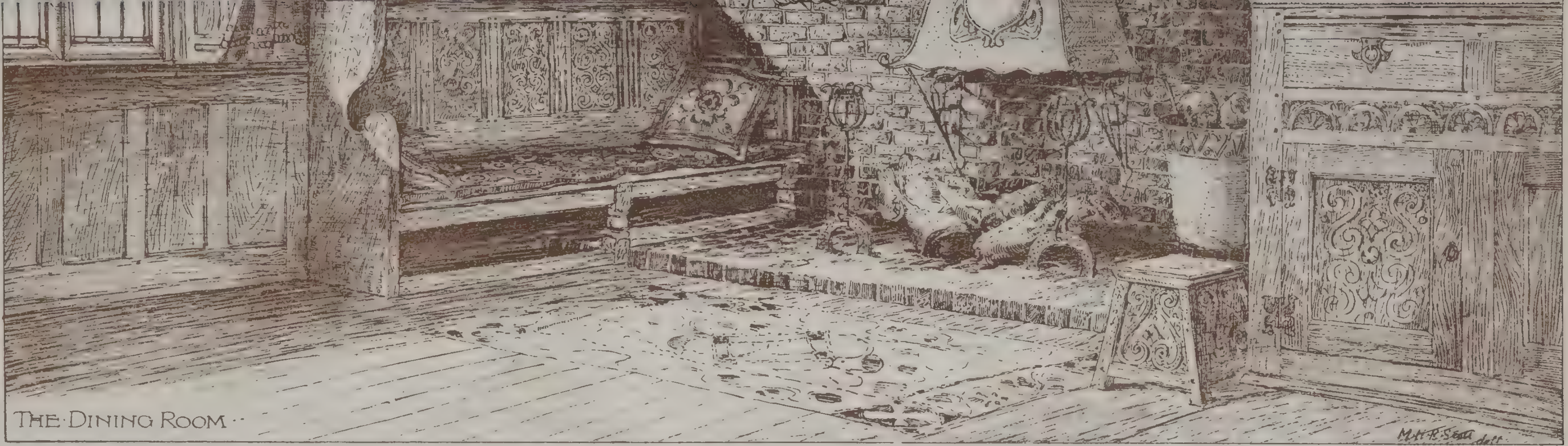
Photo Lithographed & Printed by James Akerman 6 Queen Square W.



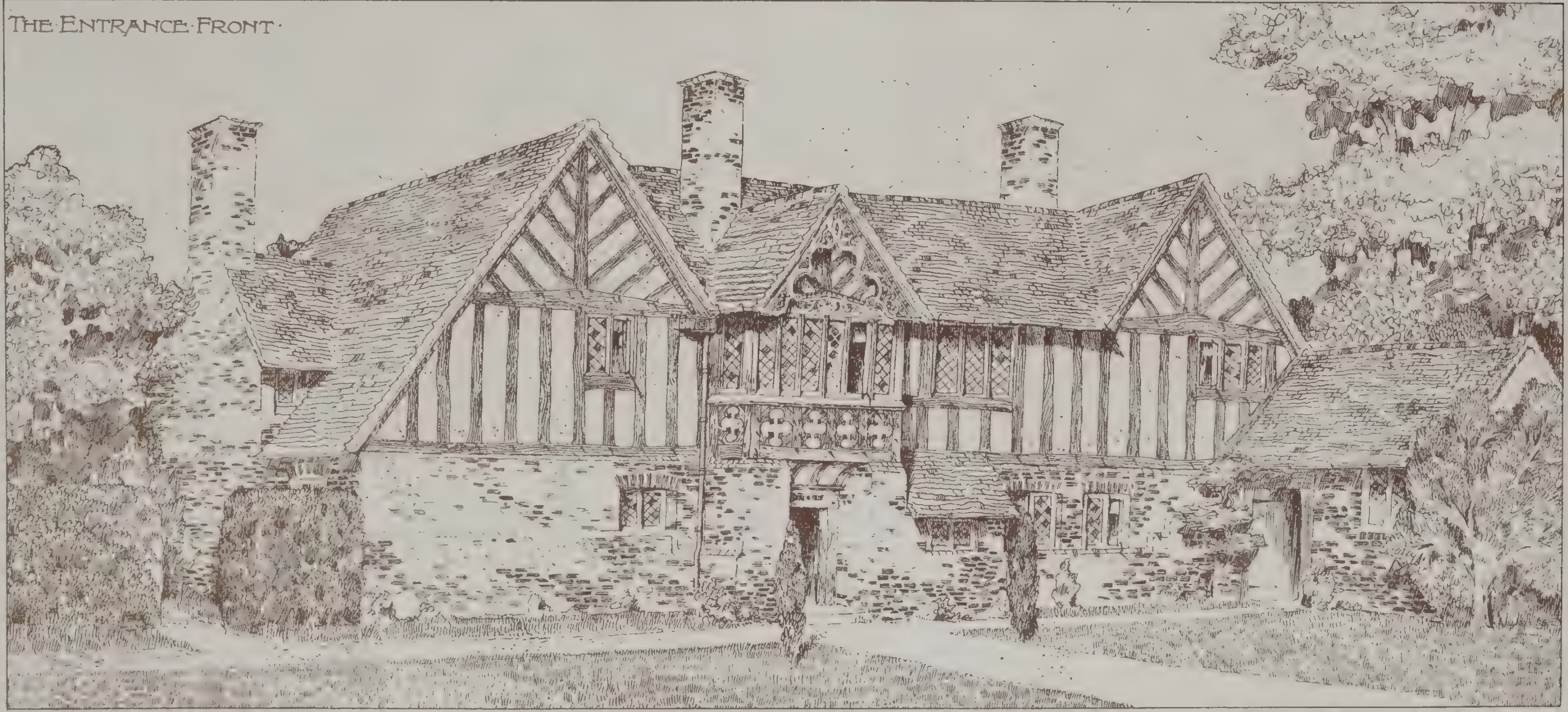
"PHOTO-TINT" [illegible] Akerman, [illegible] Queen Square London W.

OLD HOUSES · FRIAR · S^T · WORCESTER   NATIONAL PRIZE DRAWING BY H P WEAVER ·

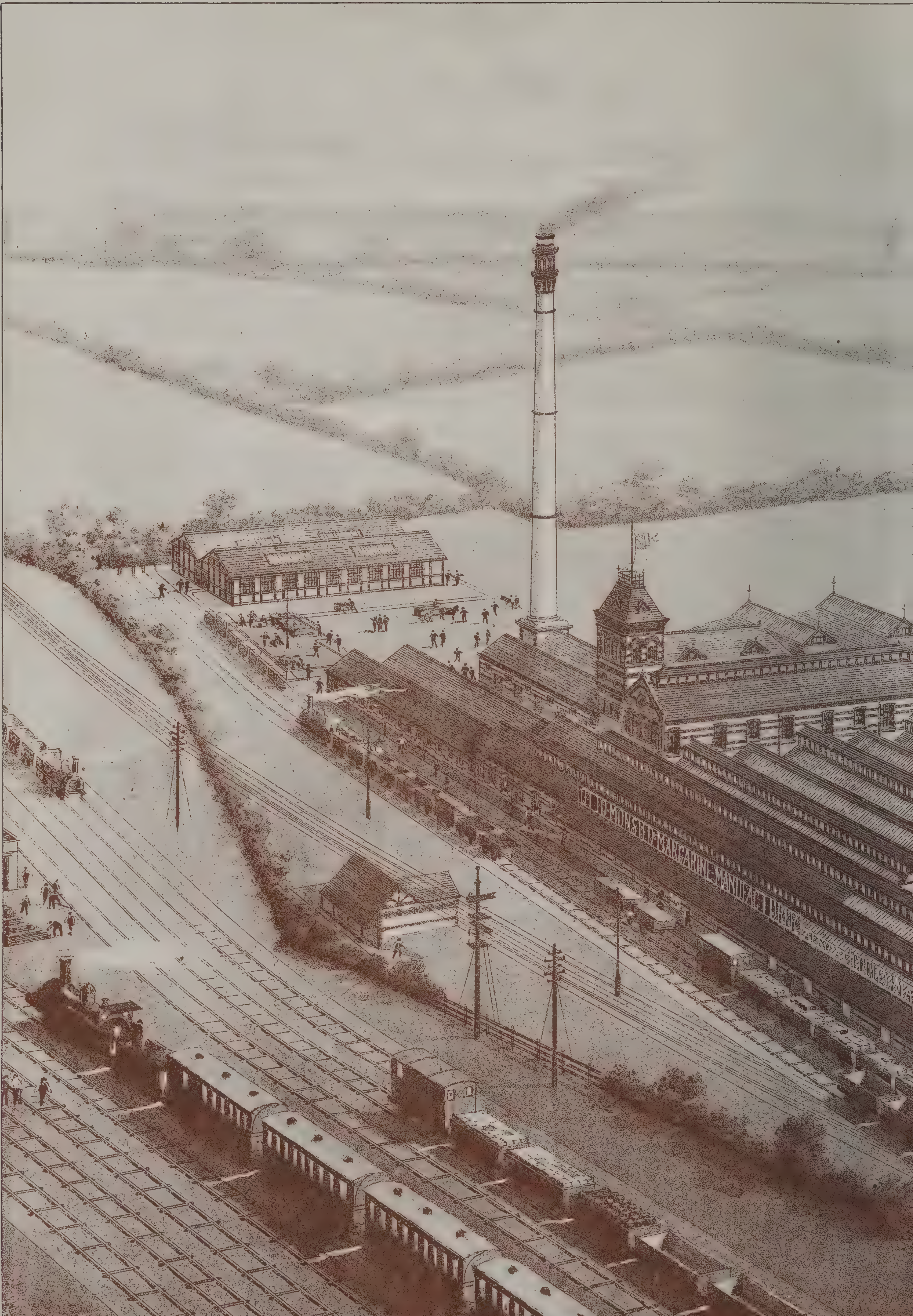

THE·GARDEN·FRONT·


THE·DINING ROOM·

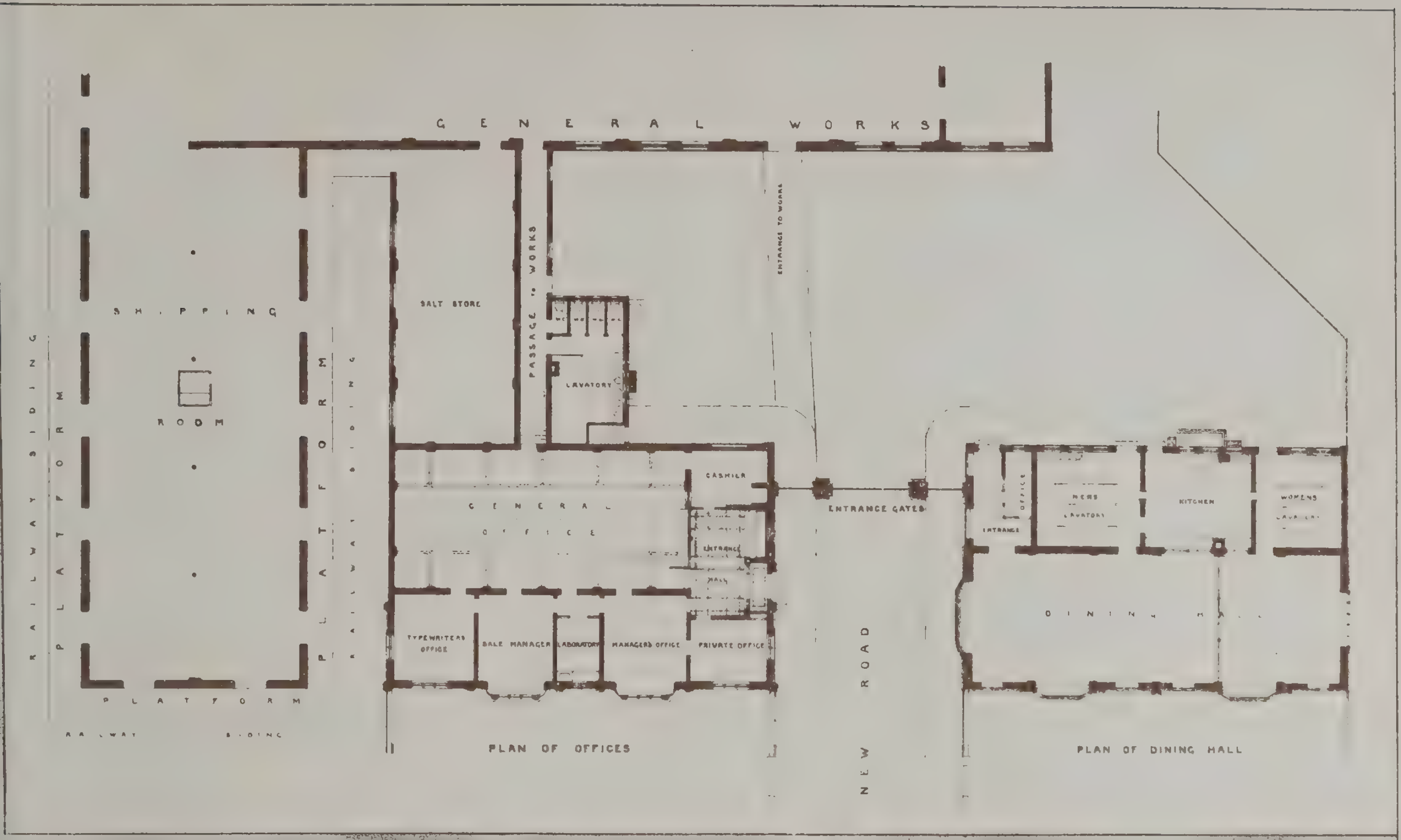
M.H.B. Scott del.

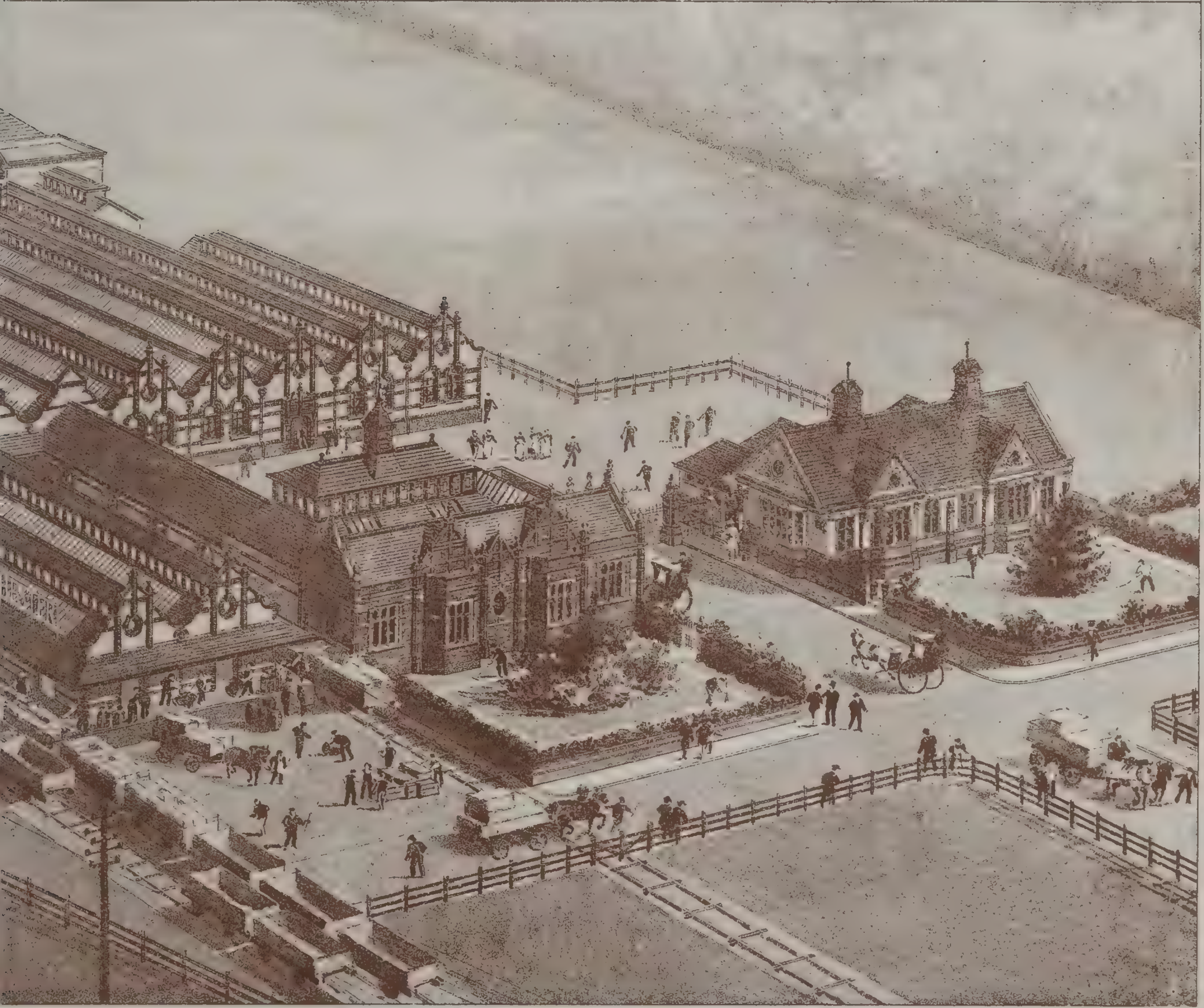

THE·ENTRANCE·FRONT·

COUNTRY·HOUSE·AT·BEDFORD MESSRS BAILLIE·SCOTT & SETON MORRIS·ARCHTS



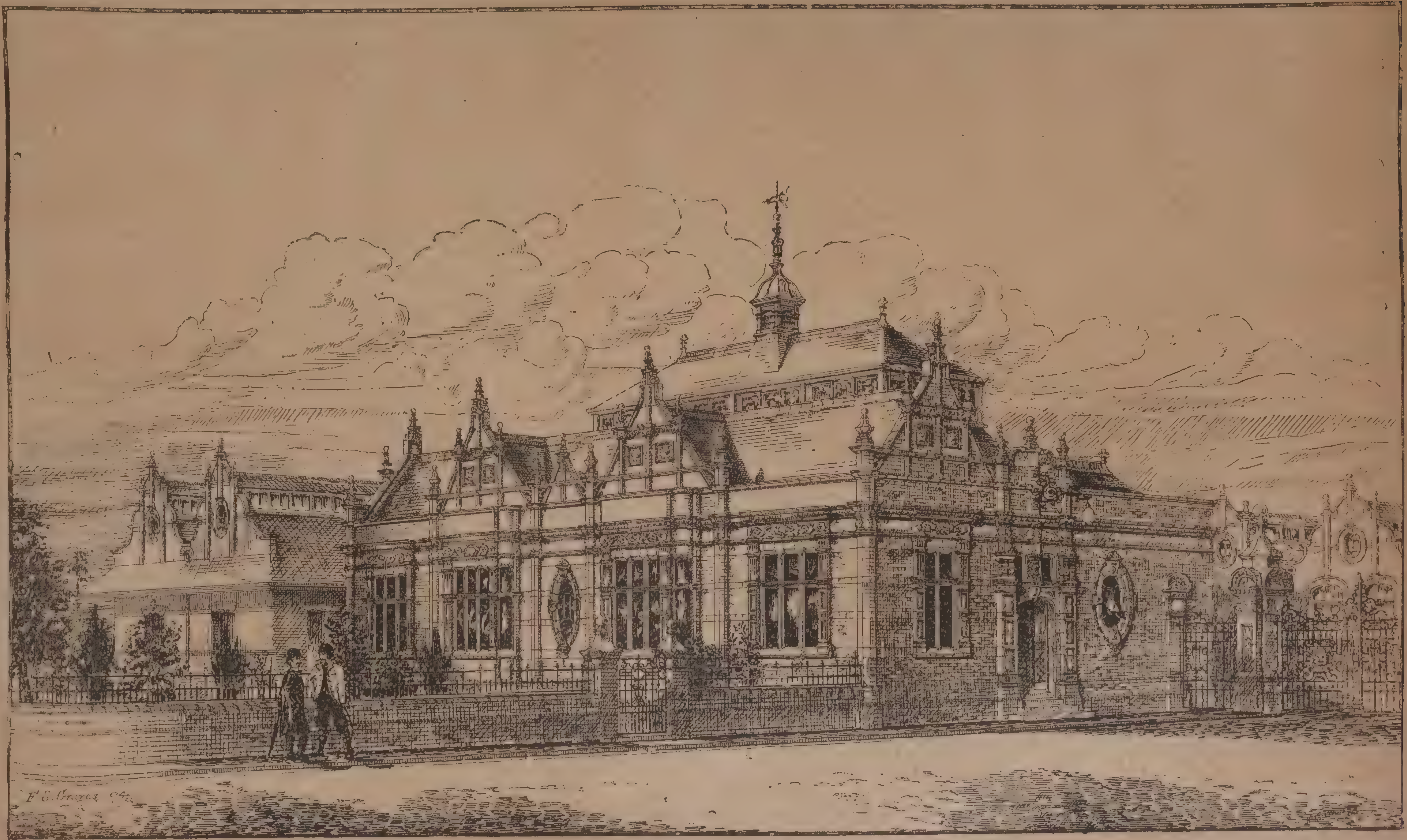
NEW·MARGARINE·WORKS·SOUTHA





"Photo-Tint" by James Akerman 6 Queen Square Londo

L· MIDDx · MESSRS BIRD·& WHITTENBURY·ARCHTS



NEW MARGARINE WORKS, SOUTHALL, NEAR LONDON.

THE NEW MAIN LINE TO LONDON.

SATISFACTORY progress has already been made in the construction of the Manchester, Sheffield, and Lincolnshire Company's extension to London. By the courtesy of the contractors of the Rugby and Woodford section (Messrs. Oliver and Son), a number of Press representatives were enabled on Tuesday to go over the sixteen-mile length now in course of construction between the places named; and as this section is probably the most important in the Midlands, owing to the heavy engineering works involved, a very fair estimate was obtained of the magnitude of the task, and the rapid and substantial manner in which the line is being constructed. The new line is of considerable importance to Birmingham, inasmuch as when the Birmingham and Stratford-on-Avon Railway is made there will be opened up another and important route to London, much shorter than the Great Western and Midland, and about the same as the London and North-Western, with the advantage of arriving in London at a central terminus—the Edgware-road. The route from Birmingham to the Metropolis will be by way of the new line to Stratford, where connection will be made with the East and West Junction Railway, along which the traveller will proceed as far as Woodford Junction, just beyond Byfield, thence on the Manchester, Sheffield, and Lincolnshire new line to Quainton-road and on to London, the latter part of the journey being partly accomplished over the Metropolitan system.

The main line in course of construction starts from the Manchester, Sheffield, and Lincolnshire Company's junction at Annesley, and runs to Nottingham, Loughborough, Leicester, Butterworth, and Rugby to Woodford, thence to Quainton-road, where it joins the Metropolitan. Just before entering London a new line will be constructed through St. John's Wood to the terminus. The length of the new line between Annesley and Quainton-road is 92 miles, and for purpose of construction is divided into several sections. Messrs. Oliver and Son's portion, from Rugby to Woodford, was commenced by them at the beginning of the year. Two-and-a-half years is the stipulated time for completion—none too long considering the enormous amount of work involved, especially at the Rugby end, where the line crosses the Oxford Canal and runs along a high embankment, afterwards crossing the North-Western Railway by means of a girder bridge having a span of 210ft. The line then passes over several sidings at that spot with another span, and enters a deep cutting through Rugby. From this cutting over a million and a half tons of earthwork are being removed. The line also crosses the railway from Leamington to Daventry by a girder bridge, thence continuing its course south to Catesby. At this spot the heaviest engineering work has been encountered, consisting of a tunnel 3,000 yards—about one mile and three-quarters—in length, constructed at a depth of 120ft. Between thirty and forty millions of bricks are being used in the tunnel. Ten shafts 15ft. wide have been sunk at various points on the route, and in each of them large numbers of men are working in day and night shifts. The country around Catesby, Cherwelton, and Woodford has undergone a very remarkable change. Hundreds of temporary wooden houses and buildings have been erected to accommodate the large army of bricklayers, masons, navvies, and labourers, together with their wives and families. Schools, mission-halls, dispensaries, and supply stores abound. Between Rugby and this spot upwards of two thousand men are regularly employed, and it is computed that along the entire route about ten thousand men are engaged. The Woodford section comprises the construction of six viaducts and about fifty bridges, besides the Catesby tunnel and the heavy works at the Rugby end. There are to be several large stations on this length, including one of a commodious kind at Cherwelton, and at Woodford a double connection, north and south, with the East and West Junction, by means of sweeping curves, the main line passing at right angles beneath. The work is well in hand in this district, the foundations of the bridges and stations being laid, and in some cases half the structures erected. Good progress has also been made in the construction of the Catesby tunnel. The material to be dealt with is a kind of sandy marl, and the workers are not much troubled with water. Blasting operations are carried on in the tunnel, which is being completed in 15ft. lengths, men working right and left of each of the ten shafts, consequently work is being pushed forward simultaneously at twenty different places. The men work by the aid of powerful paraffin lamps. The inside of the tunnel is being cased with best blue brick. A number of steam navvies are working in the cutting, loading the waggons at the rate of one every two minutes, each with about six tons of earth. The section beyond Woodford to Quinton-road (26 miles) is a comparatively light one, there being few engineering difficulties. Messrs. Scott and Co. are the contractors engaged, and are pushing on the work vigorously. Operations are also in progress at the London end, the spur to the terminus necessitating the demolition of a large number of houses. At Leicester a large and handsome station is to be built. The line has been planned to accommodate a very extensive traffic, particularly of goods and coal, from the North of England to the Metropolis. All the works are of the most permanent and substantial nature, the platforms and sidings will be ample, and the stations commodious. Sir Douglas and Mr. Francis Fox are the engineers of the southern section, Mr. Edward Parry being engineer of the northern portion.

BOOKS RECEIVED.

A Practical Treatise on the Manufacture of Bricks, Tiles, Terracotta, &c., by CHARLES THOMAS DAVIS. Third edition, illustrated (London: Sampson Low, Marston, and Co., Ltd.)—This comprehensive volume, which we noticed some years ago, has been revised and considerably enlarged. The author's work has been the chief treatise on the subject in the United States, and to this cause must be attributed the rapid sale of first two editions. The author deals with the subject from an American point of view; but, for all that, his work will be found of value by all manufacturers of brick, tiles, and terracotta. The subject is thoroughly handled. "The History of Brick" precedes chapters on "Building-Brick Clays," "Making and Burning a Kiln of Hand-Made Bricks," "Manufacture of Tempered-Clay Bricks," "Pressed and Ornamental Bricks," "Kilns," "Fire-Bricks," "Enamelled Bricks," "Architectural and Sanitary Ware," &c. The most modern machinery, kilns, and appliances are described and illustrated, and the engravings are numerous and well drawn. The student of clays and brick and terracotta will find Mr. Davis's treatise exhaustive of every kind of manufacture—from paving-brick to mosaics and enamelled tiles—and the various processes for handling, disintegrating, tempering, and moulding the clay and burning are fully entered into.

CHIPS.

At the last meeting of the Western Norfolk highways committee, held at Lynn, Mr. John Marshall resigned his position as surveyor of the Walton district, he having obtained another appointment, and Mr. Thos. Brown, of Colchester, was appointed in his stead. There were 63 applications for the post.

The examiners of the House of Lords had under their consideration, on Monday, several unopposed provisional order Bills providing for the acquisition of land for the enlargement of Richmond Barracks, Dublin, and for the extension of the boundaries of Bridgwater, Wakefield, and Keighley. The examiners found that the standing orders had been complied with.

A serious fire broke out, on Monday evening, at Mildmay-grove, Stoke Newington, upon the premises of Mr. T. J. Sole, builder. Builder's workshops of two floors, 30ft. by 20ft. in dimensions, were destroyed.

The intimation has been received in Aberdeen of the death, at Melbourne, of Mr. Mathew B. Jamieson, A.M.I.C.E., son of the Rev. Dr. Jamieson, Old Machar. The deceased, who was only in his thirty-fifth year, served his apprenticeship in Aberdeen as a civil engineer, under Mr. Boulton, burgh surveyor, ultimately acting as assistant. After serving in British Guiana, in the Public Works Department, Mr. Jamieson proceeded to Australia, where he carried out many mining and railway schemes and the construction of waterworks.

The New York Observatory at Lake Geneva will be ready for use at the beginning of September. The building has been constructed of grey Roman brick, with grey terracotta and stone trimmings, resembling in its form a Roman cross, with three domes at its extremities. The principal dome contains the 40in. telescope, the other two are fitted up with the 12in. and 16in. telescopes which are at present used at Kenwood Observatory.

OBITUARY.

Mr. JOHN COLSON, F.R.I.B.A., the architect to the Dean and Chapter of Winchester, died at his residence in that city on Tuesday week from a paralytic seizure at the advanced age of 75 years. He was the son of the late Mr. John Colson, of Hall-place, Shedfield, Hants, and was articled to Mr. Owen B. Carter, of Winchester, the well-known architectural draughtsman, where he was a fellow-student with the late Mr. George Edmund Street, R. A. Mr. Colson commenced independent practice in that city, but soon removed to London, and in 1855 returned to Winchester, where he had a considerable practice both in ecclesiastical and secular work. About thirty years ago he was appointed architect to the Dean and Chapter of the cathedral, a post which he held until his death. He had restored or built 120 churches in the diocese, a great many schools, and also designed the training college and Shedfield Church, close to which many members of his family and his wife, who died last January, rest. In connection with the cathedral he supervised the restoration of the Perpendicular west front, and the great repairs on the south transept. He was a staunch Conservative, and had formerly sat in the town council. He was an antiquary, and a capital florist and horticulturist. For many years he had been in partnership with his son, Mr. John Barnes Colson, F.R.I.B.A., who succeeds to the practice. He had been a Fellow of the Royal Institute of British Architects since 1858.

Two wealthy and philanthropic Scottish shipbuilders, Mr. CHARLES MITCHELL, LL.D., of Sir W. G. Armstrong, Mitchell, and Co., and Mr. PETER DENNY, LL.D., of William Denny and Brothers, Dumbarton, died on Thursday in last week. Curiously enough both were born in 1820, and were consequently 75 years of age. Among the special gifts of Mr. Mitchell may be named the church of St. George, Jesmond, Newcastle-on-Tyne, built in 1888-90 at a cost of nearly £30,000, from designs by Mr. T. R. Spence, of Newcastle, and the extension of the buildings of Marischal College, Aberdeen, a work now in progress, from plans by Mr. Mackenzie, of Aberdeen, at a cost of about £30,000. Mr. Denny's gifts to Dumbarton include the Levengrove Public Park and Knoxland-square. A statue of Mr. Denny, to be erected at Dumbarton, is now in hand for subscribers, the sculptor being Mr. Hamo Thornycroft, R.A.

ON Wednesday evening Mr. J. B. MARSH, architect, of Dudley, was descending a hilly road leading to Dartmouth on a pneumatic safety bicycle, when he lost control of the machine, and on reaching the bottom was thrown violently against a high wall. He was very seriously injured about the head, and was removed to the Cottage Hospital, where he succumbed to his injuries shortly afterwards. Deceased, who was between 40 and 50 years old, was visiting Dartmouth with his wife and family for the regatta, and only arrived in the town on Tuesday.

◆

At the Woodbridge sessions on August 21st, Edmund Capps, builder, Mill Hill, Middlesex, was charged on the information of Mr. George S. Horton, surveyor, of Felixstowe, with non-compliance with the by-laws of the Felixstowe urban district council, by not giving notice of completion before occupation in one case, and in another by not causing proper ventilation to be provided for the soil-pipe of a w.c. He was fined the full penalty of £5 for not providing the soil-pipe, and costs, £3 2s. For not giving notice of completion before occupation the defendant was fined £1 1s., and costs 9s.

A number of master painters and workmen have met in Southampton, under the presidency of Mr. Doggrel, with the view of promoting some form of technical instruction in house-painting and decorating. Mr. Fussell read some correspondence between himself and the Hartley Institute Council. The meeting came to the unanimous conclusion that technical classes for house-painters and decorators were necessary; that the matter should be pushed forward at once; and that a public meeting of the trade be called at an early date for that purpose.

At Glasgow Dean of Guild Court on Friday, authority was given to the officers of the 1st Lanark to erect headquarters on the south side of West Princes-street, Glasgow, in place of an old hall destroyed by fire some time ago. The new buildings are to consist of a large hall 120ft. long by 69ft. wide, having an arched roof supported by iron girders, and two tenements four stories in height, to be used as regimental offices, officers' and sergeants' mess-rooms, with sergeant-major's house. The buildings will cost about £10,000.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to The Strand Newspaper Company, Limited.

TERMS OF SUBSCRIPTION.

One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India, £1 6s. 0d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front-page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No Front-page or Paragraph Advertisement inserted for less than 5s.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page Advertisements and alterations in serial advertisements must reach the office by Tuesday morning to secure insertion.

Situations.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., LI., LIII., LIV., LVIII., LIX., LX., LXI., LXII., LXIII., LXIV., and LXV. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Received.—G. S. and Co.—W. R.—M. Jacobs.—J. P. W.—Interested.—E. T. (Truro).—F. P. and Co.

Correspondence.

THE DURHAM AND LYNN COMPETITIONS.

To the Editor of the Building News.

Sir,—There is a letter in your issue of the 23rd inst., signed by "One Disgusted with Competitions through His Experiences at King's Lynn," in which the writer says that Messrs. Tree and Price won the Lynn competition in such a way as to disgust him. And he then goes on to insinuate that the accepted design was premiated because it had an ornate elevation, and that this was unfair because the work could not be executed for the stipulated sum. I feel that this imputation is so unfair to Messrs. Tree and Price, and also to the Lynn corporation, that I am bound to tell "One Disgusted," &c., that he displays absolute ignorance of the facts of this case.

This is really what transpired: The first premium was awarded to the design marked "It Speaks for Itself" for its all-round merits, but subject to its authors being able to obtain a *bonâ-fide* tender within the cost laid down in the conditions to competitors. The quantities were taken off, and public tenders invited. Fifteen tenders were received, seven of which were well within the stipulated cost, and not one of them was 10 per cent. above it. The work was immediately started (now some months ago), and we expect the building to be completed and open by Christmas next.

I fail entirely to see anything in all this which justifies the strictures of "One Disgusted," &c., on the successful architects, and I trust "One Disgusted," &c., will have the good taste now to be as ready with his apology to our architects as he was with his condemnation.—I am, &c.,

E. J. Silcock, Borough Engineer.

Borough Surveyor's Office, King's Lynn,
August 27.

Sir,—We should like to draw the attention of the other competitors in this latest piece of competition jobbery to the following fact, which seems to have escaped their notice:—Messrs. Barnes and Coates were *not* placed second by the assessor. This we have on unquestionable authority. As a consequence, some hard-working competitor has been swindled out of his well-earned second premium.

We shall be glad if you will kindly give this letter space. Surely it is about time architects combined to put a stop to this form of shameless jobbery.—We are, &c.,

Treadwell and Martin.

2, Waterloo-place, Pall Mall, S.W., Aug. 28.

ASSISTANT SURVEYORS IN THE WAR DEPARTMENT.

> "For who would bear . . . . .
> The insolence of office, and the spurns
> That patient merit of the unworthy takes?"

Sir,—For the benefit of any of your readers with any professional self-esteem who may aspire to become assistant surveyors in the War Department, I will tell a tale of what mine own eyes have witnessed.

Upon Imtarfa Hill in Malta, which commands the surrounding country much as the Acropolis crowns Athens, a vast group of new barracks is being erected at an estimated cost of nearly half a million of English money.

It was to be expected that advantage would be taken of such a site and opportunity to construct a monument worthy of her Majesty's reign, and of which a travelling Englishman might feel proud—considering that labour and excellent building stone is so cheap in Malta that the most elaborate masonry only costs about 9d. per foot cube, measured nett in the work when set.

Yet this is what has happened: Small sketch plans to $\frac{1}{8}$in. and $\frac{1}{16}$in. were prepared at the War Office, showing the proposed accommodation of the various buildings, and an assistant surveyor was detailed to Malta to elaborate the working drawings. This gentleman, who is a competent designer, naturally thought the one chance of his life had come, and hoped to be able to distinguish himself.

A series of petty contracts have been made with the native workmen for the erection of the buildings, to be measured up to schedule as the work proceeds.

The superintendence of the building was put in the hands of a captain R.E., whose fittest claim to such a responsible post was that he had had some experience in electrical engineering; but who esteemed himself able to carry out these works from the original sketches without any *professional* aid, and accordingly told the assistant surveyor that working detail-drawings were quite unnecessary, and dispensed with his services.

The captain R.E. then collaborated with the native workmen wherever details were required as the work proceeded, and the result naturally has been a series of abortions of designs and botches of construction, absolutely shocking to a professionally-trained man. The local authorities were, however, so proud of their work, that a series of official photographs was taken of the first buildings erected, and forwarded to the War Office for admiration.

The letter acknowledging their receipt asked some ugly questions as to variations from the original sketches, and complimented the colonel commanding the Malta station on having perpetrated a series of architectural atrocities "unworthy even of a barbarous nation," to reproduce the actual wording of the letter.

However, when I was in Malta a few months ago, the same system obtained, and the assistant surveyor had been relegated to a desk in a petty divisional office, so that evidently the gentlemen who direct the fine art department at the War Office are quite unable to quicken the æsthetic perceptions of even a colonel-commanding. "Corpus est delendum."—I am, &c.,

Traveller.

THE PULPIT AT ST. MARGARET'S, WESTMINSTER.

Sir,—In some notes upon the Canary Isles last week I referred to the painted oak pulpit at the above well-known church as designed by the late Sir Gilbert G. Scott, R.A. Of course, I knew the very beautiful font at the western end of the nave was made from Mr. John P. Seddon, F.R.I.B.A.'s, design, but was under the impression the rest of the new work was the late Sir Gilbert's. A courteous and esteemed correspondent has just pointed out to me that the pulpit in question was not included in the general restoration scheme, but was added some time afterwards as a memorial to the late Mr. Vacher, of Parliament-street, S.W., and was designed by his nephew, Mr. Sydney Vacher, A.R.I.B.A., architect, of 35, Wellington-street, Strand, W.C., an old pupil of the late Mr. G. E. Street, R.A. I am glad of an opportunity to make this correction.

Of course, when the wonder was expressed as to whether other painted pulpits existed in this country, I did not refer to ancient (generally stone) ones, such as the well-known 15th-century one at St. Saviour's, Dartmouth, for instance. The reference was made to modern oak ones.—I am, &c.,

Harry Hems.

Fair Park, Exeter, Aug. 26.

CHIPS.

The rural district council of Winchcomb, Gloucester, have called in Mr. J. E. Willcox, C.E., of Birmingham, to report and advise on schemes of water supply for the villages of Gretton and Guiting Power.

The new technical school at Accrington, built for the corporation from plans by Messrs. Morley and Woodhouse, of Bradford, selected in competition, was opened on Wednesday.

The sill of the Canada dock entrance to the northern docks at Liverpool has been deepened to 14ft. below the old dock sill, thus rendering it adequate for the largest vessels frequenting the port. In a few months' time the Canada dock itself, which is also fast approaching completion, will be finished. By the opening of the new lock the west side of the Canada dock has been thrown open, together with its new sheds and quayage conveniences, for immediate traffic.

On Monday the extensive granite quarries at De Lank, near Bodmin, were reopened for active work in the presence of a representative company interested in the prosperity of the county. Mrs. Rundle Cornish, wife of the Archdeacon of Cornwall, gave the final turn to the turbine wheel which started the hydraulic machinery recently fitted up for dressing, moulding, and polishing the granite. The granite from these quarries was selected by Sir James N. Douglass, engineer-in-chief to the Trinity House, for the new Eddystone and other lighthouses, and by Mr. Wolfe Barry, C.B., for the Tower Bridge.

The picturesque city of Udaipur, with its lake palaces, can no longer boast of being the most inaccessible capital of India, for it has just been connected with the railway system of the peninsula. The Bombay, Baroda, and Central India Company began the working of the branch line from their station at Chitor to Debari, eight miles from the city of Udaipur, to which it will ultimately be extended, on the 1st inst. The line—$60\frac{1}{2}$ miles in length—was made in little more than a year, and at a cost—28,000 rupees per mile—which makes it one of the cheapest-built lines in India.

On Friday, Dr. R. Deane Sweeting, Local Government Board Inspector, conducted an inquiry at the town hall, Hinckley, into an application for a loan of £4,000 for the purchase of land and erection of permanent buildings to be used as an infectious hospital by the Hinckley urban and rural district councils. Messrs. Simpson and Harvey, of Leicester, are the architects, and the plans, which are estimated to cost £3,200 in execution, and will provide twelve beds, besides observation ward and administrative block, were described by Mr. Simpson.

An inquiry, ordered by the Local Government Board into the joint application of the corporation of Richmond and the district council of Heston and Isleworth for leave to borrow £5,000, for the establishment of a joint isolation hospital, was held on Tuesday and Wednesday before Dr. Theodore Thompson, the inspector appointed by the board. The site for the proposed hospital will cover an area of about $9\frac{1}{2}$ acres, at Mogden, near the Isleworth sewage farm, and the scheme has been oppposed by an adjoining landowner and by the Twickenham District Council.

An anonymous donor has presented to the city of Liverpool a piece of land at Wavertree, an eastern suburb, expressing the wish that it should be mainly devoted to the purposes of a children's recreation ground. The area includes several large residences, the rents of which will form a fund towards the maintenance of the recreation grounds. The total area is 108 acres.

The Manchester Art Gallery Committee announce that the private view will take place on Monday next. In the work of hanging, the committee have been assisted by Mr. George Clausen, A.R.A. A feature of the exhibition will be a fine collection of sculpture. Sir F. Leighton will be represented by two of his recent works.

Intercommunication.

QUESTIONS.

[11403.]—**Estate Management.**—Can any of your correspondents give the names of any books which treat of the laying-out of building estates, the formation of streets or roads, and other matters connected therewith? Also, of any which give the powers and usual requirements of town authorities in Scotland, and the rights of proprietors in respect of such matters?—Z. Y. X.

[11404.]—**Marks and Brands.**—Will some reader tell me where I can get an up-to-date list of distinguishing brands on timber, deals, battens, and flooring-boards, &c.?—Seaside.

[11405.]—**Setting of Pencil Sketches.**—Will any reader who has had considerable experience in pencil-sketching inform me what is the best method of setting sketches to prevent them from rubbing? I have tried weak mixtures of gum and water, milk and water, and covering them with a light wash of colour, such as yellow ochre, but none of these seem entirely successful.—E. C. B.

[11406.]—**Study.**—I should be extremely obliged if any of your numerous readers would kindly give me any information on the following:—I was articled to an architect and surveyor, and with him four years; am now in a builder and contractor's office, where I have been for two and a half years, and shall stay till end of year, so as to complete my three years Which do consider the best to follow as a vocation—to remain in a builder's office, or go into an architect's office again? I do not mind the office hours, so long as I shall eventually be able to secure a good situation. Am well up in drawing, specifications, and quantities; and, of course, am now gaining the practical knowledge. Should like to know this, so as to be able to decide what course of study to take up this winter. I may mention I have passed first class in both Elementary and Advanced Building Construction, also Geometry (Science and Art Department). Any information and advice will be gladly received by—Undecided.

[11407.]—**Cast-Iron Pipe Sewers.**—How should cast-iron pipe sewers be jointed? I should like a model specification clause?—Drain.

[11403.]—**Church Screens.**—Where can I find details of old rood-screens of wood? A reader may oblige.—Old Subscriber.

[11409.]—**Joining Columns.**—How are columns supporting floors of warehouses best joined? Are there any details published of such construction? Any information would oblige.—A. S. T.

[11410.]—**Electric Railway Tunnels.**—Which are the principal tunnels in England on this system, and dimensions and mode of construction adopted?—Enquirer.

REPLIES.

[11395.] — **Concrete Arching.** — In reply to "Sigma's" query, asking for the results of experiments on the strength of Portland cement concrete in the form of arching, allow me to suggest that he apply to Mr. P. Stuart, F.R.S.A., who has carried out a large number of very important and exhaustive experiments in connection with concrete arches, and also slabs. He will, I am sure, give him very valuable information on this subject. Mr. Stuart's address is Regent's Dock, Limehouse, E.—A. W. Haynes, C.E.

[11399.] — **Rolled Joist.** — In Replies, Aug. 23, "G. H. G." states Hurst's formula to be four times depth × area below centre of gravity divided by lengths in feet; but Hurst says: constant for rolled girders 7, constant for T-girders 4. Ought it not to be 7 times depth, &c., and not 4 times, as given by "G. H. G."? As this makes a very great difference, may I ask "G. H. G." which is the correct constant to be used?—X.

[11401.]—**Warehouse Floors.**—"Zero" does not give any precise information as to the purpose of the warehouse or size of floor. Many differing data are given, but some reliable authorities allow 2½cwt. per superficial foot, including weight of floor itself, as sufficient.—G. H. G.

[11402.]—**Mortar.**—A rod of brickwork requires about three cubic yards of mortar, and about 4,350 stock bricks. One authority says a rod of brickwork requires one yard cube of stone lime and 3½ yards cube of sand. In another place the same compiler says a rod of brickwork contains about 235ft. cube of brickwork and 71ft. cube of mortar. "Beginner" may take which he likes, but the first statement is about right.—G.

At the Watford petty sessions, on Tuesday week, a sawmills labourer, named John Gulston, was committed for trial on a charge of unlawfully wounding his employer. Mr. James Waterman, builder, of Watford. Prisoner, who had been in prosecutor's employ for 12 years, was recently reduced in position, and on being given an order by his master, is alleged to have struck him several violent blows on the head with a cart prop, rendering him unconscious. Mr. Waterman has since suffered greatly, and gave his evidence while seated.

Mr. Thomas Codrington, M Inst.C.E., Local Government Board Inspector, held an inquiry at the District Council Offices, Eastleigh, on Thursday in last week, with reference to the borrowing of £1,000 for the purpose of laying-out a recreation ground, four acres in area. Mr. Galbraith, surveyor to the district council, explained the proposal. A second inquiry followed before Mr. Codrington as to an application to borrow another £1,000 for works of surface drainage to be carried out in the Winchester-road. Mr. H. J. Weston, of Southampton, is the engineer.

Legal.

COMPULSORY SALES.

When a railway company has to purchase land under its compulsory powers, it naturally desires to buy as little as possible. On the other hand, the owner of the land which the company would like to buy prefers to sell as much of it as he can make them take, and this is especially the case where there are buildings and a business to be considered. Section 92 of the Lands Clauses Act, 1845, enables the owner who is served with a notice to treat for a portion of his land to serve a counter-claim that they shall buy the whole. This section, indeed, provides that no party shall at any time be required to sell to a railway company a part only of any house or other building or manufactory if such party is willing to sell the whole. In a recent case, before Mr. Justice Chitty (*Times*, July 26), in a dispute with the Manchester, Sheffield, and Lincolnshire Railway, the point to be determined was whether a building which the railway wished to buy by itself was, or was not, a part of a manufactory, so as to compel the company to take the whole. It appeared that the building for which the railway gave notice to treat was occupied on the ground floor by tenants of the owner of the adjoining factory; but that a portion of the upper floors was used by them for the purpose of their manufactory. The owner declared they needed these floors, and that to take the land which the company wanted would interfere with them seriously in the way of their business, and they, therefore, required the company to buy the whole.

The learned judge held that it was not necessary to prove that the part which the company wanted to purchase was actually a portion of the factory. The land and buildings thereon must be looked at as a whole, and, so regarded, he thought it clear that they were all used together for the purposes of the factory. When a railway company proposed to take a part of a building, part of which building was used as a manufactory, they were in substance claiming to take a part of the manufactory, within the meaning of the Act. In this case, therefore, as part of the building which the railway desired to purchase was used with the owner's factory, the whole of this building was really a part of his factory, and so could not be taken by itself under the compulsory clauses as he was willing to sell the whole, and which the company will now have to purchase.

Fred. Wetherfield, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

The Kent County Council, at their last meeting, referred to a committee a proposal for the erection of a high level bridge over the Medway between Halling and Wouldham. Towards the estimated cost of £24,000 for the bridge, and £10,000 more for the approaches, the Rochester Bridge Wardens offer a grant of £12,000, and the residents in the district £10,000.

It was recently decided to restore three well-known North Riding parish churches, which had become dilapidated. The works at the 13th century edifice at Grinton are approaching completion. The lead has been taken off the church, and has been re-melted for use on the new roof. At Carlton Miniott upwards of £1,000 is to be spent in rebuilding the church, which dates back to the 12th century. Carlton-in-Cleveland church, which was burned down 14 years ago after having been restored, is to be rebuilt, and a restoration fund has been opened by the new vicar. Some £2,000 is to be expended on the work.

For some time past the old Grammar School in the Wakefield Borough Market has been undergoing considerable alterations and improvements, with a view to the structure being used as a boys' school in connection with the cathedral. The work, which has entailed an expenditure of about £1,200, raised by subscription, has been carried out under the superintendence of Messrs. Simpson and Richardson, architects, by whom the plans were prepared. The large schoolroom and south classroom have been completed, and were opened on Monday last, but an assembly-hall and other rooms, as well as some outbuildings and the playground, are not yet finished. The lighting, heating, ventilation, and drainage arrangements have all been revised, and the school furniture is all new.

LEGAL INTELLIGENCE.

The Kensington-court Corner Buildings Once More.—At West London Police-court, on Saturday, Mr. Rose heard the summons issued by Mr. T. Chilvers, on behalf of the London County Council, against Mr. Robert J. Worley, of Wellington Chambers, Cannon-street, in respect of the building which he suffered to be continued above the permitted height at the corner of Kensington-court, fronting the main road.—Mr. Chilvers said he was instructed to call attention to two facts—one, that the defendant was cautioned in April, 1892, before the building reached the statutory height, and the other to a letter sent to him in February, stating that the Council would consider any reasonable modification of the building he might suggest. Mr. Rose: You cannot, by the Act, pull the building down? Mr. Chilvers: No, sir. Mr. Poole, who appeared for the defendant, asked how long the persecution of the Council was to last, and said it was admitted by the judges and counsel that it was a hard case. The building, as it stood, injured no one, but added to the rates of the parish. He regretted that there was no power to pull the building down. If there had been, he could have gone to a higher Court. Because it was a fine, he was obliged to submit to a decision in the Divisional Court. It was the first case under the Act, and the Council had effected their object by the decision as to the question of a corner site. The new Act was passed within a year, showing that the old Act was unjust. He could not suggest any reasonable way except of pulling the building down, which would entail an expenditure of £10,000, with a loss in the rental of £1,500 per annum. Mr. Rose: How high is the Palace Hotel? Mr. Poole: Half as high again as the defendant's building. If a new street had been formed at the side, the County Council would have cut the hotel down. (Laughter.) Fortunately for the owner, the hotel faced Kensington-gardens. My client ought not to be followed up and persecuted in this way. Mr. Rose fined the defendant 3s. a day for each of 74 days, with costs.

Damages Against a Surveyor.—Mr. Ald. Dodsworth, Deputy Sheriff, with a jury, sat at York Castle, on Friday, to assess damages in the case of Gilbert Benjamin Jackson and Francis Jackson, solicitors, Middlesbro', against James March, surveyor and valuer, Richmond. It was stated that in January, 1893, the defendant valued some property at Richmond at £580 10s., and on the faith of that valuation the plaintiffs in May, 1893, advanced £400, and there was now £462 6s. 5d. due for principal and interest. When the property was offered for sale by auction Lot 1 realised £145, and Lot 2 £141. A policy was given as additional security, the surrender value being £23. On those figures the plaintiffs claimed £154 6s. 5d. Mr. John Weatherall, auctioneer, Richmond, who offered the property for sale, considered that £150 was the outside value of Lot 1. The property was in bad repair, and had been condemned. It was valued at 16 years' purchase. The property did not depreciate between the time of the valuation and the sale. The jury gave a verdict for plaintiff for £125.

CHIPS.

The town council of Leominster have elected Mr. Ernest Bailey, at present chief assistant to the surveyor of Barton-upon-Irwell, as their surveyor from among 55 candidates.

The War Office have instructed Messrs. Paterson and Cooper to proceed with the erection at Netley Hospital of the Hermite sanitation plant, the cost of which has been provided for in this year's Parliamentary estimates.

A life-size statue of Dr. Martineau in white marble is to be placed in Manchester College, Oxford, in commemoration of the completion of his 90th year. The commission has been given by the committee to Mr. H. R. Hope Pinker, who has already had the requisite sittings from Dr. Martineau.

The consecration of the new Episcopal Church of St. Droston, at Insch, was performed, on Saturday, by the Right Rev. Bishop Douglas of Aberdeen. The church is in the Early French Gothic style, designed and carried out by Messrs. Ross and Macbeth, architects, Inverness, and commands one of the finest situations of the rising township on the north side of Commerce-street, along with a new parsonage. The church cost £1,700, and the parsonage £800.

Business at the Auction Mart, Tokenhouse-yard, reached its lowest point last week, when the aggregate was only £2,580, said to be the smallest on record, but two sales having been effected. A remarkable instance of the depressed condition of agriculture was afforded at the sale of Langdon Abbey, near Deal, on Friday, when 639 acres of land, with farmhouse, stabling, homestead, and seven modern cottages, only realised £5,700, or less than £9 an acre. Fifteen years ago the property was valued at over £20,000, and four years ago it was mortgaged for £14,000.

WATER SUPPLY AND SANITARY MATTERS.

Bowness Sewage Scheme. — On Wednesday week Mr. G. W. Willcocks, one of the inspectors of the Local Government Board, held an inquiry at the Institute, Bowness, in connection with an application by the district council for leave to borrow the sum of £4,000 for the purpose of sewage disposal, the scheme adopted by the urban district council being that known as the international process, and embodying the treatment of the sewage in upward-flow circular tanks, and its subsequent filtration through specially-prepared polarite filter-beds. Mr. G. Gatey, the clerk to the council, stated that the normal population of Bowness was 2,062, and the maximum summer population 4,500. It will be remembered that the Bowness district council figured some time ago at the Appleby Assizes, the result of that trial being that a limited time was allowed for the carrying out of a purification works. The council having visited and inspected many schemes, finally decided upon the international process as being best adapted for their district, Messrs. Lomax and Lomax, civil engineers, Manchester, being engaged to carry out the scheme.

Glasgow and the Purification of the Clyde. —The town council of Glasgow at their meeting on Monday advanced another stage in their great scheme for the purification of the Clyde by the interception of the city sewage, which was wont to pollute the river. At present the refuse from the eastern district is dealt with at the Dalmarnock sewage works, and the proposal before the town council was to similarly treat the sewage from the north and north-western districts, at works to be erected on corporation ground at Dalmuir. The sanctioning of the new scheme meant that all the sewage from that part of Glasgow to the north of the Clyde, or two-thirds of the city, would be dealt with, and that not only would the Clyde benefit, but the Kelvin as well. The estimate of cost of the scheme consisted of the following items:—For intercepting and outfall sewers, £250,000; for pumping station at Partick and sewage works at Dalmuir, £200,000; for various properties and way-leaves on the route between Glasgow and Dalmuir, £30,000; for the lands of Dalmuir, stated at the present ledger value, £122,000 — total, £602,000. Councillor Crawford, at a previous meeting, had moved that the council obtain the necessary Parliamentary powers to proceed with the scheme, and Treasurer Gray had moved an amendment that the matter be delayed meantime. The debate was resumed on Monday, when, after a long discussion, it was decided by 42 votes to 13 to proceed with the scheme forthwith.

Glossop.—Mr. J. W. B. Clerke, M.I.C.E., conducted a Local Government Board inquiry at the Town Hall, Glossop, on Tuesday last, respecting the application made by the Glossop Corporation for sanction to borrow £44,000 for works of sewerage and sewage disposal. The scheme submitted for the consideration of the Local Government Board includes the sewering of the entire borough, and also the carrying out of outfall purification works. The scheme has been prepared by Messrs. Lomax and Lomax, civil engineers, Manchester, and is calculated to deal with the sewage from a population of 30,000. The precipitation tanks will be on the continuous upward-flow principle, the effluent therefrom being passed through extensive polarite filter-beds. The application was opposed by Mr. Fox on behalf of Messrs. Potter and Co., of Dinting Vale Printworks, the contention of Mr. Fox being that the whole of the dye and bleach waste water should be admitted into the Glossop sewerage system, the corporation having refused to deal with this waste water on the grounds that it would injuriously affect the treatment of the sewage at the outfall works. Mr. Fox gave notice that if, in carrying out the scheme, the Glossop Corporation omitted to provide facilities for the reception of this waste water into their sewers, Messrs. Potter would then at once apply for a mandamus to compel the Glossop Corporation to do so. As this point is of vital importance to all local authorities, no doubt our readers will watch with interest the result of the proceedings, if any be taken.

The Talla Water Supply for Edinburgh.—The first contract in connection with the Talla Scheme was offered to contractors on Monday, a number of whom met Mr. Wilson, C.E., at his office, 72a, George-street, Edinburgh, in order to see plans and specifications, and hear explanations. The engineer has also arranged that his assistant shall meet intending contractors to-day (Friday) at Broughton, and go over the ground with them. The first contract will include a railway 8½ miles long from the junction with the Caledonian Railway about a mile east of Broughton Station to a point near the site of the proposed reservoir embankment across the Talla; the diversion of the road near Tweedsmuir village, which includes a bridge over the Tweed, of steel girders 100ft. in span and 15ft. wide, and a double line of 36in. cast-iron pipes across the valley of the Tweed, and partly along the line of the new road. The pipes will carry the water from the reservoir the first part of the way, and it is proposed to have them put in now when the new road is being made. The railway is chiefly for conveyance of material to construct the reservoir.

Wednesbury Sewerage Works. — Proposed Extension.—On Wednesday, Colonel W. Langton Coke, M.Inst.C.E., on behalf of the Local Government Board, conducted an inquiry at the Municipal Offices, Wednesbury, with reference to an application on the part of the town council for sanction to a loan of £7,500, for additional works of sewerage and sewage disposal. The amount already expended upon the sewage and outfall works has been £50,000. Prior to March, 1894, the attention of the corporation was called to the unsatisfactory state of the effluent from the sewage outfall works, and in September of that year a report was presented by Mr. E. Pritchard, recommending certain additions to the works. The council had gone into this matter with very great care, and had adopted the recommendation, but with a great deal of reluctance on account of the further expense which would be involved. They felt, however, that something further was necessary to be done. A rate of 1d. in the pound being £280, the annual repayment of the proposed loan, at 3¼ per cent. for 30 years, would be as nearly as possible 1½d. in the pound. The sewage farm at the present comprised 26 acres, and there was abundant room for any further extension, so that the scheme before the inspector did not include the acquisition of any additional land. The outstanding loans amounted to £71,381. Mr. E. Pritchard, the engineer of the existing works, said the sewers were constructed for a population of 30,000, with an estimated quantity of 25gal. of sewage per head per day, and the sewage purification works were designed to deal with a population of 25,000, or 625,000gal. per day, on the principle of intermittent downward filtration. That, however, he asserted, was an exploded idea, and the land, having become sewage sick, refused to do its work. Under those circumstances, he had advised the corporation to adopt a plan with polarite treatment as its basis. Councillor Davies said that when the works were laid down ten or twelve years ago, Mr. Pritchard stated that the scheme was sufficient to meet the requirements of the town for twenty years, but in a couple of years, with scarcely any house connections, the scheme was not fulfilling its promise, and when there was rain as much as 800,000gal. of water was delivered at the outfall works, whilst in dry weather the delivery amounted to 50gal. per head of the population. He suggested that only a part of the scheme should be sanctioned, so that the corporation might have three or four years in which to look about and consider what further extensions should be made. The Inspector said he thought this proposal should have been made at a council meeting; but he would make a note of it, and look into any papers which Mr. Davies might think fit to send him. Mr. Pritchard cited figures and passages from reports to show that Mr. Davies was speaking under a misapprehension. Councillor Joynson, chairman of the outfall works committee, said no such quantity as 800,000gal. ever reached the outfall works in 24 hours, as the records kept at the works would show. At the present time, with 4,306 houses connected (all but 200 in the town), the maximum delivery was not more than 600,000gal., and then only in times of heavy rains. The proposal to deal with the matter in the piecemeal manner advocated by Mr. Davies had been thoroughly discussed in committee and by the council, and the conclusion arrived at was that nothing less than what was put before the inspector that day would be sufficient to carry out the work properly. Mr. Duignan, in answer to the Inspector, said the Walsall, the West Bromwich, and the Wednesbury authorities, whose sewage outfall works were in the same neighbourhood, had been threatened, and had spent large sums to improve their respective systems so as to avert litigation. On the proposition of the Mayor, seconded by Alderman Kilvert, a vote of thanks was accorded the inspector, who said he thought he could best show his gratitude by getting the work through as soon as possible. He then went to inspect the works.

◆

The electric lighting committee of the Blackpool corporation have decided to recommend the town council to spend £30,000, in addition to the electrical works, before next season.

By way of marking the completion of the Cowlyd water scheme, which has been carried out from the plans of Mr. T. B. Farrington, C E., borough surveyor of Conway, Mr. Albert Wood, who was for several years the mayor of the borough, has erected in Castle-square a drinking fountain. It stands about 10ft. in height, and is surrounded by a bronze figure of Llewelyn the Great, bearing his armorial shield, and carrying an unsheathed sword. Around the base run the words—"Llewelyn Ab Iorwerth, founder Conway Abbey, A.D. 1152." The material from which the stonework was executed came from the Penmon limestone quarries, Anglesey.

Our Office Table.

Five fresh pictures have been hung at the National Gallery. One of these is simply transferred from South Kensington Museum, by which institution it was acquired in 1869, and was numbered 1356. This work, which is now numbered 1439, is hung in the north-west corner of Room XI. at the National Gallery, is entitled "Fishing in the River," and is by Saloman Van Ruysdael, of Haarlem, 1600-70, of whose work there is one other example in the collection. It is a small picture, 14in. high by 25in. wide, and shows a typical shallow and sluggish Dutch stream, with a well-wooded bank to the right, broken up by a timber bridge crossing a ditch, which runs into the main current. On the left in the foreground are five peasants, angling from a punt moored among the reeds, and over the distant fields are seen the inevitable windmill and church tower. Another work, placed in position on Monday morning, has been presented by Mr. Arthur Kay. It is a "Seapiece with Shipping," by Hendrick Dubbels, 1720-74, a Dutch painter not hitherto represented in the gallery. It is hung on the line in the opposite or south-eastern angle of Room XI., and is numbered 1462, and measures 16in. high by 12in. across. In a wide bay are seen several sloops and fishing smacks, one on the left just grounding to unlade on a sandy shoal. Overhead is a broad expanse of light blue sky flecked with clouds, and the reflections of these cirri and cumuli and the brown and white sails and blackened hulls of the vessels are reflected in the becalmed waters. In addition to these, three small portraits, lent by Mr. George Salting, were placed on the walls under the central dome on Wednesday.

An exhibition of old and modern china, glass, pottery, and antique and humorous art, which opens at the Westminster Aquarium on September 10, should be of much interest. Viennese glass and mosaics, Bohemian glass of artistic design and lavish colour, Dresden china, and Sèvres porcelain will make a harmonious whole; whilst many varieties of English ware will also be on view. Among the curious exhibits will be some monumental vases taken from the Chinese Emperor's palace at Pekin, which were at one time the property of General Gordon; and a number of the Nelson relics will also be shown.

The forty-second annual report of the Department of Science and Art of the Committee of Council on Education has just been issued. It is arranged under eight heads covering instruction in science and art. The number of science schools in 1894 was 2,602, with 9,433 classes and 183,120 students. The results of the May examinations showed that 103,396 individual students were examined, 188,773 papers worked, 82,406 papers passed, and 49,990 first classes awarded in elementary and advanced stages. The payments to science schools on the results of the examinations for 1894 amounted to £140,391, or £10,382 more than in the preceding year. During the year 20,206 elementary schools, with 2,155,311 scholars, were taught drawing and examined under the regulations of the Department. In addition, 16,842 pupil teachers and ex-standard scholars were examined in drawing, of whom 7,473 were successful. The grants for drawing in 1894 amounted to £159,072, in 1893 to £152,860. In 1894, 1,799 schools received "fair" awards, 13,462 "good," and 4,926 "excellent." Building grants were made in 1894 to Science Schools at Batley, Rochdale, Gravesend, High Wycombe, Skipton, Rochester, Battersea, Aston Manor, King's Lynn, Tiverton, Banbury, and Darwen, amounting to £5,314. The grants for buildings in the previous year were £2,251 12s. 6d. In the works submitted in architectural design, the examiner, Professor T. Roger Smith, F.R.I.B.A., refers to the fact that the numbers have diminished, saying the competition under the new syllabus has, however, very possibly not been quite so attractive to ambitious students as under the old arrangements, which approximated more closely to the conditions of actual public competitions as usually conducted by persons requiring designs for public or other buildings. The competition this year has been the means of obtaining a great deal of good and solid work, and less that is either extravagant on the one hand, or trivial and poor on the other hand than has been submitted in some former years, In building construction, the examiner, Colone

H. C. Seddon, R.E., reports there is again a large increase in the total number of candidates, being 501 in excess of last year, 1,296 in excess of 1892, and 2,061 in excess of 1891. The results in the elementary stage have been the most satisfactory, the drawing, as a rule, being far better than in the advanced stage, whilst the largest percentage of those drawing badly is to be found in the honours stage. The percentage of worthless designs was decidedly lower than in previous years, but this was no doubt chiefly due to the alteration in the system.

Two of the few remaining old houses in Wych-street are, we see, to be sold. These are situated on the south side of the street, and have some interesting remains of wood mouldings round the projecting bay windows, and the three upper stories overhang, and have gables. The fronts are framed and plastered, and are good specimens of 17th-century timber-framed work. They are at present untenanted, and to all appearances very dilapidated. Adjoining these are to be noticed two other houses, with old woodwork round the windows, but in a rather Later style. Sketchers and photographists of Old London may find their opportunity here, as in other parts of this locality.

Under the will of the late Mr. George Woofindin, of Sheffield, who left personal estate valued at £131,493, the executors are to stand possessed of one-third part of Mr. Woofindin's residuary estate upon trusts, to lay out such sum as the trustees shall think proper in the purchase of a site within the parish of Sheffield, and to erect thereon, furnish, equip, and endow such number of almshouses as they shall deem the trust fund sufficient to provide, to be called "The George Woofindin Almshouses." The executors are to stand possessed of the remaining two-thirds of the testator's residuary estate in trust to purchase within 20 miles of St. Peter's Church, Sheffield, a site, and to erect thereon, furnish, equip, and endow a convalescent home, to be called "The George Woofindin Convalescent Home," and, if the funds should be sufficient, to purchase also a site at some seaside place, and erect thereon, furnish, equip, and endow a "George Woofindin Subsidiary Convalescent Home." The plans for the homes and almshouses are to be obtained by public competition; but one of the executors, who is an architect, is not to be prohibited by his position as executor from competing.

Estate duty has been paid on £104,220, as the value of the personal estate of Mr. Thomas Chatfeild Clarke, of 132, Westbourne-terrace, and Oakfield, Wootton, Isle of Wight, and of 63, Bishopsgate-street Within, architect and surveyor, formerly a member of the School Board for London, and a candidate in the Liberal interest for the Parliamentary representation of Poole, Hammersmith, and Grantham. Mr. Clarke bequeathed to University College Hospital, £200; to the London Domestic Missions Society, £200; to the Sustentation Fund for Augmentation of Ministers' Stipends (of which he was treasurer), £200; to the British and Foreign Unitarian Association, £200; to the Royal Isle of Wight Infirmary, £100; and to the Society for the Prevention of Cruelty to Children, £100. The bulk of the property is left to members of the deceased's family. It is significant that, although Mr. Chatfeild Clarke was an ardent advocate for Home Rule, the trustees are authorised to invest upon the security of landed estate in England and Wales only.

Mr. T. H. Crasp believes there are few trees which cannot be safely lifted. He has lifted many kinds of conifers and deciduous trees in different parts of the country, and under varying conditions of soil and climate, and claims that the results have been uniform. Conifers of heights ranging from 20ft. to 50ft. and proportionate diameter, have been lifted, and in some cases conveyed a distance of several miles without any real injury. Magnificent retinosporas, 12ft. to 15ft in height, Portugal laurels of great age, fine hollies, horse-chestnuts, and copper-beech, with large laburnums, and scarlet thorns, and many others have been lifted with equal success. The yew-tree in Buckland churchyard, near Dover, is an example of a very old and large tree which was successfully moved a few years ago from one spot to another without being injured. The tree, which it is said was mentioned in the Domesday Book, was well watered after transplantation, and is now in the best of health.

Under the active presidency of the Earl of Derby, a vigorous effort is being made by the British Dairy Farmers' Association to give a helping hand to one of the most important branches of agriculture—dairy-farming, and its allied industry of poultry-raising. At the twentieth annual London Dairy Show, to be held at the Royal Agricultural Hall in October next, prizes to the value of £2,515, in addition to 142 gold, silver, and bronze medals, are offered for competition in 451 different classes, in many of which a keen contest is already assured. This handsome total is due to the fact that the Association have this year been generously supported by liberal contributions to the prize fund from the Corporation of the City of London, the Poulters' Company, the President (Lord Derby), Mr. Titus Barham, Sir James Blyth, Bart., and others, the last-named gentleman giving £400 as prizes for plans and models of dairies adapted for the manufacture of butter and cheese. Altogether the exhibition, which will include every department of the dairy, promises to be exceptionally comprehensive, attractive, and—what is of the greatest importance—helpful to the struggling British farmer.

The last of the scaffolding has disappeared from the façades of the new National Portrait Gallery, and the hoarding has been removed from the whole of the east frontage. The inclosure before the north elevation, facing Charing-cross-road, still remains, as the open space that has been cleared is being flagged. The gallery, it will be remembered, has been erected at a cost of about £96,000 by Messrs. Shillitoe and Sons, of Bury St. Edmund's, from designs by the late Mr. Ewan Christian. Mr. Lionel Cust, who recently succeeded the late Sir George Scharf as director, is now busily engaged in arranging and hanging the collection of portraits, which have all been transferred from Bethnal Green. Some of the pictures are being renovated, and all the frames are being cleaned, regilded, or renewed. The gallery will not probably be formally opened until Easter next.

The "hygienic aspect of wood pavements" is a question discussed in the *Lancet* of last week. The writer refers to the report of Mr. Wynter Blyth on the health of St. Marylebone. That gentleman has been experimentally inquiring into the rival claims of wood and asphalte. The saturation of the former with horse excreta, &c., is mainly referred to. Mr. Blyth has found, it is stated, by examining blocks laid down in Oxford-street during the last six years, that "in a block taken from the centre of the road the greatest pollution was found in the upper slice, although the block was permeated with pollution." He took the upper, middle, and lower slices of blocks for his tests. In blocks taken from the side of the road the greatest amount of pollution was found in the lowest slice, and much in excess of the block taken from the middle of road. The moisture penetrates the joints in the middle of road, and on reaching the impermeable bedding passes down to the sides of the roadway, and so saturates the lowermost layers of the side blocks. Mr. Blyth thinks asphalte is the best form of pavement as being proof against saturation. He admits, however, its noisiness and slipperiness. The latter is a very strong objection, and one which must be overcome by some means of grooving, &c., before asphalte surfaces can be again tolerated.

The final meeting in connection with the curriculum of the course of instruction for practical foresters and gardeners, which has been in progress since 1892, by arrangement between H.M. Commissioners of Works and the Board of Agriculture, took place in the lecture hall of the Royal Botanic Garden, Edinburgh, on Tuesday night, when a prize of £10, given by General Michael, of Ascot, one of the pioneers of Indian forestry, was awarded to John Fowler, Annand, Aberdeen, as the forester who has done best in the examinations over the whole course; and the second prize of a microscope, given by Mr. Robert Dundas, of Arniston, was awarded to William Davidson, Brechin. Professor Bayley Balfour congratulated the men upon the enthusiasm with which they had entered upon and carried through the educational experiment which now came to an end in the Garden so far as most of them were concerned. Some of them had expressed a wish to go to Germany to gain a practical insight into German forestry, and this, he hoped, would be arranged for through the Board of Agriculture. The Professor then announced that the new curriculum would begin in October.

Two new sky-scraping structures are, says the *American Architect*, now in course of construction in St. Louis, Missouri. One of them, the Chemical Building, by Mr. Henry Ives Cobb, of Chicago, is to be sixteeen stories in height, a greater number than in any building in St. Louis. The design shows a very plain building in the Romanesque style. It will be surmounted by a roof-garden, which will practically form a seventeenth story. The estimated cost of the structure is £150,000 sterling, but an outlay of £200,000 will represent the entire investment. The entire ground floor will be occupied by the Chemical National Bank. The other structure, the Century Building, will be a more elaborate and costly undertaking than the one just mentioned. It will front on three streets, Locust-street, Olive-street, and Ninth-street, being located one block west of the Chemical Building, and across the street from the general post-office. The cost of the building alone will be in excess of £200,000. It is to be a combined theatre and office-building, the Chemical Building being for offices only. The structure is to be twelve stories in height, and built entirely of Georgia marble. The two upper stories are to be occupied by a secret society. In the same city a Jewish synagogue is now being converted into a theatre, to be called the "Oriental," and a third theatre is being built on Pine-street.

The completion of the largest gas-holder in America, in connection with the largest metal tank ever constructed, is announced. The holder in question has been built by Messrs. R. D. Wood and Company, of Philadelphia, for the New York and East River Gas Company, at their works in Ravenswood, Long Island City, nearly opposite Sixty-Fourth-street, New York City. It has a capacity of five million cubic feet. It is the first holder of importance built in the United States with the inner lift rising above the top of the guide-frame when fully inflated. The general dimensions of the holder are as follows:—First or inner lift, 179ft. diameter by 48ft. 6in. deep; second lift, 182ft. by 49ft.; third lift, 184ft. 6in. by 48ft. 6in.; fourth or outer lift, 187ft. by 49ft. 2in.; steel tank, 190ft. by 49ft. 6in.; guide frame; 24 standards, 148ft. high; five tiers of latticed girders. The tank rests upon a concrete foundation, the space under the bottom plates being filled with a cement grouting run through holes in the plates after the bottom was lowered upon the foundation. The top of the tank shell is stiffened by a horizontal plate girder, 48in. wide, which serves as a walk around the tank, extension plates being placed back of each standard to permit passage. When the holder is fully inflated, the crown is over 40ft. above the top girder, and is reached by means of a chain ladder kept taut by a weight on its lower end, working in guides. When the holder is filled with gas, the crown is 240ft. above the level of the ground. The largest holder of the world is that built by Messrs. Clayton and Sons, for their South Metropolitan Company, at East Greenwich, London, and which possesses the capacity of 12,200,000c.ft.

On Thursday in last week the police committee of the Belfast Corporation approved of the designs submitted by the assistant city surveyor for new divisional fire-station in Whitla-street and Duncrue-street, close to the harbour, on a site offered by the harbour commissioners.

On Thursday afternoon in last week, the Bishop of Portsmouth, the Rev. Dr. John Virtue, laid the foundation-stone of a new Roman Catholic Church about to be erected in the rear of the Convent of the Cross, Parkwood-road, Boscombe, near Bournemouth. The new church is principally the gift of an anonymous donor, is intended to seat 400 worshippers, and has been designed by Mr. J. W. Lunn, of Great Malvern, the contractors being Messrs. Jenkins and Sons, of Portsmouth. It will take the place of the iron structure erected some eight years ago.

Mr. Bramwell Davies, Q.C., has just published his award in connection with the arbitration proceedings between the Metropolitan Bank and the liquidators of the National Bank of Wales to determine the value of the Dean Forest Navigation Collieries, which formed part of the assets of the National Bank. The amount claimed by the National Bank was £27,000, exclusive of railway waggons. The Metropolitan Bank contended that the collieries were worthless, and offered £5,000 for the plant. The arbitrator has fixed the value of the property at £13,000.

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXIX.—No. 2122.
FRIDAY, SEPTEMBER 6, 1895.

PROFESSIONAL CHARGES AND BUILDING NEGOTIANTS.

"EVERY man," says the lawyer in one of Fielding's novels, "ought to have a proper regard for his fee." It is a virtue in which lawyers are seldom supposed to be wanting, and, judging from the amounts at which their estates are often valued for testamentary purposes, it seems to bring its own reward. The legal profession, however, is one which a man is hardly likely to enter for mere love of it. Its honours and its prizes, and not the intrinsic attractions of its work, are what keep its ranks so full. It is otherwise with our own—at least, in its higher branches. To succeed in producing art of any kind is one of the greatest of intellectual pleasures. To produce one of its most lasting varieties is the privilege of the architect; and his temptation, when he is anything of an artist, is to put his fees into an altogether subordinate place. This is natural, but not wise. People would care more for architecture if they paid more for it. When they get it at all, they get it too easily. More than this, they get all qualities of it—from the worst to the best—at about the same price, and they consequently infer that the difference between one quality and another is insignificant, instead of being almost infinite.

The schedule of professional practice and charges is now being, or is just about to be, considered by the practice committee of the Institute, with a view to possible modifications. This particular committee, as is well known, does not largely represent the artistic element in the profession. We may take it, perhaps, speaking generally, as standing for that large and prosperous section of gentlemen concerned with building matters, for whom the title of architect is a misfit. They are useful, and almost indispensable; but they are much more at home in the surroundings, the preliminaries, and the preparations for architecture, than in architecture itself. They are skilled in negotiations—they are clever at contracts—they know all about freeholds and leaseholds and copyholds—they are admirable at valuations, and can prove the same plot of land to be worth £500 or £5,000 with equal ease—they understand the laws connected with building, the decisions about light and air, repairs and dilapidations—they are in their natural element as arbitrators, though, of all people in the world, they are the most incapable as competition assessors. It seems odd that they should be grouped with architects, just as it seems odd that barbers were formerly grouped with surgeons. The one grouping has ended: it was too absurd to last; in years to come, the other will probably end likewise. The "building negotiants," as we may term them, will some day form a profession of their own—and it will be well, both for architecture and architects, when they do so.

It will be well for architecture, because these gentlemen, who have quite enough to think about in their own proper work, will then be under less temptation to go beyond it. The qualities of mind which conduce to success in their legitimate calling are pretty much those which constitute the sharp solicitor. Till the millennium arrives they will "fetch their price in the market"; but it is only by a sort of miracle that they can ever be combined with the invention and imagination and good taste which go to the making even of the smallest particle of real art. On the other hand, the separation will be good for architects, because they will no longer be expected to pose as authorities on subjects which lie quite outside their true vocation. As matters are now, they profess to understand a great deal too much. They let their clients suppose that they can not only design their buildings properly, and get them properly built, but that they can also do all the other things for them which the "building negotiant" can do. It is an absurd pretension which leads to endless trouble. No one man, with the rarest exceptions, can possibly be both a real architect and a real building negotiant; but when he has led outsiders to think that he can, and has induced them to employ him in consequence, the law courts naturally punish him when he fails.

The Institute Schedule, it is true, does not confuse the duties of the architect with those of the "building negotiant." It states that the professional services included in the ordinary charge of 5 per cent. are the following: "The requisite preliminary sketches, drawings, and specifications sufficient for an estimate and contract; detailed drawings and instructions for execution, one set of tracings, and duplicate specification; general superintendence of works (exclusive of clerk of the works), and examining and passing the accounts, exclusive of measuring and making out extras and omissions." These, according to the schedule, the architect has to provide. It expressly states that his charges "do not cover professional services in connection with negotiations for site, in surveying it and taking levels, in making surveys and plans of buildings to be altered, in arrangements respecting party-walls or rights of lights, nor services incidental to arrangements consequent on the failure of builders whilst carrying out work, or in cases of subsequent litigation; but all such services are charged for in addition." There is no doubt these things ought to be charged for in addition, but in many cases they are not. Clients are allowed to suppose that 5 per cent. covers everything that an architect may have to do in connection with a building under any conceivable circumstances, and the result is that either no claim can be made when such circumstances arise, or that clients think the claim a gross imposition.

To prevent quarrels, there is nothing like having a clear understanding at the outset. Three-fourths of the actions about architects' charges would never have been begun if the Institute Schedule had been put into the clients' hands at starting. It is a question whether the rule of some colonial associations of architects might not be adopted here—by which it is made the duty of every member to forward at once a copy of its schedule to everyone from whom he accepts a commission, and to state that on it his charges will be based. There are certain points in the Institute Schedule, however, about which special agreements may be, and often are, made. It is seldom, perhaps, that time occupied in travelling can be charged for. When several similar buildings are erected at once, a preliminary agreement as to terms is required. For small works, for furniture, fittings, and decoration, the 5 per cent. commission is admittedly insufficient. But the popular idea is that 5 per cent. covers everything, and this makes it extremely difficult to obtain anything beyond it. Yet, by itself, it is miserably inadequate to the work performed, except in the plainest and simplest of buildings. The public think it enormous, because they are utterly ignorant of the time and trouble required for architectural work. "I thought the perspective view and the plan were all the drawings needed," a secretary of a church-building committee remarked some time ago to his architect; "and it seemed to me that your charges were outrageous. Now I see all the drawings, and details, and documents, and the correspondence required, I do not much envy you your appointment."

Except for architects of the very highest reputation, there is no chance of raising the rate of commission. Even if it could be raised, it does not follow that much would be gained. Physicians and consulting surgeons are said to be worse off, rather than better, for the decision they arrived at a few years since to make the fee for a first interview two guineas instead of one. So it would be with us if our 5 per cent. were raised to 7 or 10. Too many buildings are put up without architects as it is, and many more would fall into the same class then. It is not in this direction, but in quite a different one, that we may discern a possibility of making architecture a paying profession. A most important move in this direction would be to mark clearly the distinction between the profession of architect and that of building negotiant. The same man may still practise, or attempt to practise, both, just as the same man may be an architect and a quantity surveyor. But the point is to make the public see that in such a case he is practising two separate professions, not merely one, and that if they employ him in both they must pay him for both. As it is, they often make their architects do the work of a building negotiant, and then calmly assume that his five per cent. commission covers it all. It is true he can bring up the Institute Schedule of Charges against them. In that case, they may defer to it and pay, or they may object to it and leave him to bring an action; but, in either case, they will feel ill-used, and will be his enemies rather than his friends for the future. This would not happen if we could draw a sharp line, visible to all the world, between the building negotiant's duties and the architect's. Clients would then be ready to pay the architect his 5 per cent. for strictly architectural work, and would not expect him to take up a separate profession and exercise it gratuitously for their benefit. For the semi-legal building affairs, their light and air questions, their liabilities to repair, and their dilapidations and valuations, they would go to the building negotiant and pay him his own fees, so that he would get a great deal to do, and be paid for doing a great deal, which now improperly falls upon architects, and for which, in the majority of cases, they are not paid at all. The public, it is true, would then have to pay for this sort of advice and assistance; but by getting it from specialists who devoted their whole abilities to it, they would have value for their money. As it is, they must often find that what costs nothing is worth nothing.

An ideal schedule of charges would concern itself wholly with the work of the architect. It would leave the building negotiant, as such, out of sight altogether, unless, perhaps, by casually remarking, as the Institute Schedule does about the quantity surveyor, that his fees are not included in the 5 per cent. commission. It would give a clear and exhaustive statement of the things which an architect has to do, and would make it plain that when he has done them his responsibility ends. Possibly it might be desirable to issue a quite separate schedule relating to the building negotiant's fees; but the point is to keep the two professions palpably, obviously, and utterly distinct in the eyes of the world. The public would then cease to expect their architects to do a quantity—in some cases immense—of very troublesome business, which has no real connection with their work. They would go to the proper persons for it, pay for it honestly, and get it properly done. The architects' schedule might then be shortened and simplified, so that not only juries, but even judges themselves, would clearly comprehend it.

This is the first and great reform that is needed: alike in the interest of architects, building negotiants, and the public. But the Institute Schedule also wants revising in smaller points. Look, for instance, at paragraph 8:—"If the employer, after having agreed to a design, and had the contract drawings prepared, should have material alterations made," there is to be an extra charge, unless the alterations were made in order to cut down the contract to the amount of the architect's estimate. Well and good; but why insert the words "after having had the contract drawings prepared"? An actual case will show how unfairly this proviso sometimes acts. Some 16 years ago, a large public building was erected in the north of London. The tower, which was an expensive one, remained incomplete for want of funds. After three or four years, the committee began to think about building it. Being in no hurry, they called for design after design, perspective after perspective. One year they had six or eight square towers of different types submitted. Another year they went in for polygonal ones. A year or two after they tried spires. Then somebody wanted a dome, and somebody else suggested a "crown," like that of St. Nicholas, Newcastle. But on three different occasions they did deliberately approve a design, and then, long afterwards, altered their minds, and wanted a different one. Every design submitted involved an estimate of cost, which, in such a subject, could not be arrived at by mere cubing. Every design, too, needed an approximate calculation of its weight to be made, though contract drawings were not asked for except in the final case. These performances went on, with occasional intermissions, for nine years. At last the work was done. The committee, like honourable men, expected to pay for the time occupied in this immense amount of preparatory labour. But one of their members was an architect, and had been an unsuccessful competitor for the building. He raked up the clause we have referred to in paragraph 8, and contended that nothing beyond the 5 per cent. commission could properly be claimed!

We might say something about the vagueness of paragraph 2, which describes how designs for fittings, stained glass, and decoration are *not* to be paid for, but omits to state how they are to be. Then, again, how much attendance has an architect to give in order to receive instructions? Must he, for instance, spend one, two, or three evenings per week at committee meetings for half, or even perhaps for all, the time in which his building is going on? This is sometimes expected of him; but is it reasonable? Then, again, what is "examining and passing the accounts" in cases where there is no quantity surveyor? Practically it means, very often, measuring up the variations; for how else can the architect certify the accounts to be correct? Other points such as these turn up in practice, and need discussion while the Institute Schedule is being revised. But the great and vital point, the point from which some substantial good might really come to everyone concerned, is the first one of which we spoke—the making of the architect's duties clearly and unmistakably separate from those of that respectable and useful personage, the building negotiant.

STATUTORY "NEW" BUILDINGS.

MANY doubts have arisen about the meaning of the term "new" building in the London Building Act, 1894. Definition (6) leaves the point somewhat obscure. It includes any building erected after the commencement of the Act; any building which has been taken down for more than one-half of its cubical extent and re-erected, or commenced to be re-erected, wholly or partially on the same site after the above date, or any space between walls and buildings which is roofed after such date. These definitions do not say whether any and what addition to an old building is to be called a "new" building; whether, for instance, the addition of another story or a new set of rooms constitute a "new building" under the Act. Nor do they very clearly apply to a building which was commenced before January 1, 1895, or is being carried out under a contract entered into before the passing of the Act (August 25th, 1894), nor to certain alterations to buildings. In fact, cases have arisen already under these heads which have given rise to legal proceedings. It may be useful to point out that one of the instruction letters issued by the London County Council to district surveyors states that this particular definition must be read in connection with sections 207—212. Now, according to section 207, a builder or owner cannot alter a building in such a way that it may "not conform" to the Act, unless he has consent of the Council. If we read this section aright, it will prevent any alteration being made to an old building which would make it contrary to any provision as to new buildings. It will be seen, therefore, especially when we look at section 209, that there will be a very limited number of alterations which can be made to a building without bringing it under the new Act—in fact, it practically includes every important alteration, such, for example, as a projection or raising any portion.

The next clause is more definite. Suppose a party or external wall of a house not in accordance with the new Act be taken down, or falls, or is burnt down to the extent of one-half its superficial area, the whole of the remaining part of the wall which is not in accord with the Act is to be taken down or rebuilt in accordance therewith. We will cite a particular decision of some importance in this connection, made by a magistrate. It was held that when a building upon one side of a party-wall had been pulled down to an extent which made its re-erection the erection of a "new" building under section 6, but the party-wall, although it was not in conformity with the Act, was pulled down to an extent less than one half of its superficial area, the party-wall might be reinstated in its former condition. Thus section 208 was strictly interpreted in this decision. We quote the section: "Unless in any case the Council otherwise allow, where a party-wall or external wall not in conformity with this Act has been taken down, burnt, or destroyed to the extent of one-half thereof (measured in super. feet), every remaining portion of the old wall not in conformity of this Act shall either be made to conform therewith, or be taken down before the rebuilding thereof."

Section 209 is most important. It refers to additions and alterations, and interprets more clearly section 207, which we have referred to. This section subjects additions and alterations to the buildings to the provisions of the Act. It says: "Every addition to, or alteration of, a building, and any other work made or done for any purpose in, to, or upon a building (except that of necessary repair not affecting the construction of any external or party-wall), shall, so far as regards such addition, or alteration, or other work, be subject to the provisions of this Act and of by-laws thereunder relating to new buildings." This clause is, as we have just said, far-reaching in its effect, and will only exclude buildings that are exempted specially under the Act. Mere repairs are also excluded, as, for instance, taking out an old doorframe in an external wall and substituting a new one, provided the doorway is not enlarged; or decayed brickwork may be reinstated. But any alteration or addition, such as an enlargement of a room or raising a story, or the increasing the size of openings, comes under the new provisions. Buildings erected before the commencement of the Act, subject to the provision as to new buildings just considered, are free from interference. The next clause deals with several kinds of conversion of buildings, such as that of converting into or use of as a dwelling any building not originally constructed for human habitation; the conversion into one dwelling of two or more dwellings constructed originally as separate dwelling houses; the conversion into or use of two or more dwellings of any building constructed originally as one; the converting a building originally exempt from the building law into one which would have come within the enactment; the reconverting into dwellings of buildings which have been discontinued as such; the converting of shops into dwelling-rooms, or *vice versâ*—all which conversions are disallowed without the Council's consent. Then there is, lastly, a clause to provide for buildings in progress at the commencement of the Act, and which exempts from the operation of the new law any building in progress at the time, or which is to be carried out under any contract made before the passing of the Act, subject to the provisions of the previous Acts. One important point has been raised as to contracts made before the Act, which the L.C.C. have in their instructional letter made a note of. The committee say, they are advised that a distinction has to be drawn between a "building contract" and a "building agreement," the latter being merely an agreement between a ground landlord and an intending lessee to take certain land, and to build within a certain time. It will thus be seen that the statutory definition of what constitutes a "new" building (Sec. 6) is far from being complete, and must be read in connection with the other sections of the Act we have noticed. This is not quite as it should be, and the definition as it stands merely describes buildings erected after the commencement of the Act; any building taken down for more than half of its cubical extent and re-erected; and any space between walls which is roofed over after the Act commences. No mention is made of additions or alterations which comprise the majority of the cases which come within the definition. This definition draws a line at the commencement of the Act, a new building being one erected after that date. As there must be numerous instances of old buildings being added to or altered since the date of the new Act, the application of the definition is by no means clear, and needs amendment.

"ARCHITECTURAL ENGINEERING."

THE phrase which heads this article at first sight seems rather like a contradiction in terms, yet it is one that was used in an address to engineering students of the Rensselaer Polytechnic Institute, U.S.A. It will be asked, How can engineering be made architectural—the two arts are so dissimilar, and in many respects contradictory? How, for instance, can such works as railway tunnels, embankments, reservoirs, filter beds be rendered architectural? These and other similar constructions chiefly appeal to our sense of mechanical fitness and ingenious contrivance, and cannot be considered to be on the same platform as architecture at all. Of course, there are other constructions which come within the scope of the civil engineer which are architectural, such as bridges, railway stations, factory chimneys. These are branches of engineering which are really architecture, or so closely trench upon it that it is hard to draw a line that divides them. A bridge and a lighthouse are structures which appeal to our artistic sense; still they are designed by engineers. Who will declare, for instance, that the Tower Bridge and the Eiffel Tower are not within the domain of architecture? It is true they are both mechanical structures in which engineering science enters, and which have called forth some of the highest attainments of the engineer; but they both represent architectural structures, and are designed—externally, at least—in accordance with the principles of architecture. We will not go so far as to say they represent the best or highest forms of the art. The Tower Bridge is a steel structure or framework incased in a shell of masonry representing Late Gothic features, and, therefore, we cannot say that it is an honest piece of constructive architecture; but it appeals to everybody as an artistic structure. For the sake of argument, let us compare two such very opposite examples of engineering skill as those afforded by the Tower Bridge and the Forth Bridge. These structures may very appropriately represent engineering as architecture, and engineering as engineering. No one can call the great cantilever bridge over the Firth of Forth architectural, whatever it might have been made. As a gigantic example of unsophisticated engineering and mechanical skill, without any pretence to design, it is conspicuous. There is no disguise or attempt to misrepresent the hard mechanical forms of the truss, and, so far, all is honest and straightforward, and in this sense it is a work of iron architecture of the age, and one which critics like the late Mr. Fergusson would delight to call a truer example of historical architecture than many a great architect's work—like the Law Courts. Or, let us compare two other examples of modern engineering construction, the Eiffel Tower, Paris, and the Great Wheel at Earl's Court, both of them designed as exhibition attractions, and as feats of skill. The former structure presents a claim to be considered a work of architectural design in iron; it has an elegant and well-equilibrated contour, and the designer evidently intended to impart to the work the graces of art; but the great rival attraction, or monster mechanical "whirligig," as it may be called, lays no claim to architecture, and we can hardly conceive how such a huge rotary machine can be made to look like a stable erection, to say nothing about art. Between these two kinds of construction a line can be drawn. On one side we have structures that may be regarded as architectural, and be designed upon principles common to all artistic production; on the other side we have constructions which have nothing in common with architecture. All machines which subserve essentially utilitarian purposes are of this latter class, as well as all civil engineering works, like sewerage works, railway tunnels, docks, marine construction, and the like. We can hardly imagine that any of these works can be rendered architectural—presentable to the eye certainly they may be made, and can be, if only a little thought and artistic sense could be infused into them. Thus, for instance, a factory, or a factory chimney, need not be positively repulsive. A few courses of brick, dividing the shaft into something like stages, or a top capping, or a slight alteration of a line or angle of roof may make all the difference between an ugly and an agreeable-looking building. Such things as filter-beds, or reservoirs, or sewerage tanks can be arranged in plan without becoming offensive; the angles of tanks may be rounded instead of made square, and we do not see why a geometrical arrangement—ornamental setting-out of plan—may not often be adopted with equal advantage instead of the everlasting rectangles and crude arrangements of the engineer. By these and other ways, even such engineering constructions might appear at least inoffensive to our taste. Our great water companies have made some places hideous by the huge and ungainly erections of their pumping stations and reservoirs. It is true here and there we see a company who have not disdained to employ an architect to design their costly buildings, as the Lambeth Water Company; or the engineer of the company has not thought it beneath his dignified position to make his chimney-shafts represent Italian campanili, nor to adorn his buildings with dressings and features borrowed from Renaissance and Gothic design, though they are often grossly misplaced or burlesqued. Still, those efforts show that engineers are not all blind or callous to architectural impressions when they have to deal with buildings of however utilitarian a character. It is in such cases as these that "architectural engineering" can come in or find a place. There is evidently plenty of scope for it in water-works. May there not be in our great gas-works? What hideous blots these are in our landscapes! Can nothing be done to mitigate or redeem the monstrous erections for storing gas which everywhere in our denser neighbourhoods mar the surroundings? The huge gasholders at Battersea, Kennington, Old Kent-road cannot be called "things of beauty"; but surely something even here can be done to mitigate their harsh outlines. Yet any attempt to make them ornamental would be simply ridiculous. The electric-lighting stations afford an opportunity to engineers if they cared to take the hint.

But there are other classes of structures generally intrusted to the engineer which appeal more strongly to our sense of architectural propriety. These are our bridges, viaducts, and railway stations. They come well within the line of architectural buildings. As yet engineers have done very little to take them out of the groove of commonplace construction. With the exceptions of London Bridge and Waterloo Bridge, which are masonry structures, and the iron bridges of Westminster, Blackfriars, Chelsea, and the new Tower Bridge, we cannot boast of very much. Where the architect has been consulted he has made things worse by adding ornament, in the way of cast-iron rosettes and other embellishments; the constructional lines and general features have all been designed by the engineer. In this branch architectural engineering may accomplish something. The viaducts which traverse our towns and cross our streets are generally unredeeming structures, sometimes hideous. Why the open arches cannot be made a little more architectural, and, if possible, let out as shops, is a question which deserves attention. A little more trouble in designing the brickwork and proportioning the arches, where the viaduct crosses a street, would scarcely add much to the cost. Let us next take the railway station. How very few of those can be said to be architectural! As specimens of "architectural engineering" we may mention the station at York, the Caledonian Terminus, at Glasgow; the St. Pancras Terminus, London—important buildings in which the combined skill of the engineer and architect has been displayed; but as architectural achievements they leave much to be desired, however good they may be as examples of engineering construction. The St. Pancras Station roof has been regarded as one of the latest attempts to impart an architectural form to the iron roof; yet it is rather as an engineering triumph that we must regard it. The Great Eastern Terminus roof is an advance in architectural construction, and certainly these examples, so marked as improvements on the common shed truss type of building, lead us to hope for a more satisfactory development. Lately the Institute gave prizes for a design for a railway-station, and the response showed that it was possible at least to design a railway-station architecturally, and to impart a freshness in the arrangement of the booking offices and other requirements. That the engineer has not been able to devote some portion of his earlier training to architectural design is partly owing to the multifarious requirements of his profession, partly to his inaptitude for artistic work. His work, too, is generally of a hurried and too mechanical a kind to admit of much thought in design or details, and these matters are generally left to the draughtsman. The large and important works of the engineer which assume an architectural character bear too distinctly the traces of separation between the professions of engineering and architecture to be mistaken. The construction and arrangements are left entirely to the engineer, and the architect's share is confined merely to the embellishment, and this separate treatment is prejudicial to artistic unity. Even the large pile of offices constructed mainly of girders and the American "sky-scraper" partake more of the engineering than the architectural elements, and such buildings may be correctly designated as engineering disguised, so little is the true architectural feeling manifested in the design.

THE CITY AND THE ENGINEER.*

THE thing and person named in my subject are inseparably correlated. If there were no cities there would be no engineers, for there would be no need of any; and if no engineers were to be found cities could not be built. You will see that I here use the terms in a broad sense—the city as the place of abode and work of human beings in considerable numbers; the engineer as he who moulds and puts to use the materials and forces furnished by nature. This last definition is too broad if we think only of professional work; but I will let it stand with the reservation that I do not refer, in what I may have to say in this discourse, to the part borne by the merely skilled workman. Speaking to young men, it is appropriate that the topic and its treatment should be of the nature of a forward look rather than backward, for it is more profitable for you to have hints as to the character of the responsibilities you need to fit yourself for, rather than tell you of what those who have gone before you have done—deeds which you will never be called on to repeat. None of those who have wrought in the field of city engineering has achieved undying fame. We do not know who was city engineer of Babylon in the days of Nebuchadnezzar, nor of Rome in the days of its glory; but we do know that they were competent men, for things were done in their days that would tax the abilities of the best of modern engineers. We know, moreover, that engineers were not, even in remote times, all from the ranks of practical men in the sense that term is often used as in contrast to scientific. Archimedes was an engineer of technical education, who put his theoretical knowledge to practical use. King Solomon, with all his wisdom, was wise enough to send to Tyre for an architect-engineer, who studied out his plans before he began work so thoroughly that the hammer of the fitter was not heard about the building. When notable engineering achievements are mentioned our thoughts tend towards rivers and gorges bridged, mountains tunnelled, great lines of transportation brought into existence, railways and canals located and constructed. These certainly are grand undertakings, but they are not now, and in days to come will still less be, the occupation of the great body of those who follow the profession of the engineer. My object will be to set before you, as young men looking to engineering as your probable life work, the fact, as I regard it, that engineering in and for cities is an inviting field for you to look over and perhaps enter of set purpose to find there your work. I am aware that some regard a nomadic life for some years as a valuable part of a civil engineer's education, and I do not wish to gainsay any argument that has been advanced; but the nomadic feature has an undue attraction to many young men, and, in my judgment, so far as roughing it enters into the life, it brings nothing of value. A young man will be the better for a broad experience gained by serving under many chiefs and adverse lines of work, so as to become familiar with a variety of methods before forming fixed notions and habits, and also to shake off any tendency to follow in the steps of a master;

---

* A paper by Robert E. McMath, M.Am.Soc.C.E., President of the Board of Public Improvements, St. Louis, Mo. Reprinted from the *Transactions* of the Association of Civil Engineers of Cornell University.

and further, if you will excuse me, to get some of the conceit taken out of him. Beyond this I know of no reason why he should not locate permanently at an early date. In my opinion, he will, as a rule, be the gainer if he selects his place of abode and never changes his residence, going from it as occasion offers, but returning to it. "A rolling stone," by the proverb, "gathers no moss." An engineer should not gather moss on his back; neither should he wear himself out by rolling. There is a happy mean that is worth seeking. I will fail of my object if you think my suggestions have sole or even principal reference to official positions. Cities furnish many opportunities for municipal engineering outside of direct employment by the city, and so far as my observation goes, when a chief is to be appointed the fortunate party is usually one who has wrought in these outside lines rather than one taken from the ranks already in city employ. Under a well-administered civil-service system this might not be the case. To forecast the future of municipal engineering we must first ascertain what the cities of coming days are to be. There is a proper use of the imagination, which is essential to success. One must first conceive the idea, then picture in his mind the object in outline, and afterwards perfect the conception by working it out in appropriate details. In my own life I have gone through some preliminary stages, and have dismissed as too visionary for serious consideration projects which I have seen conceived, taken up, and successfully carried out by others, who had more faith in their imagination than I, or better judgment. Poets have sung of the excellencies of pastoral life, and spoken disparagingly of cities. "God made the country, and man made the city," says Cowper, and in the same strain Cowley voices the reproach, "God the first garden made, and the first city, Cain." I am not aware that these writers gave evidence that they ever read the Good Book through, or they would have at least qualified their implied condemnation of the city, for He who at first put man into a garden to meet and yield to temptation, in the end intends that perfected man shall have his permanent home in a city. A study of the specifications of that city shows that it is to be beautifully adorned, perfect in sanitary arrangements, well paved, and the pavements kept clean, without slum districts or dark places, abundantly supplied with pure water, food so ample and secure in supply and distribution that none of the inhabitants can lack. We speak of cities as well built, and call some of our modern-style buildings "sky-scrapers." But Chicago or New York's tallest are but dwarfs compared with the lofty architecture that shall be characteristic of the final city, and the beauty of its buildings will appear from whatever point or angle viewed—not as ours, fair in front, but hideous from side, rear, or distant view. I have named the points in the specifications which pertain to engineering, and would impress you with the thought that municipal engineering has a future, without limit in time and scarcely in scope. The chief engineer has dropped a few hints as to the ultimate plan, and has left to us—his assistants—the privilege of filling in the outlines and working out the details. It is as much a privilege and honour to lay foundations as to gild finials. Coming to the realm of present facts, as demonstrated by the actions of men, man is made for life in communities, and the community becomes by natural development a city. Cities have been a chief factor in civilisation, "redemption from savagery." Cities furnish the opportunity for men to make the further progressive step to enlightenment, coming under the protected law of liberty, by which each man's free acts will not infringe upon the right of any other. Perfect enlightenment is the realisation of an ideal social state to which close and necessary association is an essential condition. The city has throughout the history of the race been the centre of activities, the initial point of action. In the centuries preceding the 19th the size of the cities was limited by ability to command supplies; a maritime location alone enabled a great city to be fed. Steam and the railway have in a great measure done away with the limitation. Men may now gather to any number anywhere that water in sufficient quantity can be had, and bear in mind that the quantity of this necessity per capita increases with progress in civilisation. Moreover, density of population finds a limit in sanitary conditions. With steam, railways, electricity, telegraph, and telephone have come improved implements and machinery in all lines of industry whereby the labour of one man in field or factory accomplishes what formerly required a dozen. Hence the production of food is no longer the necessary avocation of a majority of men, and labourers are made free or even compelled to find other employment than agriculture. Machinery has also rendered the continuance of many home industries impossible, and the manufactory has displaced small shops. These changes are the result of development and have come to stay, and men are and will increasingly be compelled to congregate in large masses in order to win a living. The growth of cities in the old world and new alike has been astonishing for the century now drawing to an end, and especially for the last half of it. Even in states whose history scarce covers 50 years the country parts and small towns are actually decreasing in population, while the growth of cities and large towns on the way to become cities show a high rate of increase. So far from being disturbed by the facts and bemoaning their existence as indicative of evil, we must recognise, if not welcome, them, and prepare to meet the coming situation. Such preparation, in the first instance, calls for a high degree of practical, large-minded wisdom on the part of those whose province it is to legislate concerning municipal affairs and to administer them, and, I may add, on the part of courts when interpreting law, for new conditions will require the modification of many positions taken by courts in restraint of powers needed for great cities. It might be interesting to inquire why this drift of population to cities has developed and progressed so rapidly; but our time and my purpose do not permit going into detail or proofs. I content myself with stating these propositions:—(1) The movement is in accord with the social instincts of the people of the latter part of the 19th century, and is a result of universal education and the printing press. (2) External conditions now permit these great aggregations as not inconsistent with necessities, comforts, and conveniences of life. (3) External conditions not only permit but exert a certain amount of compulsion for many to leave the country and seek the city. These external conditions are largely the result of inventions and discoveries in the useful arts and sciences. These impelling forces drive those who have a living or fortune to make or mar citywards, regardless of the probable outcome of good or evil. In my opinion, the whole balance of probability is in favour of good as a whole, notwithstanding the fact that it is easier to slide down than to climb up, in a moral sense, as well as in a material. But I acknowledge that, unless wisely-directed effort is put forth to provide the city populations with healthful influences, there is much of danger to country and race from the movement of the masses towards cities. An economical theory that is much urged in these days charges that a large part of the ills affecting the masses is due to the individual ownership of land, claiming that poverty exists and increases because the masses are shut out from using the soil with the freedom that they have to light and air. To set aside these theories as untrue in essence and impracticable of application, it is enough that, as a fact, it is not possible to drive the average city-bred poor man to the soil; and further, that he would starve in hopeless impotency to get anything from the soil if placed upon it without preparation and capital. If he could realise the delusion of the newly enfranchised negro of post-bellum days, that with freedom he was to have "forty acres and a mule," he would be likely to desert the acres and make the mule carry him back to town, despite the familiar privations he must there undergo. "Better fifty years of Europe than a cycle of Cathay" expresses a psychological principle deeply rooted in human lives. To my notion, it is not access to the soil for cultivation that the masses need, but they want a place to live in and a home. Better if each can own land, house, and all that goes to make home comfortable and attractive. Well, if each can have a separate house with grounds for children to exercise and play in without resort to the streets and their mixed associations. It is endurable if each family can have rooms and separate privileges, such as are afforded by the better class of apartment-house or flats; but we can go no lower in the scale of home conditions, and reasonably hope that parents and children will climb rather than slide down. My idea of a city of individual homes involves a liberal appropriation of land, and therefore a spreading over large areas and large expenditure of public or private means to realise the idea. A metropolitan city may embrace a number of semi-detached suburbs. The engineering part of the great problem of salutary municipal homes is to provide all the conveniences at or near the home, at such cost, so that the working man of average earning capacity can have the use of them as owner or lessee; and further, to provide ways by which the multitudes can be quickly and cheaply carried from home to working places. The alternative is set before us to rear good citizens in pleasant, salutary homes, with opportunities for mental and moral education, or to breed anarchists, thieves, drunkards, prostitutes, and paupers in tenements and slums. If we will shut out from view the slums of the old part of the cities, Greater London and New York may be cited as partial foreshadowings of what metropolitan cities may be. We see:—(1) A central business heart, crowded even to jostling during the day, but silent and well-nigh deserted at night and on holidays. The toilers resting or recreating miles away from the scene of their toil. This heart is the commercial and financial centre, which cannot be spread out, but must be condensed in space to a degree that would be intolerable if the hours of work were long. (2) In suitable localities, more or less remote from the business heart, we find industrial centres, and of late years these tend to be confined to a narrow belt along railway lines, so that each establishment may have direct shipping facilities. (3) Residential districts of several grades. It is desirable that the industrial centres should embrace a variety of works or of departments calling for many classes of labour, in order that all the working members of the family may find employment suited to their age, strength, and sex, within a reasonable distance of the home. The working people of such a centre can find ample space for separate homes within a half-hour's ride by electric cars—say three to four miles; employers and short-hour workers can afford the ride farther. These industrial centres and resident districts may be semi-detached in locations; but should be so associated in name and government as to subject transportation rates and terminal charges to equitable control. I have named the two cities—Greater London and New York—as shadows, not examples, in order to forestall the thought that I am suggesting a visionary project, and I claim that practicability is proven by what has already been done. The suggestion is not mine, but it is made by the progress already achieved towards the condition I am endeavouring to set before you. You may see for yourselves the densely-crowded business centres, where floor space within the favoured area is so valued as to have brought into being many-storied office buildings, in which buying and selling and financial transactions take place out of sight of the commodities dealt in. The warehouses and manufactories are now placed along and near railways, for a switch is a cardinal necessity to a successful business. The small shop on a back street, receiving material and sending out product by dray and waggon, is passing away. Building associations and the real estate speculators have joined forces with the street railway to make it possible for the artisan to gain a home in full or prospective ownership at but a little more expense than renting amid squalid surroundings. These and other forces are working, and the work has far progressed already. Our cities, in their rapid expansions, are working at the problem in an unconscious, unintelligent, and therefore imperfect, way. What should be done to render progress in city expansion intelligent and adapted to coming conditions? (1) Upon the part of civic publicists there should be a careful study of the principles of municipal organisation and a determination of the form of city government best adapted to American cities. Shall the government be essentially aristocratic? That is, have its executive powers virtually in the hands of one man—the mayor—giving him the power to appoint and remove at pleasure any and all subordinate officers and employees? There are many and strong advocates of this plan of concentrated responsibility. Contrasted with it is that of making the mayor little more than chairman of an executive committee—the council. Under this plan, as territory and interests increase, executive functions are subdivided and assigned to committees of council. This plan of government by committee seems to have worked well in the towns of England and Scotland. A third plan is to commit many important functions to boards, more or less independent of mayor and council, they often being the creatures of State authority. A fourth plan is a composite of the best features of the three, giving broad powers to mayor, limiting powers to legislative acts, giving to heads of departments a definite term of several years, and grouping them for consultation and initiation of projects. A chief reason why the first is urged is drawn from the bitter experience of several of the largest of American cities, in which the outcome of election of councilmen by wards has been to fill those bodies with corrupt, or what is equally bad, with incapable men. Combines, organised and controlled by unscrupulous bosses have their own way, and the objects of municipal government are prevented. If there be any remedy for these evils in investing the mayor with autocratic powers and holding him responsible, it must be that it is due to the fact that the mayor is elected by the voters of the city at large. Precisely the same may be said of a council elected in the same way. The second system works well abroad, for special reasons which do not exist in America, and cannot so long as we retain our present form of government. Elective positions are so few in number on the other side that to be chosen to one is esteemed a high honour, though the emoluments be small or nothing; consequently the best men in the community are ready to take office and serve faithfully. Again, a stricter enforcement of law and a cleaner administration of justice serve to keep corrupt men out of office, or if such get in, to restrain them by salutary fear of consequences. With us the multitude of elective offices has cheapened them in general estimation to such an extent that candidacy for place in municipal legislative bodies exposes the candidate to suspicion of crooked intent. Especially is this the case if election is by wards. Some attribute a large share of the evils in city government to interference with elections for city officers by the organisations of national political parties. Of course, it is absurd to suppose that a man's views as to protection, free trade, or tariff for revenue have anything to do with his fitness to pass on matters of purely local interest, but there is a decided advantage to be derived from the division of voters upon some line into two nearly equal bodies, for then the independent voters may have hope to hold the balance of power, and it is the independent voter who chooses men for what he at least believes them to be. To the independent voter we must look for restraint of evil and furtherance of good. For American cities I favour a mayor vested with executive powers, a legislative body in two parts—one elected at large at somewhat infrequent intervals, the other elected by the voters of districts composed of two or three wards, on a combined ticket; executive department heads to be appointed by the mayor, with approval of council, but providing ample power of removal for cause, and restriction against removal without cause; in the departments a qualified civil service, elastic enough to cast out incompetence, and rigid enough to hold against changes for personal or political reasons.

(*To be continued.*)

CAST IRON IN BUILDER'S AND CONTRACTOR'S WORK.—III.

By Joseph Horner.

In my last article I mentioned the three ways in which the quality of cast-iron work is estimated—namely, by inspection of fractured surfaces, by means of test-bars, and by breaking up a small percentage of the castings selected at random. Of the first method I shall say no more, as being incapable of application except in the hands of any but an experienced foundryman. Of the other two, for the applications of which less technical experience is necessary, a good deal can be said with advantage. The method of breaking up a small percentage of actual castings, though it reveals a good many things which a test-bar does not tell, should be made use of in conjunction with the employment of test-bars. These bars tell the strength and elasticity of the metal in a way that every one can read, and with a precision that can be obtained in no other way. We will, therefore, consider first the method of testing by means of the fracture and deflection of bars.

Test-bars are not so reliable and valuable as indications of the quality of cast iron as strips from plates are of wrought iron and steel. That is not the fault of the bars, but is accounted for by the uncertainty of the material. A test-strip shorn from a plate will generally indicate the quality of the plate accurately. But a plain test-bar and a casting are very different specimens. The first is of uniform section, the second is of dissimilar proportions; the first has no cores, the second generally has; the first cools uniformly, the second irregularly; the first is subject to regular and uniform stress, the second to stresses of a mixed character, and so on. As an engineer, therefore, though I should note the breaking strength, and deflection, and aspect of fracture of a test-bar, I should also practically judge the casting itself by its general appearances. Cast iron is so uncertain a material, that even the bars which are cast under the most favourable conditions in regard to uniformity of section and equal rate of cooling vary in strength at the testing machine to the amount of 10, 15, or 20 per cent. So that the practice is to test several bars, and take the average results. Again, small bars are stronger than larger ones, though poured from the same metal, just as small castings are stronger than large ones, though made from the same metal.

But the mere statement of the strength of a material does not tell an engineer all which he wants to know in order that he may be able to form a correct judgment as to the suitability of that material for a given purpose. The term "strength," as commonly understood, relates only to the capacity for withstanding stresses tending either to rupture by tearing apart, or to rupture by compression, or to rupture by the operation of stresses of a mixed character. But it is equally necessary that the behaviour of the material should be known *before* actual rupture takes place. It is necessary to know the measure of its ductility or capacity for extension, of its elasticity or power of regaining its original form on the relief of stress, and also of the stage at which perfect elasticity is lost—the "yield-point" at which a permanent set occurs.

Now, cast iron, unlike wrought iron and mild steel, has no elastic limit—that is, it has no point up to which the stresses and strains are proportionate, and up to which there is no permanent set. It begins to take permanent set with comparatively small loads, and gives little warning, practically none, before fracture. Such being the case, it is highly necessary that the actual loads which produce ruptures under different kinds of stresses should be accurately known, and also that full advantage should be taken of such slight elasticity as is obtainable in certain grades of iron, likewise the way in which failure occurs should be fully understood.

Columns, stanchions, and girders all have to sustain strains of a bending character—that is, strains which combine tensile with crushing. Sometimes these strains are caused by dead, or statical, loading; sometimes they are produced by live, or suddenly applied, variable loads. A structure frequently has to sustain both kinds of loading at different times. The nature of the loads which any structure has to sustain should, therefore, be taken account of in proportioning the various members of that structure, and in making tests of the materials used.

Cast iron is tested for simple tension by tearing a bar of some definite section apart in a machine in a direction coincident with the longitudinal axis of the prepared specimen. It is tested for compression by exerting pressure on cubes, the height of which does not exceed by more than from two to three times their transverse dimensions, the specimen usually shearing off at an angle of about 56° with the axis. It is tested for cross bending, in which the forces of tension and of compression both come into play, by means of long test-bars of rectangular form, which are miniature beams supported at each end and loaded at the middle.

The ultimate tensile strength of average cast iron cannot be safely taken higher than from 7 tons to 9 tons per square inch. It is not necessary to give statements as to the various results obtained by experimenters, who have obtained anything between about 4 tons and 20 tons. It would be unwise to calculate on more than from 7 to 9. Mr. Barker once stated that in testing more than 1,000 samples of cast iron for tensile strength he obtained an average ultimate strength of over 12 tons per square inch. That looks well, on paper,—just as a test-bar of 32cwt. strength looks well. But every practical man knows that such figures are very delusive, because in fact the ultimate strength of a casting is measured by that of its weaker portions, and that depends on the designer and the moulder. I have known plenty of castings break in the sand during the cooling, have known them break on a frosty morning, going off with a loud report, have even known them break while being tooled. Mr. Barker says that in the course of testing he has seen specimens break more than 80 per cent. below the average of such samples, specimens to all appearance identical with the best in outside appearance, and that he has seen specimens break at 40 per cent. less stress than the average, without anything to denote the difference to an inexperienced eye in the fractured surface.

Because, therefore, of the uncertainty which attends the production of castings, it is seldom judicious to allow cast iron to be stressed in tension to more than one-sixth of its breaking strength, and then only after the most careful scrutiny has satisfied the inspector that the parts subject to tension are perfectly sound. Taking the ultimate strength at 9 tons, which is, I am sure, rather above the average, that will give $1\frac{1}{2}$ tons as a safe working tensile strength, and this may be set down as a constant rule.

Purely tensile tests are very suitable for average work, because they test the iron under the most unfavourable conditions, which, however, not unfrequently occur in practice. Cast iron is weakest in tension, and, therefore, it should be tested in tension. When tested transversely, as in the common test-bar, laid horizontally, and loaded at the centre as a girder, then the upper edge is in compression, and the lower only in tension, and stresses are of a mixed character. If the iron happens to be strong and hard, it will show higher results than a greyer, softer iron, notwithstanding that the latter would be more suitable for work in which elasticity is necessary.

Experiments have shown that the tensile and cross-bending strengths of cast iron do not coincide. That is, a bar having a higher tensile strength than another bar will not necessarily show a corresponding higher cross-breaking strength, but probably a lower one. Formulæ have been constructed for the conversion of one kind of stress into terms of the other. But they are only suitable for the experiments on which they are based, and for one class of iron. It is better not to use them, but to resort to direct experiment under new conditions.

Cast iron is enormously strong in simple compression. The average crushing strength ranges between about 35 to 40, or 42 tons. But the specimens must not exceed by more than two or three times the transverse dimensions, or the mode of fracture partakes partly of cross-breaking. The shearing strength is about equal to the tensile strength. But this is of little practical importance.

Test-bars for cross-bending have been made of nearly all conceivable size, from 1ft. long to 7ft. long, and of varying sections. The most common size is 3ft. long (always reckoning between knife-edge supports, the bar itself being 3in. or 4in. longer), by 2in. deep by 1in. wide. This is most often used, and weighs 21lb. Other common dimensions are 3ft. long by 1in. by 1in., and 1ft. long by 1in. by 1in., and 1ft. by ½in. by ½in. But although the size of a bar influences its strength, that is a matter of slight importance by comparison with the large margin of safety allowed in cast-iron work. In each case, the strength of the bar is calculated as that of a beam supported at both ends, and loaded at the centre. The usual formula for these is—

$$W = \frac{BD^2}{L} \qquad (1)$$

In which—

W = the breaking load in tons.
B = the breadth of the beam in inches.
D = the depth of the beam in inches.
L = the distance between the supports in feet.

If we take a bar 3ft. by 2in. by 1in., then by the formula (1)—

$$\frac{1 \times 4}{3} = 1{\cdot}33 \text{ tons.}$$

If we take a bar 1ft. by 1in. by 1in., then—

$$\frac{1 \times 1}{1} = 1 \text{ ton.}$$

Test-bars are often made of 3ft. span by 1in. by 1in. Such bars break at about one-fourth the load necessary to break bars of 3ft. by 2in. by 1in., because the strength of a beam varies as the square of the depth, and the square of 2 is 4. But they often show a slightly higher strength, and this is doubtless due to the closer texture of the grain. Such bars will deflect about $\frac{5}{8}$in. before fracture, or not quite twice that of the 2in. by 1in. bars. The rules give quite the minimum of strength demanded. Generally test-bars give better results than these. Of late years the requirements of engineers and inspectors have raised the quality of iron subject to test, and founders have had to be more careful in selecting and mixing for inspected work. Years ago 25cwt. was a common limit of breaking strength for a 2in. by 1in. bar. Now it is usually about, or even over, 30cwt.

When a test-bar breaks, it breaks so clean that the ends will always fit close together again. The act of rupture, therefore, does not detach any particles from the surface. It occurs, roughly, at right angles with the length of the bars. In the very strongest and best grey and mottled irons, however, the aspect of the fractured surface differs from that of ordinary grey iron, and from white iron. The fracture is not quite short, but rather rugged, and often small fragments of iron are left partly fractured, partly adherent to the broken surfaces, giving them a flaky appearance. This indicates the toughest and most elastic quality of cast iron procurable, and scrap of this character is reserved for the best class of castings.

Although the majority of bars break straight across at about the centre, many yield a curved line of fracture away from the centre, indicating that one section of the bar is weaker than the other. In Mr. Millar's exhaustive experiments on test bars, it was proved that the popular idea that bars which break with a curved fracture denote stronger iron than those which break straight across, is an erroneous one. It was, however, clearly demonstrated that bars which break at the centre, or within about $\frac{1}{2}$in. of the centre, invariably fracture straight across, while those which fracture at positions away from the centre always show a partially curved fracture, and that the form of curve varies with the distance from the centre of span, and that the curve of fracture always extends towards the centre of the bar, never away from it. Fig. 1 illustrates the forms of these curves obtained in Mr. Millar's experiments, *c* indicating the centre of the bar. The fractures Nos. 1, 2, 3, 4, 5, 6 occurred at the following distances respectively from the centre—$\frac{3}{8}$in., $\frac{3}{4}$in., $1\frac{1}{2}$in., $1\frac{7}{8}$in., 2in., $3\frac{1}{4}$in., the amount of curvature increasing with the distance from the centre. It will be noted that the curves increase in extent as the line of fracture recedes from the centre. Also that the actual curve occurs at the lower portion of the bar which is subject to tension, and ceases at the narrow upper zone, which is subject to compression, becoming then a short vertical line running in unison with the direction of the load. This is very suggestive, emphasising the fact that cast iron, run not only from the same ladle, but also in the same bar, varies much in strength, and since the fractures on the compression side are always nearer to the centre than those on the tension side, it seems to bear out the fact that cast iron is more reliable and regular in its behaviour in compression than in tension.

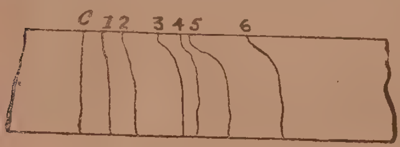


Fig. 1.

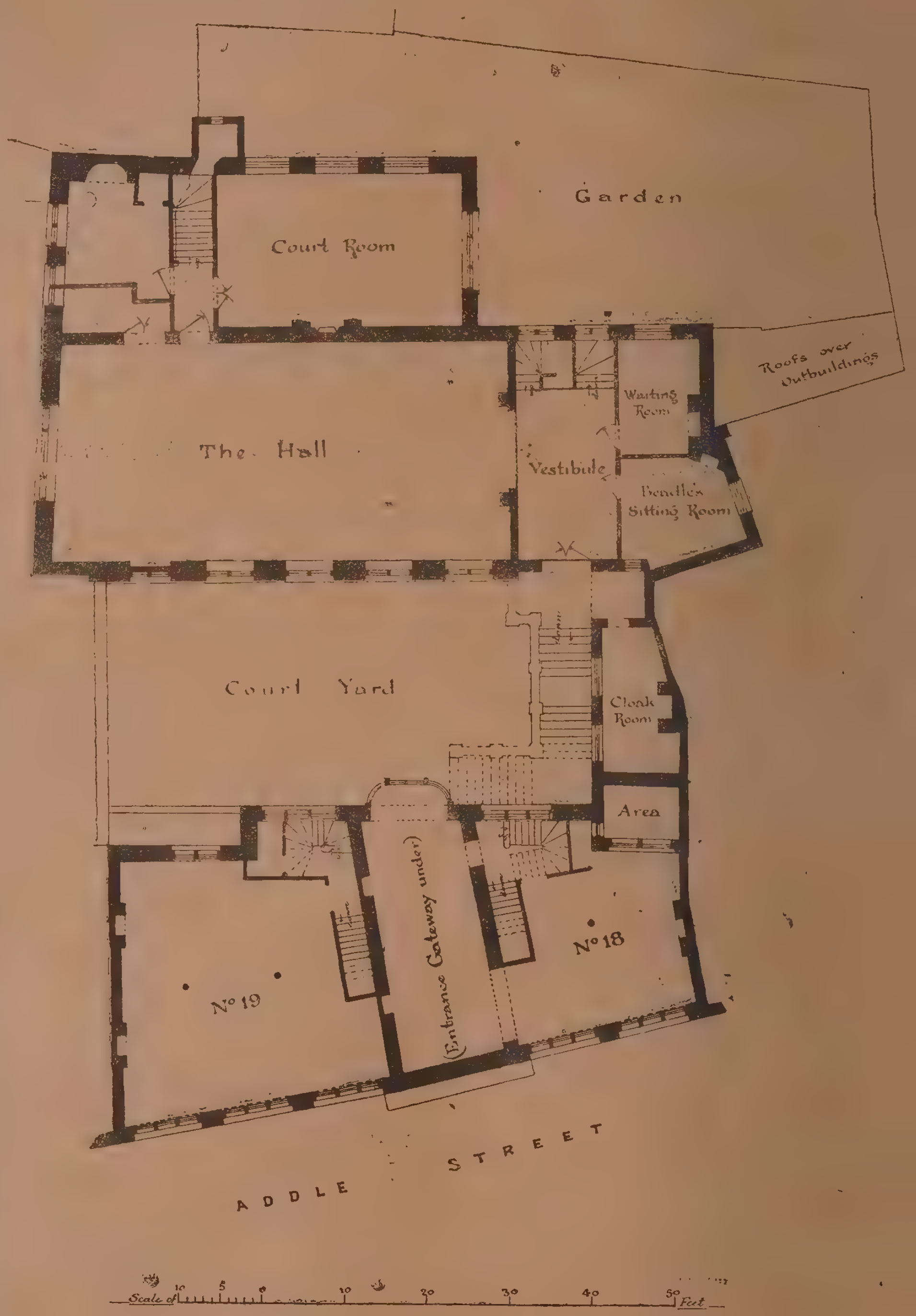
If cast-iron bars will show, as they do, differences amounting to from 10 to 20 per cent. when run from same ladle, such percentage variations may be well doubled in the case of irregularly proportioned castings, subject to many conditions of design and workmanship which tend to irregular results.

I must reserve the consideration of the differences in the behaviour of cast iron in tension and in compression, as illustrated in the test bars, for the next article.

* * *

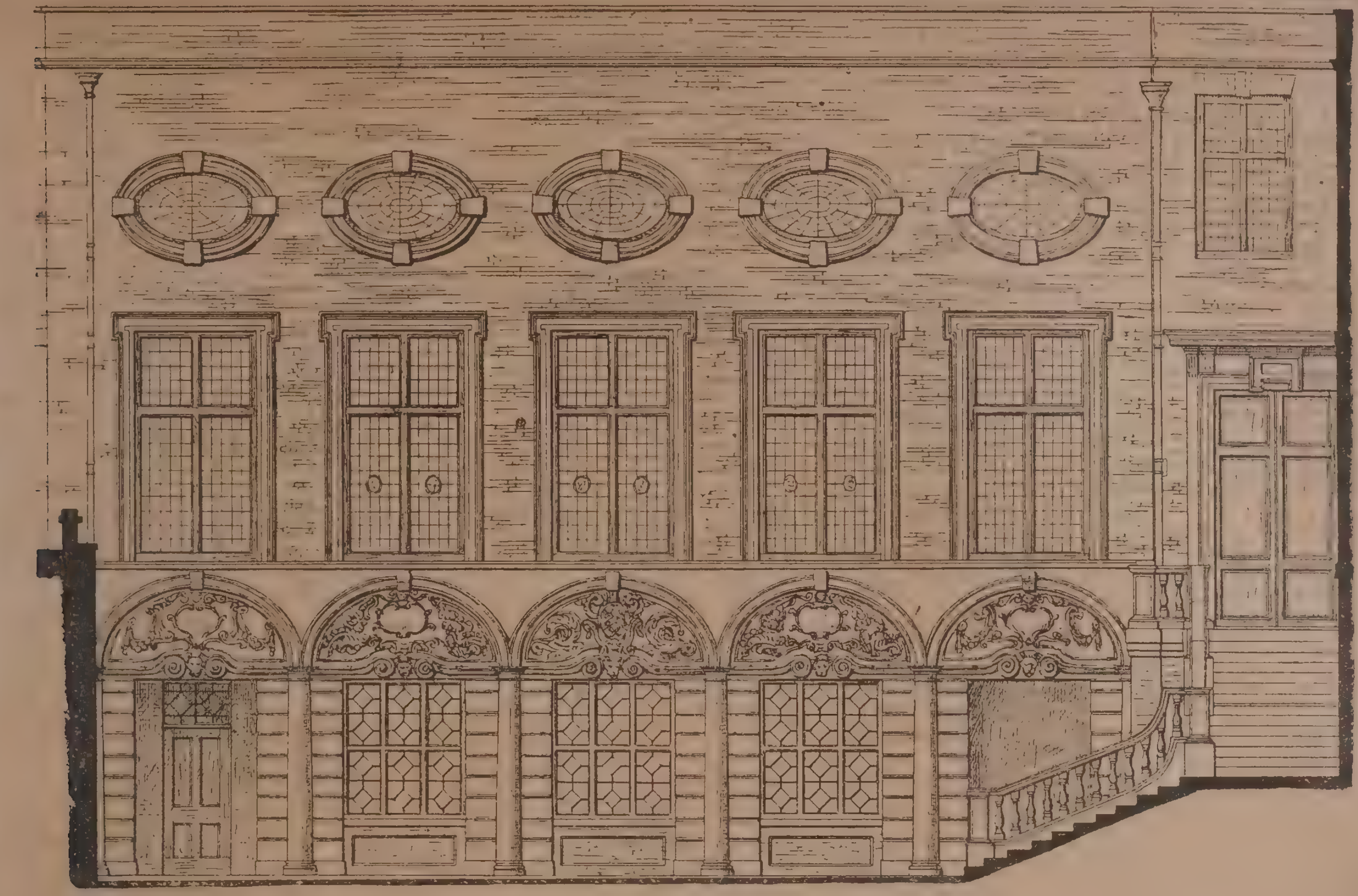
BREWERS HALL.

PLAN OF PREMISES AT FIRST FLOOR LEVEL



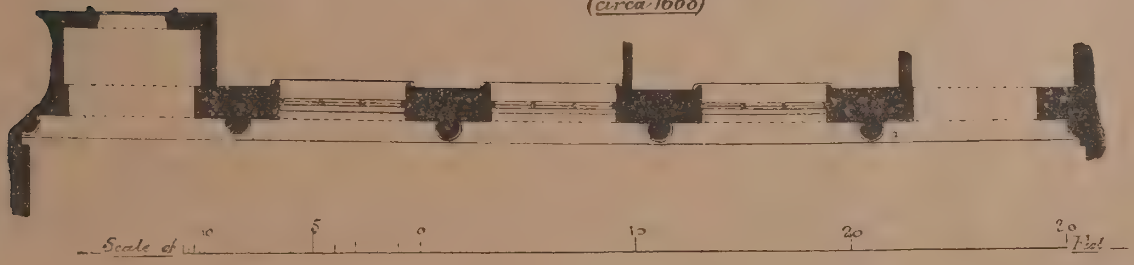
AMBIGUITIES IN THE NEW LONDON BUILDING ACT, 1894.

A CONTRIBUTOR to the current issue of the *Journal of the Society of Architects*, who signs himself "M.S.A.," writes: "Architects are beginning to discover that the new London Building Act, 1894, contains a great many ambiguous sections and clauses, apparently the result of the great desire of the London County Council to conciliate the large amount of opposition arrayed against it, and to pass their Bill at any sacrifice. The rules as to recesses and openings in external walls on the ground story are very vague. By the insertion of the words 'above the ground story,' one does not know what amount of opening and recess to provide at the ground-floor level, especially where your building is only one story in height. The provision in Section 73, Clause 5, as to bay windows being permitted beyond the frontage line without preliminary application to the Council, is of somewhat doubtful advantage to architects, as they are only permitted to project 3ft., and must not come in any part nearer to the centre of the party-wall than their projection. This, in narrow frontages, very often throws the bay window to one side of the room, instead of it coming in the centre. Section 74 requires a deal of interpretation, and is very far from clear in its details. It has reference to buildings exceeding ten squares in area, and used partly for dwelling, and partly for purposes of trade. Does this apply only to new buildings, or does it apply to an addition to an old building, where the area of the old and new part, if added together, would exceed the ten squares, and are the regulations to be carried out only so far as they affect the new part, or to old and new parts alike; and if you have fire-resisting doors of oak or teak, can you have door-frames of the same material, and is it in the case of a fire-resisting floor, sufficient if you fill in concrete between the ordinary wood joists? What is the definition of a conversion of a private building into a public one under Section 79?—is it simply a question of user, or must some alteration be made? In Section 80 great attention seems to have been paid to the width of staircases, corridor, and passage ways; but the width



Elevation of Brewers Hall towards Court Yard

(circa 1668)



of door openings is not provided for, and although no outside locks or bolts are to be affixed thereto, it does not say what fastening you may have. In the schedule relating to the thickness of walls, a three-story building must have two stories of 14in. work. This may be all very well to living-rooms; but where you want to put a small addition in rear of a dwelling-house, perhaps consisting of a scullery below a garden entrance, or lobby on the next floor and a bathroom and w.c. above, the whole area of which is 10ft. by 8ft., it seems rather absurd to have to inclose two of these stories, each under 9ft. high, with a 14in. wall. It looks very much as if the New Building Act will have to be followed by an Amendment Act in the near future."

BREWERS' HALL.

IN connection with our "City Guilds" series, we have already given in the BUILDING NEWS views of the Court-room of the Brewers' Company, March 22nd last (when we gave detailed description of the Old Hall of the Brewers' Company in Addle-street), and the Screen in the Great Hall on April 26th last, both from photographs specially taken for us by Mr. J. T. Sandell, with his plates. On May 17th we illustrated some sketches of the quaint kitchen, and the barge table and masters' chair in the Court-room. We now, by the courtesy of Mr. E. H. Martineau, the architect of the new buildings in front, further illustrate these premises by an elevation towards the courtyard and a plan taken at the first-floor level.

COUNTY LUNATIC ASYLUMS.—XXVIII.

By GEORGE H. BIBBY, F.R.I.B.A.

CONVALESCENTS' RESIDENCES.

IN a large asylum where the average number of resident patients was 2,249, the number admitted during one year was 519, while 215 were cured, 80 were removed or relieved, and 232 died during that period.

In many instances, the patients, when discharged, are compelled to go direct to homes which contrast very unfavourably as regards locality, comfort (and inmates) with the institution from which they have been discharged; in some instances, the only "home" is the workhouse, from which they may have been sent by the board of guardians of the parish to which they become chargeable. Therefore, it would appear to be very desirable that there should be provided some buildings of moderate extent wherein the recovered patients could reside for a reasonable period prior to resuming the occupations and associations of their station in life. When a patient has been discharged from an institution, his reception order expires, and he is free to do as he pleases. It is rarely that *perfect* recoveries are made, and it is an ordinary course to grant patients, sufficiently improved, a leave of absence on trial, previous to a full and definite discharge, and the question as to whether or not the recovered or improved patient should be returned to a workhouse-ward, his former home, or to a convalescents' house, are matters upon which the asylum authorities would obviously be better able to form a sound opinion than the guardians of the patient's parish, or the friends of the patient.

The asylum architect may, therefore, have to plan buildings for the reception of a limited number of discharged patients, or patients granted leave of absence on trial, to be erected either upon some portion of the asylum estate, at the sea-side, or in some other suitable locality, this detached institution being under the control of a master and matron, and, though in touch with the asylum, yet so planned and constructed as to allow the discharged patients very considerable freedom, but under a certain amount of quiet observation.

The buildings for convalescent patients, even if in conection with a very large asylum, need not be very extensive, and assuming, as an instance, that the asylum authorities discharge 200 patients per annum as recovered, and that the residence of each discharged patient averages one month in duration, it will be perceived that the building for the convalescents' home need not provide accommodation for more than 20 patients, discharged or granted leave of absence. The erection should be in two divisions for males and females, with single bedrooms in each, and suitable bath and lavatory accommodation must be provided. There should be a small library and writing-room for the use of both sexes, and separate dining-rooms for each sex; also kitchen and other offices, with a small residence for the master and matron.

When the asylums are for the accommodation of limited numbers of patients, one of these convalescents' homes might be provided for the reception of discharged patients from two or more asylums: the great advantage of these homes would be the opportunity for the gradual introduction of the society of sane persons in place of the ordinary occupants of the main asylums, and in place of a possibly too sudden reintroduction to their former friends and associates, a close association with whom might, by reason of incompatibility of temper or other adverse circumstances, tend to cause the patient's return to the asylum in a worse condition than at first.

The buildings should be of a very simple and unpretending character. What is required is merely a temporary, but comfortable, home, without any of the adjuncts or suggestions of an asylum, where the discharged patients could reside for a limited time, while having in view the necessity of soon resuming all the duties and employments of the stations in life to which they belong, and perhaps endeavouring to obtain suitable employment, with a greater prospect of success than if directly transferred to their homes, if, indeed, they *have* any homes. The dismissal of patients chiefly depends upon the action of the medical superintendents. At first, it should, as a rule, be provisional or experimental; thus, on the first indications of a relapse, it will be easy to bring the patient back to the asylum. During this temporary dismissal, there should be occasional reports from those to whom he is sent as to the state of his health. Should the convalescence continue during a sufficient period, the patient may then, for the first time, be permitted to quit all connection with the asylum. There is obviously great necessity for aid by societies for needy convalescents; these exist, I believe, both here and abroad.

From the statistics of institutions for the insane, it appears that recent mental disease allows of a far better prognosis than most other chronic affections of the brain. If we understand, however, the word "recovered" to signify, as it ought, the total disappearance of the mental disease and the complete return of the former capacity of intellect—of the whole earlier force of character—it must, of course, be but seldom that such a result can be expected. Cases are numerous where, indeed, the leading symptoms of the insanity disappear; but the individual retains a slight feebleness of intellect, continues irritable in temper, or is possessed of certain eccentricities which, however, permit him to take part in the simpler avocations of life, and, it may be, to return to his former pursuits; therefore a distinction should be made in successfully treated cases between recovered and improved. Relapses are said to occur, by far most frequently, during the first and second years after recovery. A medical authority upon the subject states:—"This is easily accounted for by the state of exalted psychical irritability, which often continues for some time after the disappearance of the disease, and the greater susceptibility to physical ailments which must exist after so serious a malady. Too early dismissal from the asylum is likewise a frequent cause. To the first of these causes is also probably due the fact that relapses are somewhat more frequent in the female sex. It should be remembered also, too, how rare complete and lasting recoveries are in most chronic diseases, and how difficult it is to remove certain constitutional causes which may frequently have existed from earliest infancy, whose constant action has, as a consequence, a succession of diseases following the same pathological direction. It is not in the powerlessness of our art, nor to a certain predestinated incurability of these forms of disease, that we ascribe relapses in those who, on their dismissal from the asylum, return to the most deplorable conditions of life, or the full influence of those health-destroying causes which were to blame for their first attack: in the case of individuals who, on recovery, return to habits of drunkenness, to misery, to over-fatiguing employments, to the causes of violent agitations and emotions, we can almost with certainty predict a relapse; the drunkard especially is each time dismissed from the asylum only with the unsatisfactory prospect of soon seeing him again." Upon the whole, however, the prospects of recovery in insanity are much brighter than is frequently supposed by medical men and the public, and it is asserted that the prognosis in recent acute insanity is very much more favourable than in most other diseases of the brain.

The constructional arrangement and the fittings of the buildings to be appropriated to the use of recovered patients should partake, as far as may be found practicable, of the character somewhat of a boarding-house, and certainly not be suggestive in any way of their connection with the asylum with which they may be associated. At the same time the staircases should be constructed so as not to facilitate any attempts at suicide by any patient that may inadvertently have been released from the main asylum, and such other reasonable precautions of a kindred nature adopted with regard to fireplaces, and opportunities for concealment, &c., as may be necessary or convenient, having regard to the fact of the possibility of a relapse. The day and sleeping apartments should be sufficiently lofty and well lighted, and have rather the general appearance of private rooms, suitable for the occupation of persons taking a holiday prior to resuming their various trades or during the period of their efforts to obtain employment.

The following table shows the number of persons who have recovered or improved during one year in an asylum where there were 2,249 patients, also the probable causes of their insanity, and is of some value, having regard to the necessary arrangements for convalescents' residences. For instance, it will be noticed that 32 epileptics were admitted, and that ten of these were removed or relieved, and while only three patients recovered, on the other hand, mental anxiety sent 14 patients to the asylum, where 11 of them recovered. In this asylum a much larger number of female patients are accommodated than males, and the number of female recoveries is also greater.

Causes.	The Admissions.			The Discharges.					
				Recovered.			Removed, Relieved or otherwise.		
	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.
Moral—									
Disappointment in love	—	—	—	—	2	2	—	—	—
Domestic troubles	2	12	14	2	5	7	2	—	2
Fright	1	3	4	—	3	3	—	—	—
Loss of work	11	—	11	—	—	—	—	—	—
Mental anxiety	11	3	14	9	2	11	—	1	1
Over-study	—	—	—	2	1	3	—	—	—
Pecuniary losses	—	2	2	1	—	1	1	—	1
Religious excitement	—	5	5	—	3	3	—	1	1
Physical—									
Accident	—	2	2	—	—	—	—	1	1
Assault	—	—	—	—	—	—	—	—	—
Congenital	—	—	—	—	—	—	1	—	1
Epilepsy	15	17	32	—	3	3	2	8	10
Fever	—	—	—	—	—	—	—	—	—
Hereditary taint	57	16	73	11	8	19	5	1	6
Injury to head	6	1	7	2	1	3	1	—	1
Intemperance	37	17	54	19	9	28	4	1	5
Lead poisoning	—	—	—	—	—	—	—	—	—
Marriage	—	—	—	—	—	—	—	—	—
Masturbation	3	—	3	2	—	2	3	—	3
Over-work	—	1	1	1	—	1	—	—	—
Puberty	—	1	1	—	1	1	—	—	—
Puerperal	—	23	23	—	29	29	—	1	1
Sexual intemperance	—	—	—	—	—	—	—	—	—
Smallpox	—	—	—	—	—	—	—	—	—
Sunstroke	3	—	3	1	—	1	1	—	1
Syphilis	—	—	—	—	—	—	—	—	—
Other diseases	—	—	—	—	—	—	—	—	—
Unascertained	78	192	270	13	85	98	19	27	46
Total	224	295	519	63	152	215	39	41	80

It would not be necessary for the architect, in planning the residences for convalescents, to provide any arrangements for the classification of the recovered patients; the required buildings would only be of very moderate extent, and it may be supposed that if the patients have really recovered, that it would perhaps be even less necessary to provide for special separation in a convalescents' home than in the patients' own private residences, inasmuch as the latter are too frequently badly arranged and overcrowded.

The convalescents' home is not to be arranged by the architect as a building to be occupied by absolutely idle people, but as a place where the released patients could remain for a moderate period while making, with or without the assistance of their friends, their arrangements and plans for the future, and where their friends might visit them freely. The necessity or advisability of providing such a building cannot but be obvious if it be remembered that too frequently the only home of the recovered patient may have suffered during the insanity of the bread-winner, and perhaps even have been broken up for various causes during his absence in the asylum.

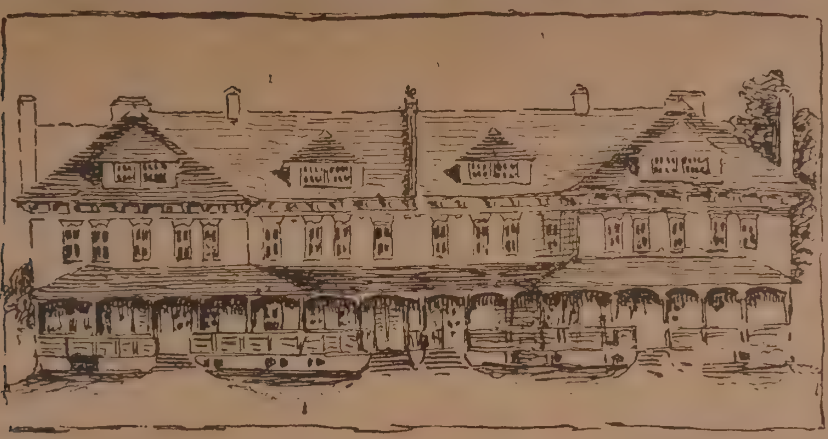
Under no circumstances, if it can possibly be avoided, should an asylum be erected within the precincts of a city; but if the asylum patients' convalescents' home be not upon the asylum estate (for economical reasons), there might be some advantage in having it near to a town, inasmuch as patients would have better opportunities of seeking for employment.

(*To be continued.*)

GLASGOW ARCHITECTURAL ASSOCIATION.

THE opening meeting of the winter session was held on Tuesday evening, in the new rooms, 187, Pitt-street. The premises, which are jointly tenanted with the Glasgow Institute of Architects, were occupied for the first time, and there was a large attendance of members and others interested. General satisfaction was expressed at the skilful manner in which the house has been adapted to the various requirements of the two societies. After the preliminary business had been transacted, the president, Mr. Alexander N. Paterson, M.A., delivered an address. The first part was devoted to a rapid survey of the work of the past session, particular reference being made to the progress of the schemes suggested by him in last year's presidential address. Whilst the projects for acquisition of improved premises and co-operation with the Glasgow Institute of Architects had been successfully accomplished, the third—increase of membership—had been to a certain extent delayed, pending arrangement of the first-named schemes. With the additional attractions the association now offered to the junior members of the profession, he anticipated a large increase, and commended improvement in this respect to the energies of the members. Referring to the memorials addressed to the responsible authorities relative to the Tron Steeple and Cathedral, Mr. Paterson said in so doing the association was fulfilling one of its functions in the promotion of architecture in this city, and indicated the action of the corporation in intrusting the designing of public buildings to a section of a department primarily concerned in works of a purely utilitarian character, as a matter demanding immediate attention. He further suggested the institution of a class of lay members—gentlemen neither connected professionally nor inferentially with architecture, but who were interested in it for its own sake.

The second part of the address was entitled "Archæology, History, and Art," between which, the lecturer continued, there existed an intimate relationship. The connecting link lay in the continuity, the traditional character of art, and particularly of architecture. To the architect who was ever seeking to assimilate and reproduce in his work the spirit of the old masters, even when endeavouring to solve the very different problems of the present day, the doctrine and practice of the ancients was of paramount importance. Proceeding to analyse and differentiate between archæology, history, and art, he said the first two were so closely interlinked that the one could scarcely be said to be complete without the other. Broadly speaking, however, the one was concerned with monuments, the other with events; the one with the actual details and arrangements of the buildings, the other with the significance of these as made clear by the habits and actions of the society of the time. Art was on an entirely different plan from the others, and for purposes of comparison with them it might be expressed in its widest sense as the creation of the beautiful. Considering architecture as an actual occupation, not as a theoretical study, the relationship between the terms of the title might be concisely put by saying that art, from the architect's point of view, was concerned with the design and erection of buildings in the present time, that the art in these buildings was a necessary and natural outcome and development of similar works in the past, and that archæology and history were the branches of knowledge by which we best arrive at a knowledge of such work. Architecture, from its close dependence on construction, was of all the arts that most closely ruled by tradition. It was scarcely possible to think of design apart from these symbols and formulæ that have come down from the past. The insistence on the traditional, the national, and even the local types, constituted at once one of the main interests and healthiest signs of a living architecture. The lecturer went on to



consider on the one hand how far the influence of archæology and history was beneficial and of real value in connection with everyday work, and on the other whether such influence was not by some allowed to preponderate to a hurtful extent, and even at times to lead to a confusion of identity between the means and the end. Accepting archæology as a scientific aid to study, and associating with it its necessary complement of history, it was difficult to imagine any subject more worthy the attention of the architect.

At the conclusion Mr. Paterson received a very hearty vote of thanks.

◆

AMERICAN BARRACKS.

A SURVEYOR of the Royal Engineer establishment sends us the following particulars of some new barracks being erected by the U.S. War Department at Presidio, California, with the hope that they may prove interesting to those of our readers who are engaged in barrack-building in this country. Our correspondent is indebted for the information to a professional friend in the States, who sent him a copy of an American paper containing a woodcut and description. He has traced the elevation from the woodcut, which was rather small and faint, but thinks that it will give some idea of the style of barrack buildings in vogue across the water. No plans were given in the copy of the paper; but the following extracts give leading particulars :—

"Seven double barracks will house 14 companies of infantry; over 20 durable brick houses will be erected for the officers' quarters.

"A description of one of the double barracks that has just been finished will apply to the other six remaining to be completed.

"The front elevation herewith gives an idea of the size of the structures. It contains two stories, with a basement and attic. The frontage is about 144ft., the depth 120ft., and the minimum height 50ft. It stands upon a stone foundation—the stone being obtained from the Government quarries at Angel Island. The entire cellar and area floors are covered with concrete. The walls are built of well-burned brick, and the facings are of pressed brick. The trimmings on all the five walls above the roofs are terracotta. The basement contains twelve store-rooms.

"On the first floor there are two soldiers' dormitories, each 46ft. by 50ft.; two mess halls, each 33ft. by 30ft.; two kitchens, each 22ft. 6in. by 34ft.; two rooms for commissioned officers, and two company offices.

"The second floor has two large dormitories, each 46ft. by 40ft., and two smaller ones about 40ft. square each. Here are located barber shops, tailor shops, and reading-rooms for the men. In the attic there are seven rooms, which for the present will be used as store-rooms.

"Each building will accommodate two companies, or about 120 men. . . ."

"The sanitation will keep pace with the high character of the other improvements. A perfect sewerage and drainage system with ocean outlets will be constructed at a cost of possibly 30,000dols.—these figures being subject to material decrease or increase as the plans finally adopted affect the cost. . . ."

"On the heights and along the valley boundaries of the coast, battalions of trees—great American pines—will be planted, to break the force of the ocean gales. . . ."

"Then in the list of expensive improvements is the tree purchasing and planting. When this has been accomplished the Presidio will look thereafter like a forest, with broad roads cut through, and wide open spaces for buildings and for the accomplishment of military evolutions. Already a contract is about to be let for 66,000 pine trees. It is required that the trees be 'good, healthful, two-year-old pines, raised from seed planted in 1893-94.' This army of pines will be received at the Presidio in the months of January, February, and March of next year, and will be planted in single file along the outer boundaries of the Presidio and along the neighbouring hills.

"Following is a tabulated statement of the principal improvements contemplated :—

Improvement.	Estimated Cost Dols.
Seven double barracks at a cost of 40,000dols. each	280,000
Twenty brick and stone buildings, for officers	100,000
Six brick and stone stables	30,000
Waterworks plant (completed)	20,000
Tree planting	15,000
Road improvements (under way)	6,000
Fences and gates	10,000
Parade ground	10,000
Sewerage system	30,000
Total	501,000"

Having noted these facts, it may be interesting to make some comparisons between the methods of building barracks in America and this country, also to compare the relative costs.

The American soldiers are housed in double-company barracks, and each building provides dormitories, mess-halls, and kitchens, barber's shops, &c., and reading-rooms for the men, as well as two rooms in each barrack building for commissioned officers—one to each company. Presumably these latter are junior officers, located with the men for purposes of discipline.

English soldiers are housed in single-company barracks. They have no mess-halls, taking their meals in the same rooms they have used for sleeping purposes during the night. The kitchens are separate from the barrack buildings, as are also the workshops, reading-rooms, &c. The officers are all housed in a large mess-block, and none of them are detailed to live in the same buildings with the men. Probably we are not yet sufficiently educated in democratic principles to permit of this.

As regards cost, the American barrack buildings appear, at first sight, somewhat more expensive than our own. Theirs work out at about £66 per man, whereas ours can be built for £44 per man; but considering the extra accommodation given in the American type, a part of which has to be provided for with us in separate buildings, the costs do not seem to show any very considerable difference.

◆

THE LOCOMOTIVE SERVICE OF LONDON.

AN exhaustive report on the locomotive service of the Metropolis has just been published by the Statistical Department of the London County Council. It forms the first part of a return to be issued, and consists of a volume of nearly 200 pages, the information being confined to a detailed statement of the particulars of the existing tramway, omnibus, and steamboat services. Other parts still to be prepared will deal with the particulars of the railway and canal service, and the local distribution of the traffic, and will include an examination in detail of the present system of locomotive service, and of the requirements to meet the needs of London. Part I. of the return is divided into four sections, and the particulars of locomotion, the routes, distances, fares, accommodation, workmen's tramways, omnibuses, and steamboats in London are tabulated. The eleven Metropolitan tramway companies work 71 different routes, 33 on the north and 38 on the south of the Thames, although the actual number of routes in use is only 58—29 in the north and 29 in the south of London. The Highgate Hill cable line is not included in the return, as it has not been used for public traffic for over two years. The total length of the 71 routes is 221·27 miles, of which 7·47 miles only are not used. The longest route is possessed by the London Company—viz., 69·76 miles (not including a northern branch), and the shortest by the Harrow-road and Paddington Company—viz., 1·81 mile. There are 623 fares, varying between ½d. and 3d. per journey. There are 31 3d. fares, 10 2½d. fares, 97 2d. fares, 79 1½d. fares, 265 1d. fares, and 141 at ½d. The average mean rate per mile of the fares for the entire routes is ·67d., and the average mean speed of the cars per hour is 5·48 miles. The mean sitting accommodation provided in the cars is: Inside, 19·83; outside, 23·21; total, 43·04. The average number of single journeys made each day by the whole of the cars possessed by the several companies is 17,148, the cars required for which number 879. The average time which the cars run daily is 16 hours 44 minutes. The total length of line authorised for the whole of the companies is 153 miles, and the actual length of line open for passenger traffic in the administrative county of London is 136 miles.

◆

ARCHITECTURE AND BUILDING CONSTRUCTION CLASSES IN GLASGOW.

THE *Calendar* of the Glasgow and West of Scotland Technical College is an octavo volume of 300 pages, and represents very fully the arrangements of the college, its teaching staff, and constitution. The day and evening classes and syllabuses are numerous, and cover the whole field of physical and technical education. Engineering and architectural students can here acquire all they need to equip them for their respective professions. The diploma course for the first year includes mathematics, natural philosophy, chemistry, drawing; and the students have the use of workshops. The second and third years include, amongst other subjects, civil engineering and surveying, materials of construction, applied mechanics, electrical engineering, technical chemistry, photography, mining, agriculture, and architecture, and it is more particularly to the latter we wish to draw attention. The day classes in architecture is a new feature. These classes meet twice a week — Mondays and Thursdays — and are under the management of Professor Gourlay, A.R.I.B.A. The junior course of sixty lectures comprises art, construction, and design, with instruction in the studio. The senior course, also of sixty lectures, includes, in addition to the three branches above, professional practice, and, of course, each subject is more fully developed. The section on Art will include the characteristics, history, and development of the principal styles, with the mouldings and ornament appropriate to each style. The section on Construction will comprise the principles of hygiene; nature and properties of building materials; principles of stresses and strains, formulæ for their calculation and their graphic determination; principles of construction, and their application to foundations, walls, arches, vaults, girders, floors, roofs, &c. Under Design, buildings of moderate dimensions, details of construction and ornament to scale, are given; and under Professional Practice, specifying, estimating, and measuring; also the duties and responsibilities of client, architect, and builder. The evening classes are arranged to supplement the office training of pupils, and to prepare them for the R.I.B.A. examinations. The first course deals with Classic architecture till the end of the Roman period, and includes an analysis of Greek and Roman buildings, the Orders of the Renaissance, &c.; the second course is on Mediæval architecture, and is specially arranged for Scotch students. English and French Mediæval is first dealt with, and then the Scotch, showing the influence of the two former upon the latter during the same period. In the third course, "History of Architecture," the lecturer will deal particularly with Byzantine and the Renaissance periods. In each course there are 30 lectures, illustrated by photographs, drawings, and lantern views. The analysis of the Classic and Mediæval periods are useful features of these courses, especially for those preparing for the "testimonies of studies" required for the Intermediate examination of the R.I.B.A. There is an architectural studio under the management of Mr. Jas. Lochhead, A.R.I.B.A. The lectures and classes on Building Construction and Design are arranged in three courses. The first course treats of the various trades and the processes and methods used; the second course deals with the application of the trades to foundations, brickwork and masonry, roofs, girders, centres, joinery, floors, and the nature and application of materials; and the third or "Honours" course with calculations for structures, materials, ventilation and warming, water, sanitary subjects, and professional practice. Instruction in design and the preparation of working and scale drawings is given in this course. Courses of lectures on brickwork, carpentry and joinery, plumbing, and other practical trades are also given. We recommend all students to obtain a copy of the Calendar and syllabuses of the courses. The fees are very moderate.

THE INCANDESCENT GAS LIGHT IMPROVEMENTS.

WE have received the new illustrated price list of the Incandescent Gas Light Co., Ltd., of Palmer-street, Westminster, &c., and beg to call the attention of our readers interested in this exceedingly popular and excellent light to the great reduction made by the company in the price of the burners. Last year the price of the ordinary "C" burner was 15s., and owing to the unprecedented increase in the use of the light, the company were enabled to reduce the price to 10s. 6d. Since then an enormous increase in the sale of the burners has led to a further reduction in price to 9s., a step taken wisely, we think, in order to still further popularise the light. The "by-pass" and other forms of burners have also been reduced. The several kinds of burners manufactured by this firm, including the "C" burner with by-pass, and those having governor and by-pass, are described and illustrated. We lately drew attention to the great advantage of these additions. The "by-pass" arrangement enables the Bunsen burner to be relighted by simply raising a small lever. When turned down the Bunsen flame is extinguished, but a small jet is kept alight inside the mantle. These arrangements effect a great economy in the use of gas, and are clearly described in the catalogue. For lights over reaching distance, as for halls and churches, a lever tap, with chains, is provided, and this burner we have lately seen introduced in a large church at Streatham, where the old gas coronæ, which cast awkward shadows, have been removed. The soft white light is a remarkable success. The two-light and three-light clusters, shown on p. 9, are an excellent form of application of the "Switch" light burner, introduced by this company for halls and large buildings, where it is necessary to turn the light on and off from one point. The burners fitted with anti-vibration springs to counteract the tremors caused by traffic in streets are useful, and the springs are also admirably adapted for any burners subject to vibration. The ventilating lamps illustrated are clever adaptations of this light for smoking-rooms and other places. The company have also introduced shorter chimneys and the "Jena" form has been found superior to any other kind of glass chimney. The fluting of the glass is another improvement, and we recommend purchasers to use the fluted chimney sold by this company, who have made the manufacture of this requisite perfect. The patterns for shades and globes illustrated are worth notice for their elegance, and are suitable for drawing-rooms and other rooms where tasteful forms and tints are desired. Many forms of pendants and reflectors are illustrated, and deserve attention.

GLAZED AND DECORATED TILES.

MESSRS. T. AND R. BOOTE, Ltd., of the Waterloo Potteries and Patent Tile Works, Burslem, and of Waltham Buildings, Holborn Circus, E.C., have just issued a new illustrated catalogue of their glazed tiles suitable for grates, hearths, furniture, and various other purposes. Since the last catalogue was published, a considerable reduction in the prices has taken place. The illustrations produced in chromo-lithography are a very particular feature of the book before us; and they give a very admirable idea of the patterns and colours. In the first part of the catalogue, several plates of tiles, brown on cream, olive on white, and other tints are given, neat in design. These are drawn to a third full-size of the tiles, which are 6in. square. Coloured tiles follow in a great variety of designs, many of them of floral character. Several plates of embossed tiles, varying in price from 4s. 3d. to 5s. per dozen, represent a great variety of colours in browns, buffs, greens, and blues, suitable for grates, wall and furniture decoration. The patterns given on Plate 15 are adapted more particularly for decorative purposes, borders, corners, friezes, and panels; many of these are 12s. 6d. per square yard. Old gold, mahogany, rich greens and blues are among the colours. The series of floral pattern designs unslabbed for hearths exhibit much diversity of pattern and colour. Plate 21 illustrates two slabbed hearths, one of 22 tiles which can be made any size, the other a design of folial character. A very rich unslabbed hearth, with floral design on ground of shades of old gold and red, is noteworthy; also the hand-painted panels on the same (Plate 24). The designs for hearths on Plate 29 are also unique and simple, being a panel with floral design on a tile ground of mahogany and old gold. Several of the designs are new, and have a freshness. The price list accompanying the catalogue is worth particular attention by all builders, and those who are requiring tiles, plain, coloured, or embossed, will do well to consult Messrs. T. and R. Boote's catalogue.

JAPANESE LEATHER PAPER.

SOME years ago, the Japanese Government established an imperial press, which does all the printing work of the Government, from postage stamps and postcards to paper money. One of the specialities of the establishment is the manufacture of leather papers, which has been brought to a great degree of perfection. The Japanese, taking as a pattern some of the finest European leathers, have succeeded in applying their own peculiar methods of manufacture, and fashion them according to the Japanese taste. The first step is the engraving of a block, consisting of a large, hard wooden cylinder, hung on to a frame, which is engraved with a knife or chisel, the worker following the model with great precision and exactitude. When the block is ready, it is covered with moist paper, which is folded and pressed on to the mould, then taken off and hung across a bamboo to dry. When it is thoroughly dried, by exposure to the air, decoration is commenced. The paper is now spongy, and almost as absorbent as blotting-paper. It is now covered with several coatings of glue, which makes the surface smooth and non-absorbent. The paper is then figured, metallised, and varnished, and the figured design then stands out, as if gilt. The Japanese have the monopoly of the best lacquer varnish. It is this lacquer varnish which gives a golden appearance to the metal, and the exact colour is at the discretion of the worker. The final operation consists in the arrangements of border patterns, by means of stencil plates—an operation performed by young girls, who also touch up the border work, erasing all smudges and filling up blank spaces, &c. The rolls of paper are then hung up again, and when dry are ready for the market. They are sent first to Yokohama, and thence all over the world.

THREE TOWNS ARCHITECTS.

AMONG the architects who, on Saturday, accepted an invitation to attend at the offices of Mr. G. H. Luff, Devonport, to consider a suggestion that an architectural society should be formed for architects and assistants in the Three Towns, Plymouth, Devonport, and Stonehouse, were Messrs. Dwelly, Greenwood, Harris, Leest, Luff, Mill, and B. Priestley Shires. Several letters of regret at being unable to attend were received from leading architects. On the motion of Mr. Luff, seconded by Mr. Greenwood, Mr. Priestley Shires was elected to the chair, and Mr. Edgar Leest was appointed honorary secretary *pro tem.* The chairman explained that the meeting had been called at the suggestion of Mr. Leest. He (Mr. Shires) thought it was very desirable that a society should be founded in the Three Towns to promote a due appreciation of architecture, and to lessen the disadvantages under which its younger members at times labour. With a knowledge of the many points in municipal and local government by which the architects of this country are affected, it was highly important and extremely desirable that they should possess a strong representative and useful society, which should be in a position to speak with the authority of wide influence and the strength of union on many occasions, when to have such a means of expression would conduce to the general benefit of the profession. Mr. Luff proposed, and Mr. Dwelly seconded,—"That it is highly desirable to form an architectural society in the Three Towns, and if terms can be arranged, to make it a branch of the Devon and Exeter Society." The motion was carried unanimously. A vote of thanks was accorded to the chairman, on the proposition of Mr. Greenwood, and seconded by Mr. Luff. The hon. secretary, *pro tem.*, mentioned that he would be pleased to correspond with any architects or assistants who might require information, on application to Laboratory House, Mount Wise, or 64, Chapel-street, Devonport.

CHIPS.

The Bill introduced by Mr. Akers-Douglas and Mr. Hanbury to provide for the acquisition of a site for public offices in Westminster authorises the Treasury to issue out of the Consolidated Fund sums not exceeding £45,000, as they may be required by the Commissioners of Works for the purchase of such sites.

A new Wesleyan chapel is to be built at Devizes in connection with the Wiltshire Mission. The chapel will hold 450, and the school 250. The total cost will be £2,500.

A block of parish council buildings is about to be built at Gillingham, Dorset, from plans by Mr. Miles, of Bournemouth. The accommodation will include a small council-chamber, together with a clerk's or committee-room, a living-room and kitchen, back kitchen, usual offices, four bedrooms, and a store-room. The estimated cost is £800.

Mr. Bird Clerke, an inspector of the Local Government Board, held an inquiry at Oldham Town Hall, on Friday, into the application of the Oldham Corporation for sanction to borrow £40,000 for purposes of sewerage and sewage disposal, and £15,000 for the purposes of electric lighting. No opposition was offered to the council's proposals with regard to either matter.

A serious fire occurred in the Montpelier district of Bristol on Sunday, resulting in the destruction of the Salvation Army barracks, a wooden structure, and injury to the extent of £2,000 to the heavily-stocked yard of Messrs. Love and Waite, builders, and to several cottages abutting on the barracks.

The partnership heretofore subsisting between R. Bennett and F. W. Jackson, architects and surveyors, Cheapside, E.C., under the style of Bennett and Jackson, has been dissolved.

At Aberdeen, on Friday, the plans committee of the town council sanctioned plans of new buildings of a total value of £8,500.

A scaffolding upon which five men were working, in connection with the erection of a new chapel at the Good Shepherd Convent, Limerick, collapsed on Friday, and the men were precipitated a distance of 30ft. One of them, a mason named John McGrath, received such injuries that he died within a short time. The others were badly injured.

A project is on foot for the construction of an overhead railway from Waterloo Station to the City. All the necessary surveys have been made, and the Bill authorising the undertaking will be promoted in the next Session of Parliament by the South-Eastern Railway Company. The new line will compete with the underground electric system now in process of completion, connecting the South-Western Railway with the City at an almost identical point.

A stained-glass window has been presented to the Dalrymple parish church. It was designed and executed by Mr. Stephen Adam, of Glasgow, and illustrates the text, "Abide with us, for it is toward evening."

The valuable property of the Bourne Valley Pottery, Bournemouth (Henry Sharp, Jones, and Co., Ltd.), was offered by auction on Thursday week by Messrs. Hankinson and Son, of Richmond Chambers, Bournemouth. The sale was held in the brickmaking house on the premises. The auctioneer, Mr. T. J. Hankinson, on introducing the property, referred to the long time the business had been in existence, and informed the company present that it would be sold in one lot as a going concern, including everything with the exception of the book debts. After a considerable number of queries had been put and answered, an offer of £10,000 was made; this was quickly increased to £15,000, and the property was eventually sold for £20,005, the purchaser being Mr. Frederick Sharp.

CONTENTS.

Professional Charges and Building Negotiants 325
Statutory "New" Buildings 326
"Architectural Engineering" 326
The City and the Engineer... 327
Cast Iron in Builder's and Contractor's Work.—III. 329
Ambiguities in the New London Building Act, 1894... 330
Brewers' Hall 331
County Lunatic Asylums.—XXVIII. 331
Glasgow Architectural Association... 332
American Barracks 333
The Locomotive Service of London 333
Architecture and Building Construction Classes in Glasgow 333
The Incandescent Gas Light Improvements 334
Glazed and Decorated Tiles 334
Japanese Leather Paper 334
Three Towns Architects 334
The Building News Directory ... ... xi.
Our Illustrations 335
Building Intelligence 354
Designing of Steel Bridges, Theoretical and Practical. —XXII. 355
Proposed Fireproofing Tests in New York 356
Competitions 356
Engineering Notes... 357
Architectural and Archæological Societies 357
Correspondence... 357
Intercommunication 358
Legal 359
Legal Intelligence 359
Water Supply and Sanitary Matters 359
Our Office Table 360
Meetings for the Ensuing Week 361
Tenders 363

ILLUSTRATIONS.

CITY IMPROVEMENTS AT YORK.—SANCTUARY DECORATION AT ST. JOSEPH'S R.C. CHURCH, HIGHGATE.—PORTAL OF BARCELONA CATHEDRAL.— TOWERS OF BARCELONA CATHEDRAL.—HOUSE AT BOWDON.—THE SOUTH FRONT, "EVENTYDE," WOKING.— DETAIL OF THE PROPOSED NEW MUNICIPAL BUILDINGS AT COVENTRY. — RYDAL MOUNT SCHOOL.—SKETCHES FROM THE HABERDASHERS' AND VINTNERS' HALLS.—ELEVATION, PLANS, ETC. OF BREWERS' HALL.

Our Illustrations.

YORK CITY IMPROVEMENTS: NEW BUILDINGS, DUNCOMBE PLACE.

These buildings are now in course of erection on the southerly side of Duncombe-place, lately widened and opened out by the removal of certain buildings, of an old-fashioned character, at the cost of the York City Council. By this change an important vista has been opened out, affording, as stated by Mr. Waterhouse, R.A., in his report to the city authorities when advising on this line of improvement, one of the finest cathedral views in the country. On entering York from the bridge which leads from the railway station, the above description appeals at once to the visitor, and the accompanying drawing will enable the reader more clearly to follow it, the Old Minster being in the centre, the modern St. Wilfrid's on the left, and the right of the picture being occupied by the new buildings just started. Owing to the requirements of the line of improvement, it has left the outline of the site, especially at the front or Blake-street end of it, of an irregular-angled shape. The beauty of the position will be improved by the grass lawn, which will always be preserved unbuilt upon in front of the new buildings. The first portion, now begun, forms a block of offices for Messrs. Gray and Dodsworth, solicitors, of York. The sheriffs' offices will also be located here. The contract has been let to Messrs. Parker and Sharp, builders, of York, and the designs are by Mr. Edmund Kirby, F.R.I.B.A., architect, Cook-street, Liverpool.

DECORATION OF THE SANCTUARY AT ST. JOSEPH'S R.C. CHURCH, HIGHGATE.

The drawing shows the proposed high altar and mosaics for the east end of the Church of St. Joseph's Retreat, Highgate. The altar is to be principally of marbles, with a figure of the dead Christ in the altar tomb guarded by sentinel angels, with the twelve Apostles in the reredos, surmounted by Our Lord of the Sacred Heart. Above all is the Crucifixion in mosaic, surrounded with busts of the prophets with appropriate texts. The sculptor is Mr. Thomas Grew, of 4, Salisbury Mews, Gloucester-place, W.

THE TOWERS AND PORTALS, BARCELONA CATHEDRAL.

The streets of this famous Spanish city present, at any rate in the heart of the town, a sordidly dull and entirely unpicturesque appearance, and the thoroughfare, with its lofty drab-coloured façades leading to the cathedral, is, perhaps, the most dingy of them all. The precincts of the great church scarcely realise an ideal cloister, but the grand Gothic portal which bursts suddenly on the view, midst a wealth of orange-trees of great size, is a sight long to be remembered, and so are the tree-like plantations of big geraniums, while the fountains splash in the gaiety of the sunlight. The Canons' geese, too, kept in the largest of the fountains, make another feature, for they have been maintained here from the earliest times, according to the ancient Catalonian custom, for the purpose of guarding the treasures of the diocesan church, a service which the faithful believe the birds are enabled to perform far more efficaciously than any watch-dogs obtainable. The solemn Canons pace up and down the pavements of the Fontana de las Ocas, reciting to themselves their appointed task of psalms from their breviaries; endless beggars pester politely for alms midst the throng of passers-by, the men dressed in their bright mantas and scarlet barrettas, the women in their blue petticoats, and white handkerchiefs furnishing their only head-dress. Jacques Fabra designed the cathedral buildings in the beginning of the 14th century, though the church was really begun as early as 1298. "It is beautiful and solemn," says Augustus Hare, "beyond description, only faintly lighted by the rich stained-glass windows at either end, whose coloured lights are almost lost amid the many chapels and tall reed-like pillars." The portal, which we illustrate from the pen-sketch of Miss Marion Logsdail, is the principal entrance, and is called "La Puerta de la Inquisicion," because it faces what remains of that building. Beneath the altar lies the body of Santa Eulalia, the patron saint of Barcelona, the "well-speaking" virgin martyred by Dacian in 309, when, report says, she was seen ascending to Heaven in the form of a dove. The mortal remains of Eulalia were transferred hither from Santa Maria del Mar in 878, when two kings, three queens, and four princesses attended her burial with great pomp and magnificence, while the dignitaries of the church were present with appropriate consequence. Since then Spanish sovereigns down to Christian and Isabella have been true to the custom of passing the night in prayer before her shrine. There is another saint here also, one Oldagar, who died in 1137, and was discovered, they say, some five hundred years after, "quite uncorrupted, except the tip of his nose." This was a remarkable circumstance, and, moreover, this saint's good offices are usually invoked by the daughters of the church in childbirth. His sleeping effigy is raised aloft over the altar of the first chapel on the right of the nave. From beneath the organ hangs a hideous Saracen's head, with gaping mouth, starting eyes, and a vast flowing beard. The purpose of this fright was to animate the zeal of intending Crusaders. The cloisters and bell towers are of the same period as the church, and possess a quaintness and freshness of style all their own. Miss Logsdail's sketch well realises the effect of the intense light of the Spanish sunshine.

HOUSE AT BOWDON.

This house was erected some three years ago for Mr. Richardson. Several comparatively minor alterations were made in the place and also the design. It was faced with Ruabon brick and Bath stone, the outside woodwork being oak. The whole of the furniture has been, and is being carried out from the designs of the architect. One feature of the interior decoration is the use of painted friezes, specially painted and designed by Manchester painters, one of which, by Mr. Jackson, was lately exhibited at the Manchester Arts and Crafts. Mr. Martin Stone, of Altrincham, was the builder; Mr. Edgar Wood, A.R.I.B.A., of Manchester, the architect. The drawing we illustrate was hung at the recent Royal Academy Exhibition.

"EVENTYDE," ST. JOHN'S, WOKING.

This house, illustrated herewith from the Royal Academy drawing, is built of brick covered with 1in. of Portland cement rough-cast, and the roof is of green slates. The work was carried out by Mr. E. C. Hughes, builder, of Wokingham, under the direction of Mr. Walter Cave, architect, of 40, James-street, Buckingham Gate, S.W.

COVENTRY MUNICIPAL BUILDINGS: ACCEPTED DESIGN.

We print to-day a detail drawing showing a portion of the front facing Bailey-lane, where the old and the new work will be connected. On July 26th last we published views and plans, with descriptive letterpress, of this same design, which is about to be carried into execution. It was chosen in the recent competition, when Mr. Charles Barry acted as professional referee. The joint architects of the work are Mr. Harry Quick, of Coventry, and Messrs. Brewell, Baily, and Mallows, of Nottingham and Bedford.

RYDAL MOUNT SCHOOL, NORTH WALES.

The new gymnasium at Rydal Mount School, which we illustrate to-day, has recently been completed for Mr. T. G. Osborn, M.A., J.P., the head-master, from the designs and under the superintendence of Mr. T. E. Lidiard James, F.R.I.B.A., of Lonsdale Chambers, 27, Chancery-lane, London, the architect to the school. The tendency to heaviness in a building of this character has been obviated by treating the upper portion in half-timber work. Arrangements have been made for the addition of racquet courts on the east side at a future date. The gymnasium is fitted up with the usual most approved modern gymnastic appliances. The builder was Mr. J. Berth Jones, of Colwyn Bay.

SKETCHES AT HABERDASHERS' AND VINTNERS' HALLS.

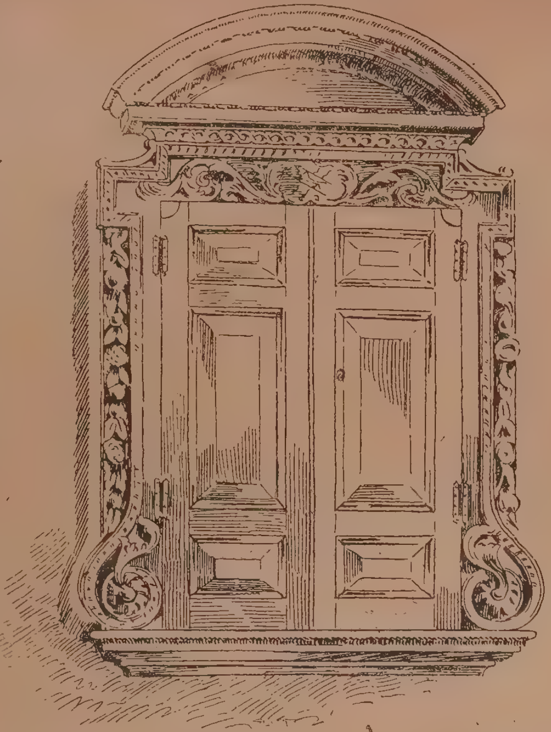
We illustrate to-day some more details of old woodwork and furniture from the halls of the City Guilds, our sketches being gathered from the Haberdashers' and Vintners' Companies. The wall-cupboard and coat-of-arms are both let into the Binding Room wall at the first-mentioned Company's premises in Gresham-street. The cupboard dates from the period just after the Great Fire, and incloses the parchment roll of subscribers, assistants, livery, and yeomanry, to the New Buildings, commenced in 1668, as well as a list of the plate, "guilt and white," with the names of the benefactors. The dimensions of this cupboard, which is black with age, are 3ft. wide and about 4ft. 7in. in height, and the carving is in a capital state of preservation. It is unknown how the coat-of-arms—a very bold and excellent piece of sculpture—came into the possession of this Company. It once formed the panel in the overmantel of a chimneypiece, and is said to be the coat-of-arms of the Earl of Essex, the unfortunate favourite of Queen Elizabeth. The master's chair, from the Court Room of the Vintners' Hall in Upper Thames-street, graceful in the lines of its curves, and appropriately and skilfully carved, shows the hand of a consummate master of his craft. It is in dark oak, and is upholstered with scarlet felt. The arms of the Company are cut in the shield under the head of what is apparently an infant Bacchus, the foliage and fruit of the vine being much in evidence. The carved sword-bracket occupies a position by the side of the door into the Great Hall. It is some 7ft. or 8ft. high, and is used for receiving the sword of the Lord Mayor when the guest of the Company, the head of the hilt resting on the projecting shell at the foot of the vine, the point of the blade being pushed up inside the lion's mask under the crown. About midway in the length, on either side, is a shield, one with the arms of the City, and the other of the Vintners' Company. The scroll-work displays much ingenuity and freedom of design. The hall itself, attributed to Sir C. Wren, contains some fine carving, upon which some skilful carver (possibly Grinling Gibbons) must have been employed, and it is probable that the sword-bracket here illustrated is of the same period.

At the last meeting of the streets and buildings committee of the Edinburgh Town Council yesterday, it was reported that the Prudential Assurance Company had sent a communication to the town clerk agreeing to construct their new buildings in St. Andrew-square of stone, instead of red brick as originally proposed. The architects are Messrs. Alfred Waterhouse, R.A., and Son.

The annual business meeting of the Sanitary Association of Scotland was held on Friday night in the saloon of the Town-hall, Greenock, the chair being occupied by the president, Professor Matthew Hay, Aberdeen. The secretary, Mr. D. M. Alexander, writer, Glasgow, read the council's annual report: and the treasurer, Mr. J. B. Stobo, Rutherglen, submitted the financial statement, which showed a balance in hand of £42. Dr. J. B. Russell, Glasgow, was appointed president-elect; Mr. Gilbert Thomson, C.E., Glasgow, and Dr. Chalmers, Glasgow, were elected vice-presidents; and the secretary and the treasurer were re-appointed.

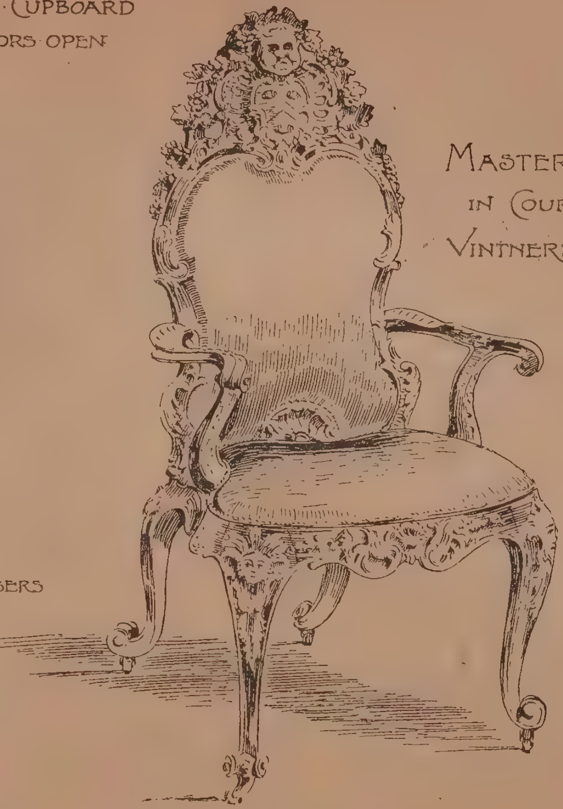
THE · CITY · GUILDS

SKETCHES AT THE HALLS
OF THE · HABERDASHERS' AND
VINTNERS' COMPANIES

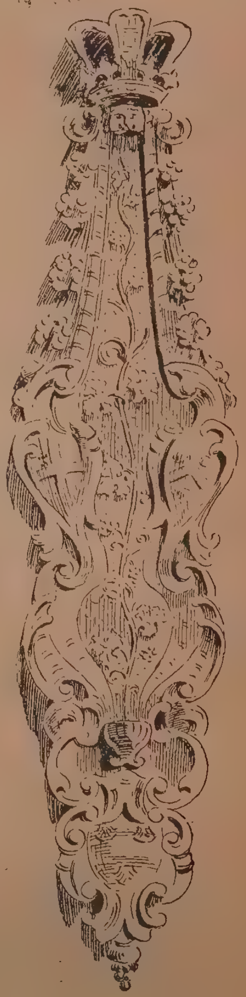


SKETCH · OF · CUPBOARD
WITH · DOORS · OPEN

WALL · CUPBOARD · IN · BINDING · RM ·
ENCLOSING ILLUMINATED ROLL OF SUBSCRIBERS
AFTER FIRE OF 1666 ·
HABERDASHERS' · HALL

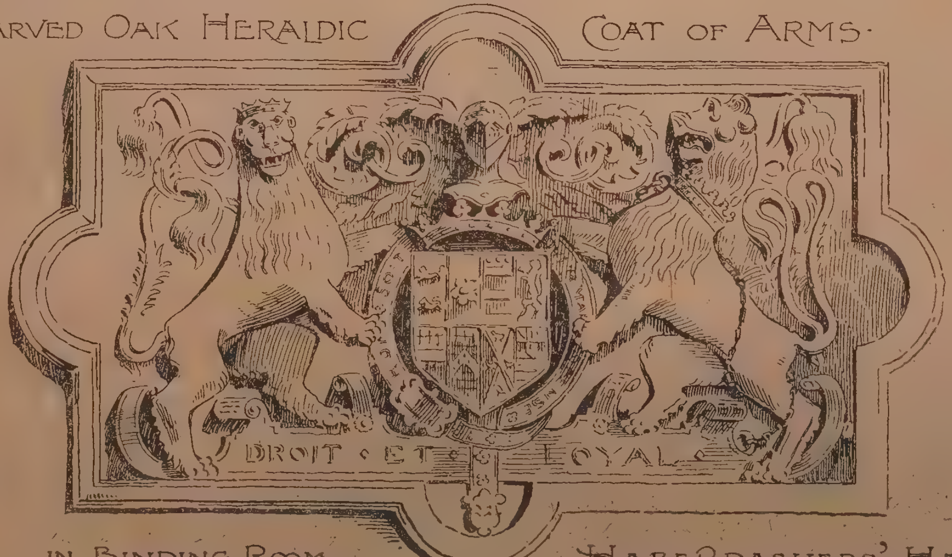


MASTER'S · CHAIR
IN COURT ROOM
VINTNERS' · HALL



THE · LORD MAYOR'S
SWORD · BRACKET ·
VINTNERS' · HALL
UPPER THAMES ST E.C

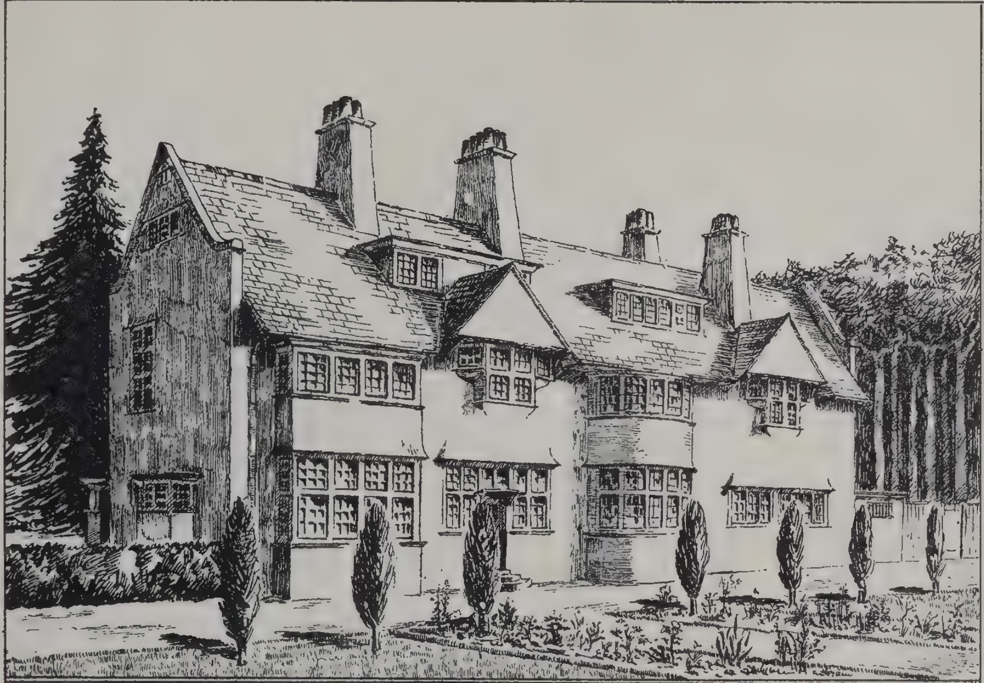
CARVED OAK HERALDIC COAT OF ARMS ·



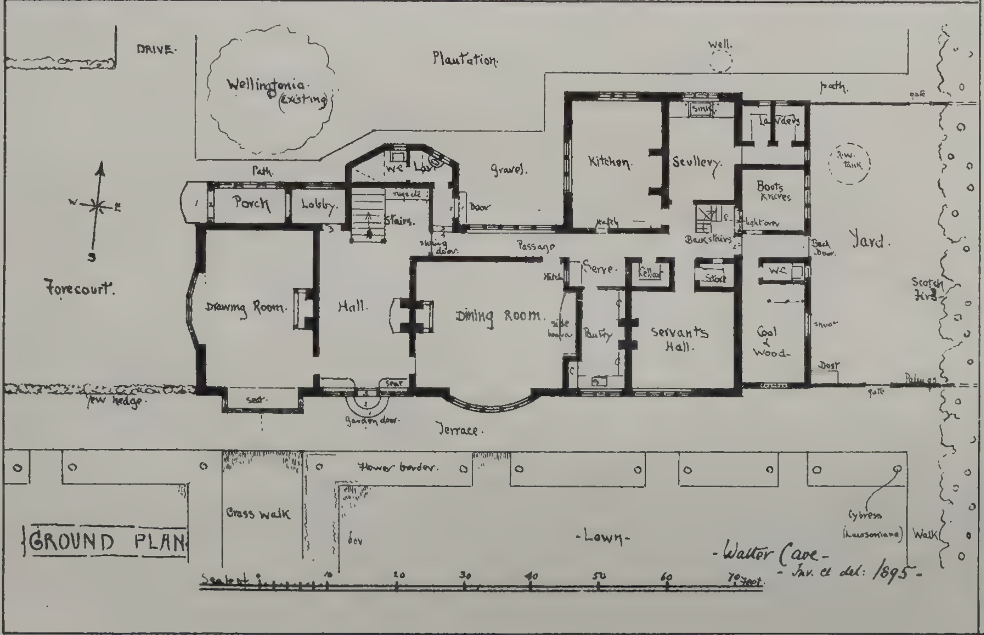
IN BINDING ROOM

HABERDASHERS' HALL · GRESHAM ST E.C

A. E. Chancellor · Del.

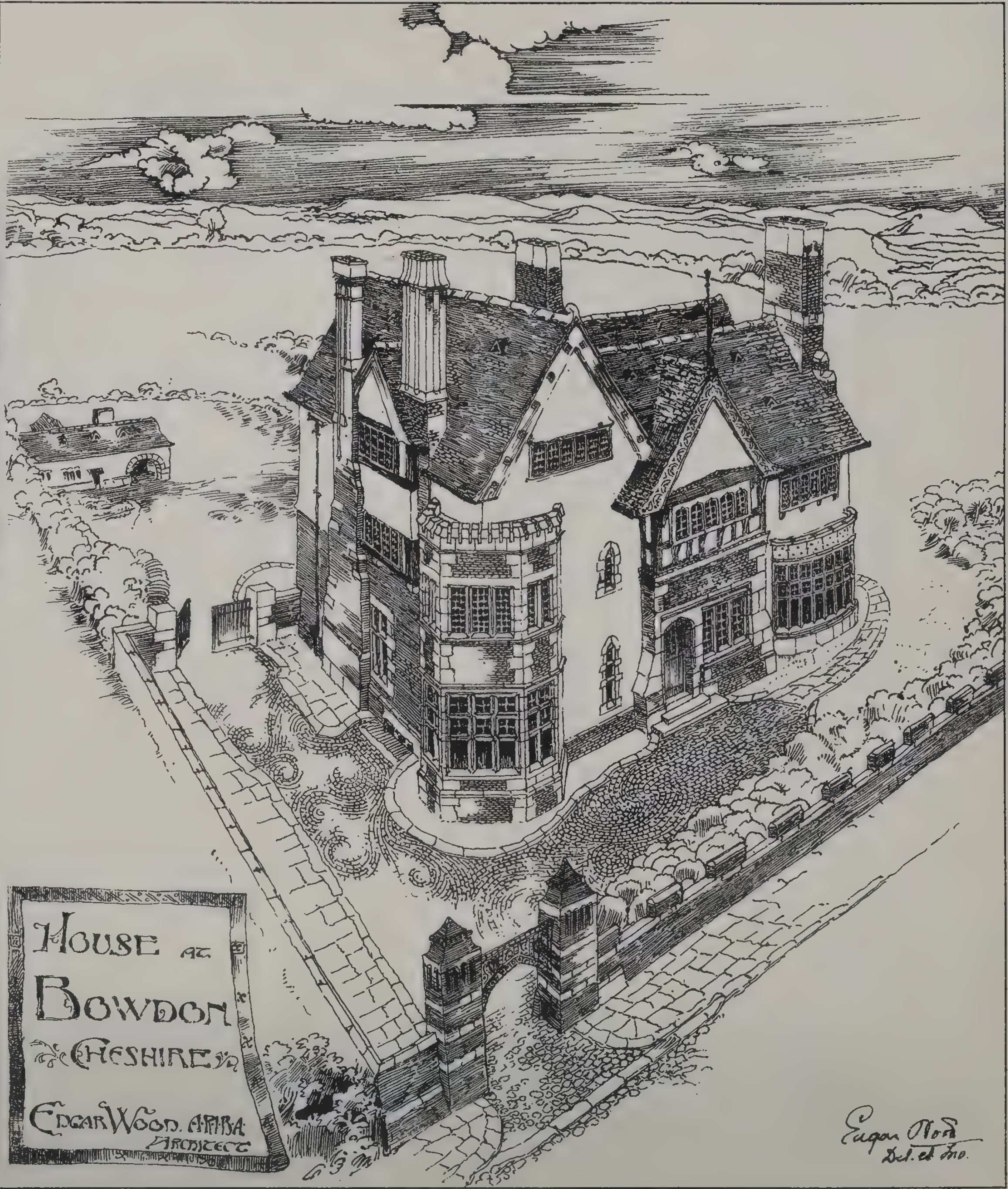


THE SOUTH FRONT · EVENTYDE · ST JOHNS · WOKING · SURREY ·



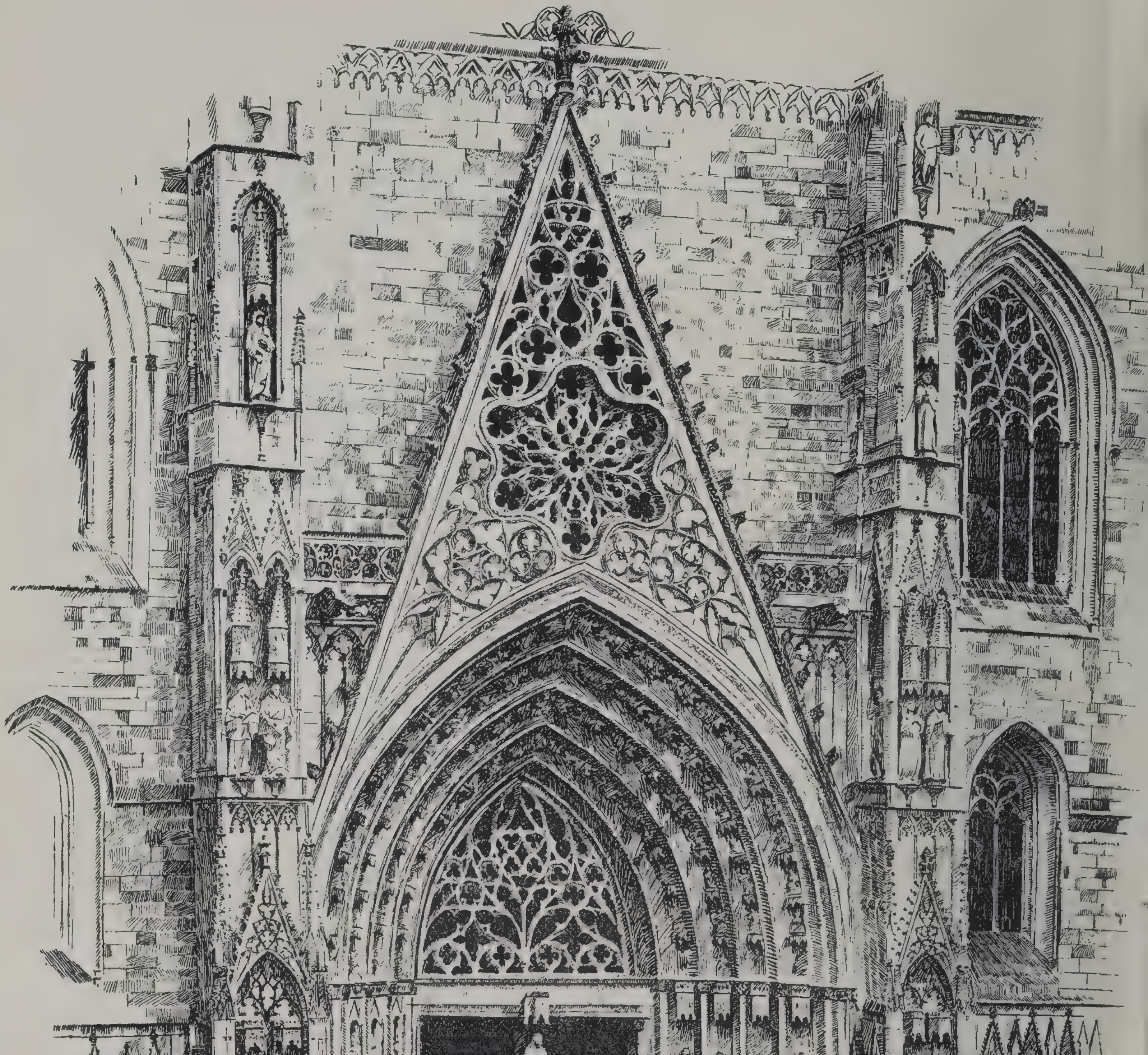
GROUND PLAN

- Walter Cave -
- Inv. et del: 1895 -

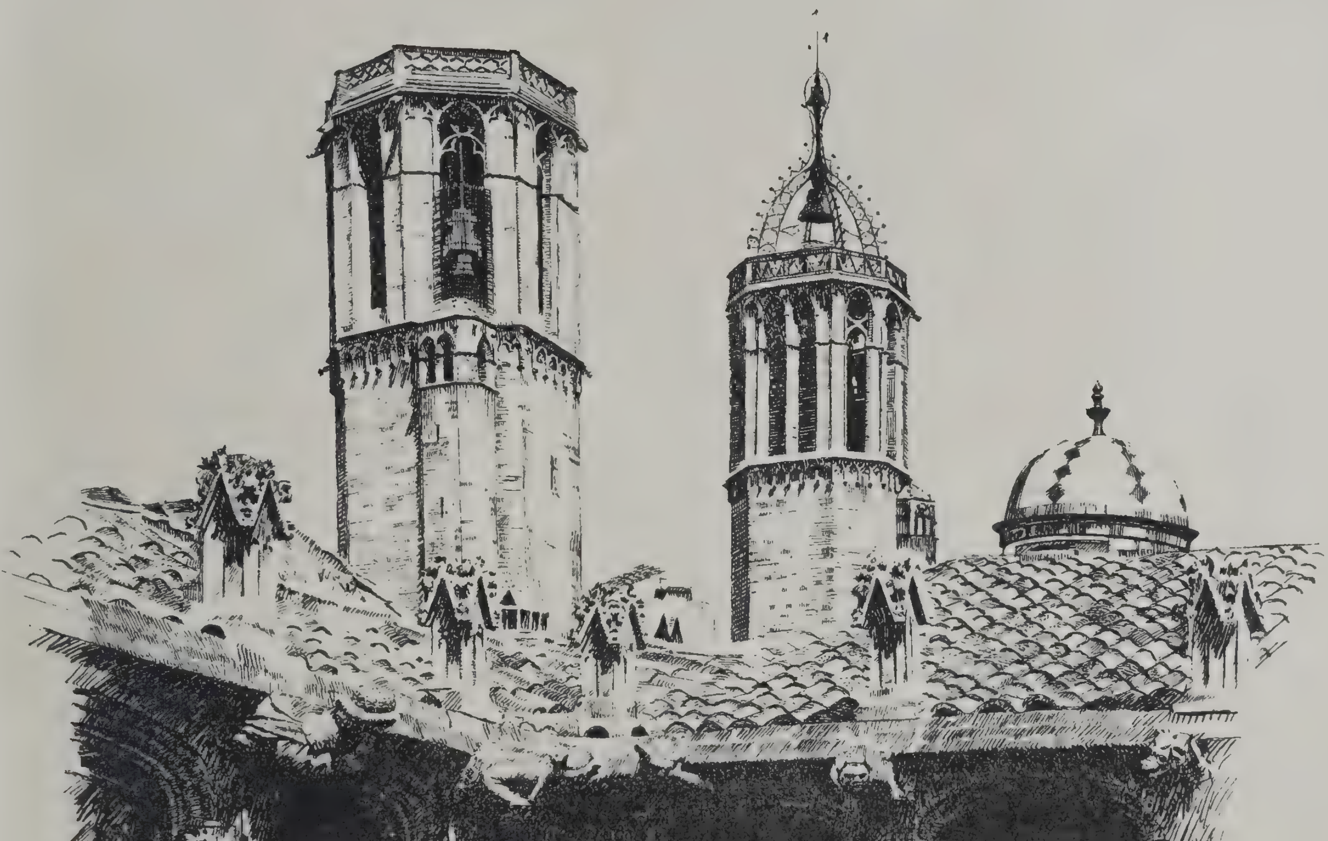


HOUSE AT
BOWDON
CHESHIRE
EDGAR WOOD. A.R.I.B.A.
ARCHITECT

Photo Lithographed & Printed by James Akerman, 6, Queen Square W.C.

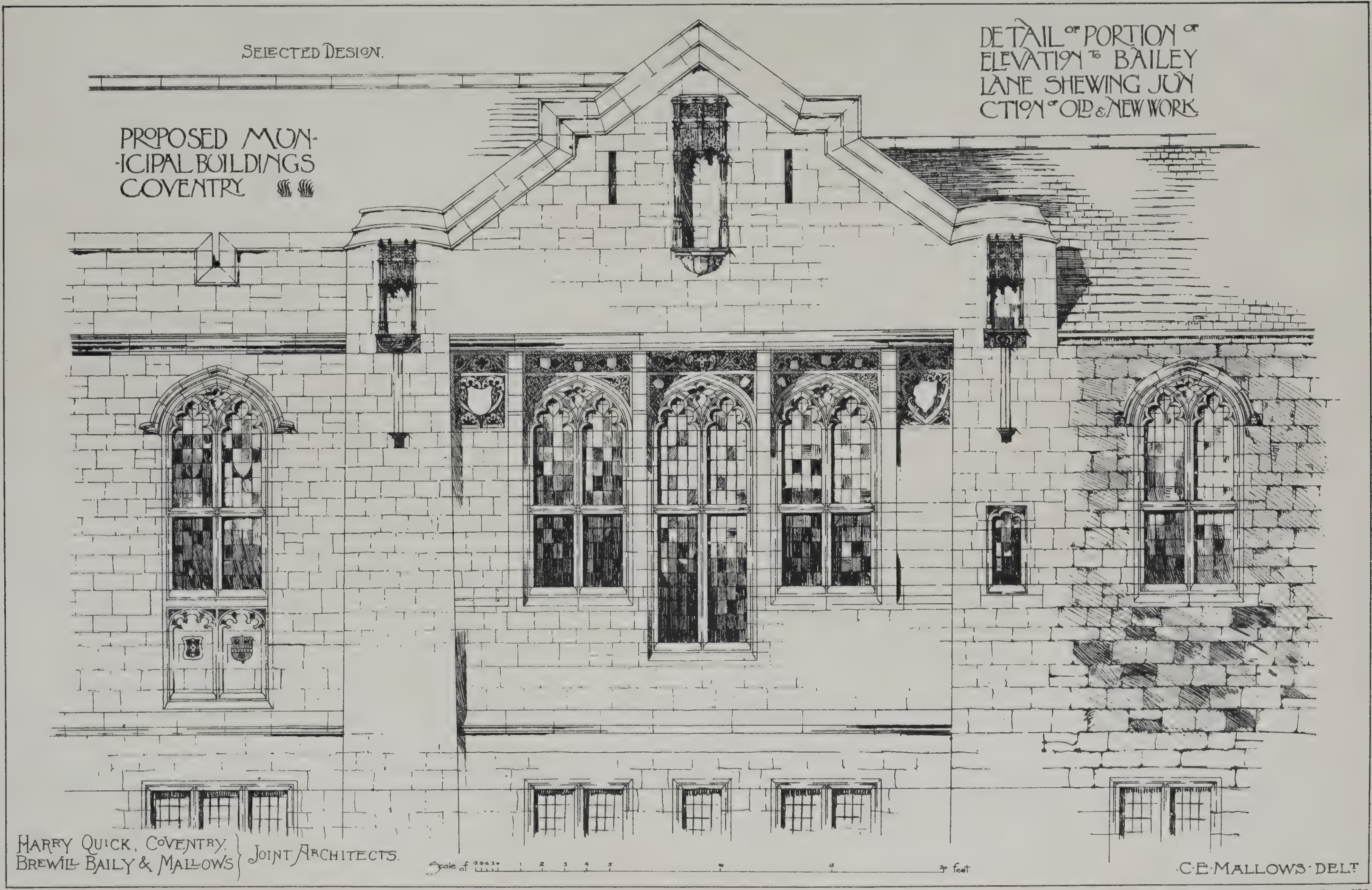


PORTAL = BARCELONA · CATHEDRAL · BY · MISS · MARION · LOGSDAIL ·



TOWERS · OF · BARCELONA · CATHEDRAL · BY · MISS · MARION · LOGSDAIL ·

Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C.



SELECTED DESIGN.

PROPOSED MUNICIPAL BUILDINGS
COVENTRY

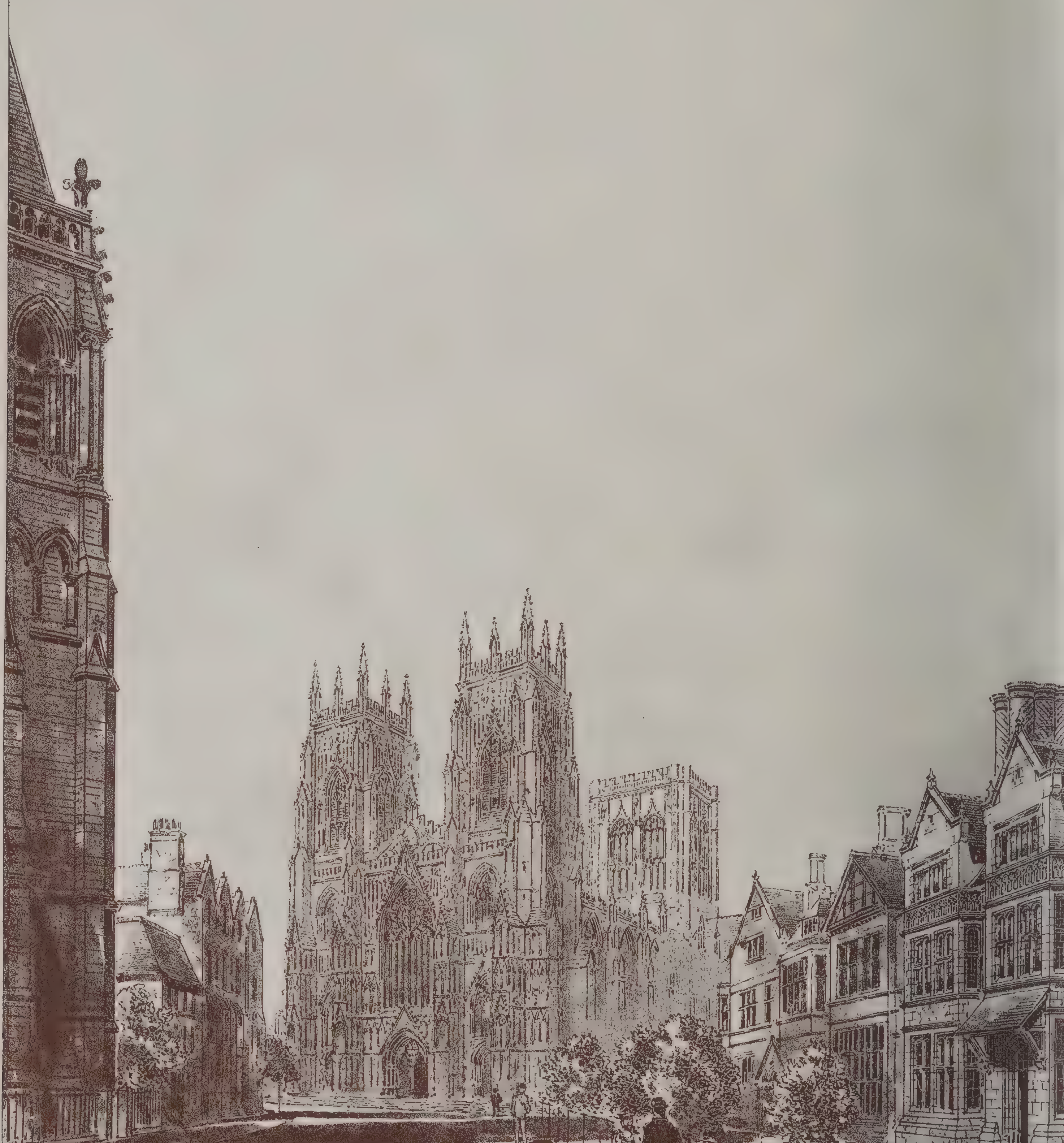
DETAIL OF PORTION OF
ELEVATION TO BAILEY
LANE SHEWING JUNCTION OF OLD & NEW WORK

HARRY QUICK, COVENTRY.
BREWILL BAILY & MALLOWS } JOINT ARCHITECTS.

C·E·MALLOWS·DELT

Photo Lithographed & Printed by James Akerman, 6, Queen Square, W.C.

CITY · IMPROVEMENT · YORK · NEW · BUILDINGS · DUNCOMBE · PLACE · EDMUND · K



SY·ARCHT

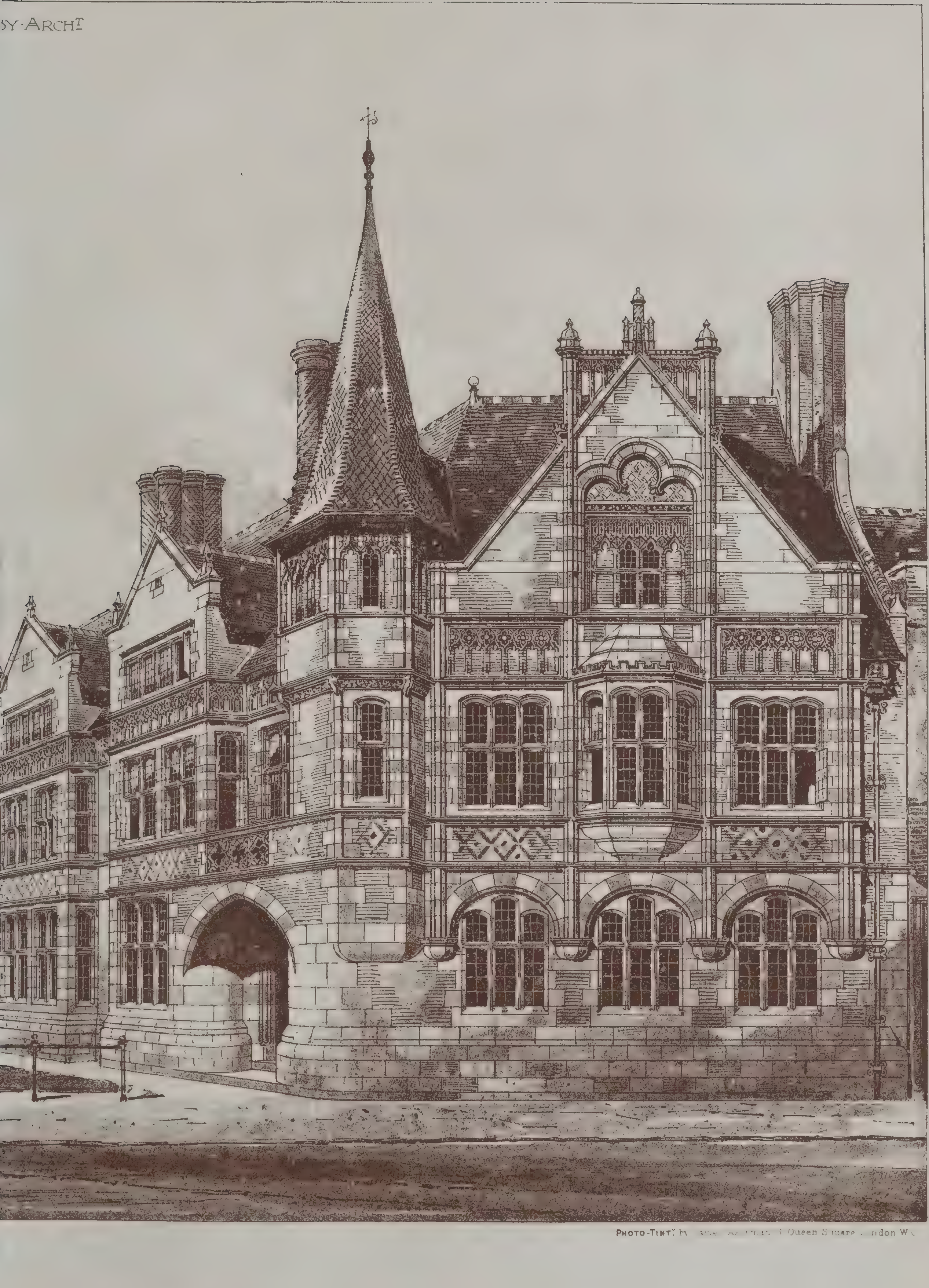
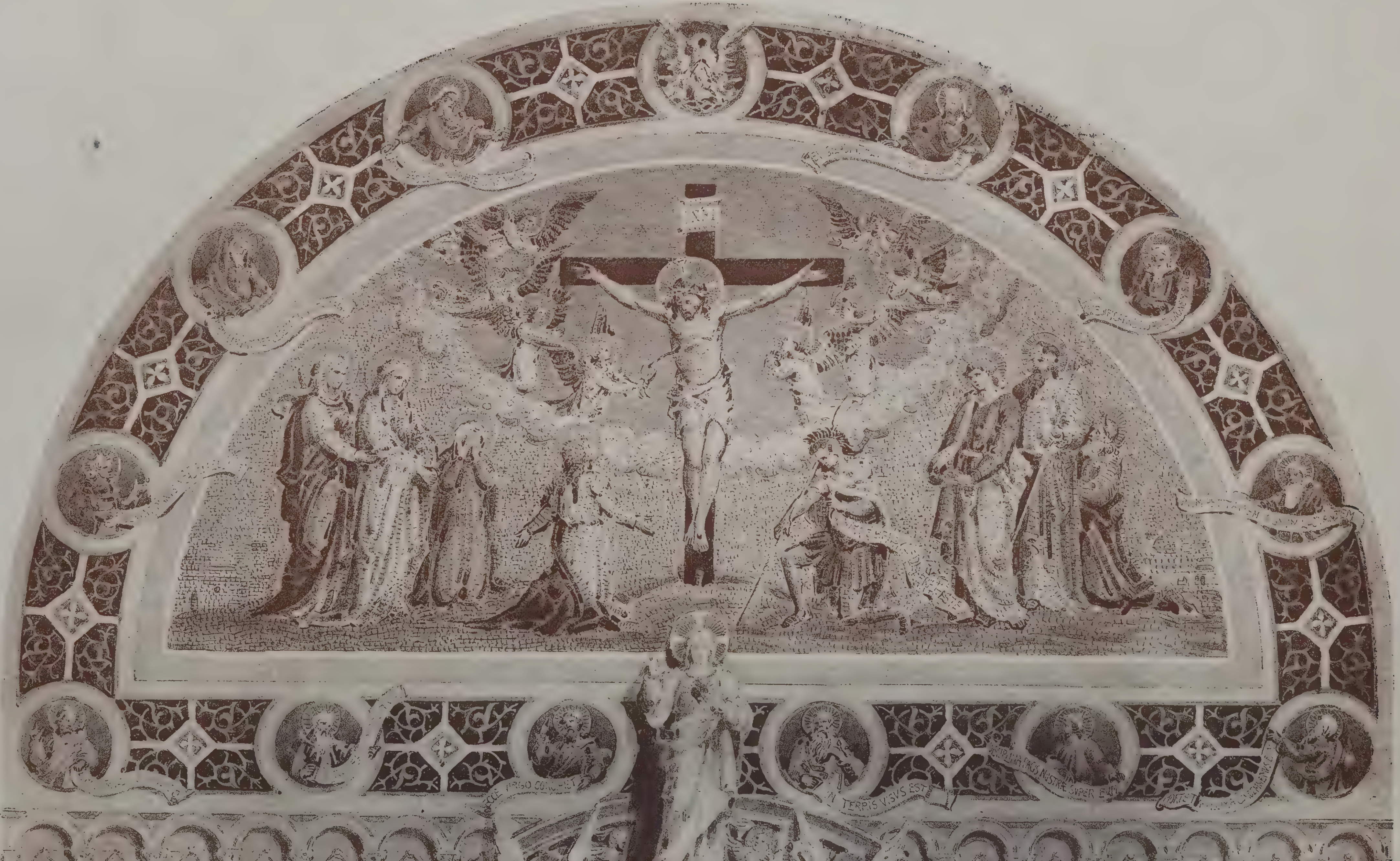
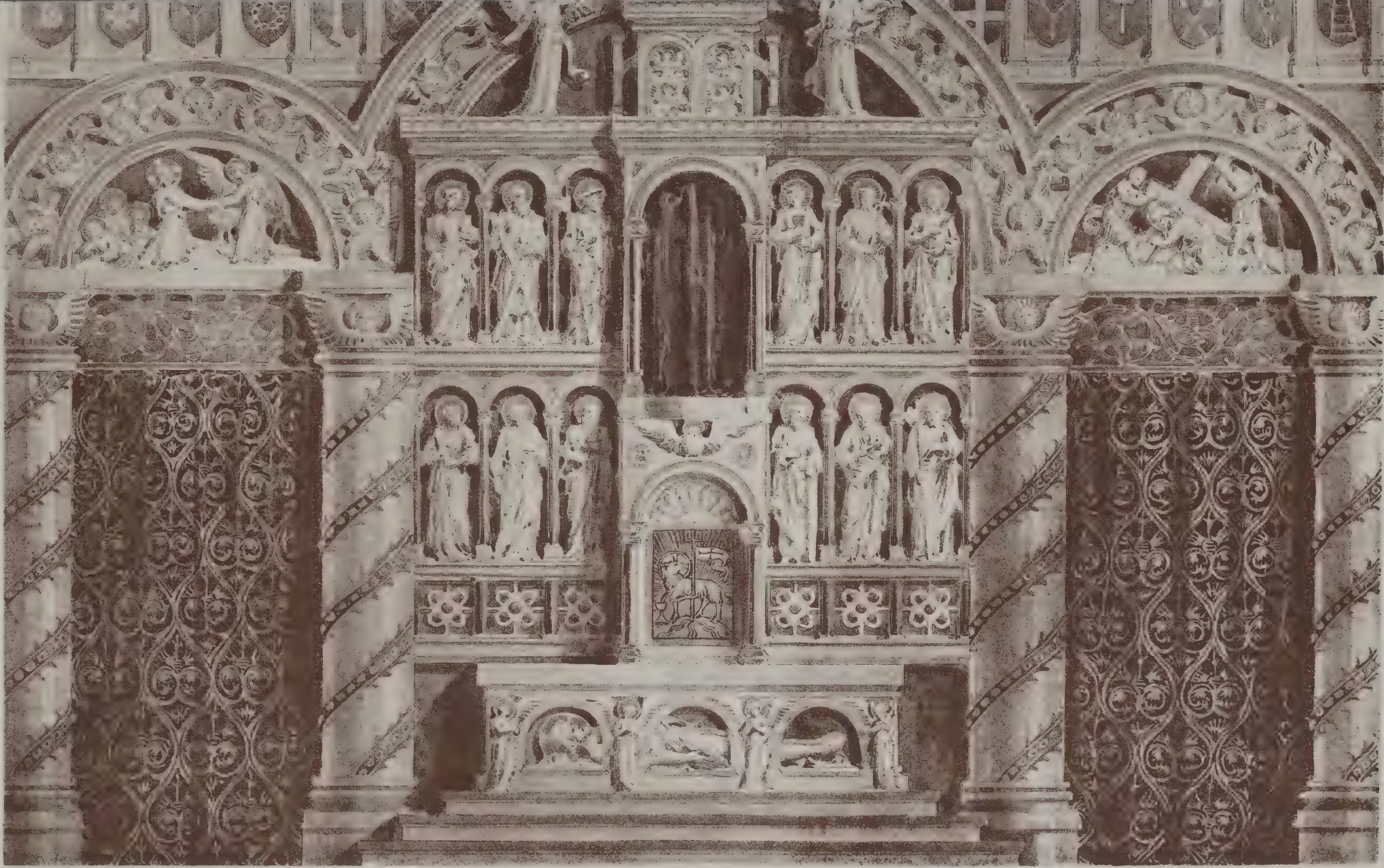


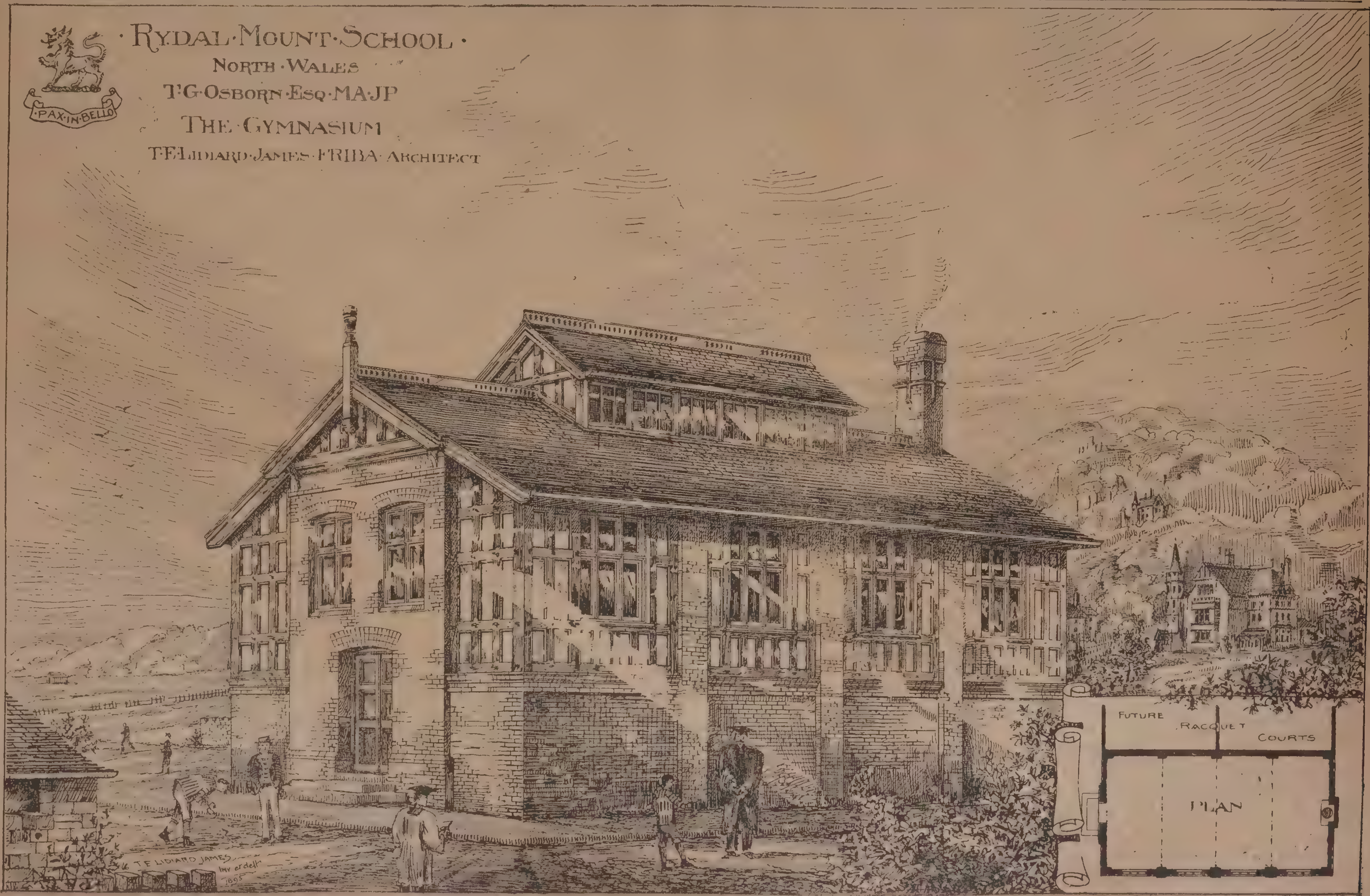
PHOTO-TINT. By James Akerman, 6 Queen Square, London W.C.


ECCE VIRGO CONCIPIET
IN TERRIS VISUS EST
NOSTRE SUPER EUM



"PHOTO-TINT" by [illegible]

SANCTUARY DECORATION AT St JOSEPH'S R.C. CHURCH HIGHGATE BY THOS CREW.


·PAX·IN·BELLO·
·RYDAL·MOUNT·SCHOOL·
NORTH·WALES
T·G·OSBORN·ESQ·MA·JP
THE·GYMNASIUM
T·F·LIDIARD·JAMES·FRIBA·ARCHITECT
FUTURE RACQUET COURTS
PLAN
T F LIDIARD JAMES inv et delt 1895

Building Intelligence.

Berlin.—The celebration of the anniversary of Sedan commenced on Sunday with the opening, by the Emperor and Empress, of the memorial church which has been erected in Charlottenburg, Berlin, to the Emperor William I. The church is built in the Late Romanesque style, in the form of a Latin Cross, the nave being comparatively short. It will seat a congregation of about 2,000 persons. The church is built mainly of sandstone. It has five towers, the central and highest of which is over 370ft. in height. It is surmounted by an Imperial Crown of stone, weighing 24 tons, from which rises a gilded cross, 22ft. 9in. high, and weighing nearly a ton. The clock is the largest in Berlin, the dials being about 30ft. in diameter and the long hands about 10ft. in length. The peal of bells is among the finest in Germany. The interior of the church is entered through a lofty, arched tribune, which is to be adorned with paintings representing episodes in the late Emperor William's life. The interior and the windows will be richly adorned with pictures of Biblical scenes. The interior is not nearly finished as yet. The total cost of the building, which has been erected by voluntary contributions, is estimated at £250,000, including more than £75,000 for the site. Herr Schwechten is the architect.

Boscombe.—On August 22 the foundation-stone of a new church for the Jesuit Fathers of Bournemouth was laid at Boscombe by the Bishop of Portsmouth. The new church was dedicated to the Blessed Sacrament, and will be called Corpus Christi Church. The building itself and the site are given by the Baroness Pauline von Hügel and other benefactors, at the cost of about £9,000. The church will be a plain but substantial brick building in the Early English style, with internal Bath stone dressings. The total length of the building will be 125ft., which will comprise a nave 68ft. by 22ft. (with side aisles each 7ft. wide), a sanctuary 31ft. by 22ft., a nuns' transept on the north side of the sanctuary, and a Lady-chapel 22ft. by 8ft. on the south side, a sacristy 18ft. by 17ft., and a boys' sacristy 16ft. by 7ft. At the west end there will be two porches and a baptistery. There will be a chancel arch and a stone arcading beneath the clerestory windows. The fixed seating will provide accommodation for between 400 and 500 persons. Mr. J. W. Lunn, of Great Malvern, is the architect, and Messrs. Jenkins and Sons, of Portsmouth, are the contractors.

Clerkenwell.—The new Northampton Polytechnic Institute, for which a principal has just been appointed, is on the eve of completion. It is one of the finest in the Metropolis, and has been erected at a cost of nearly £100,000, or it will have cost that eventually. Of this sum, £30,000 is the estimated value of the acre and a half of land or thereabouts given by the Marquis of Northampton. The Polytechnic occupies an isolated site, bounded by St. John's-street-road, Lower Charles-street, Ashley-street, and Northampton-square. The chief internal features will be a public hall, capable of seating 1,500 people; a gymnasium 120ft. long and 55ft. wide; a swimming-bath of the same dimensions; club rooms, refreshment-rooms, library, and reading-rooms, and 28 technical workshops. Facilities will also be provided for teaching women cooking and dressmaking. The building is from the designs of Mr. E. W. Mountford, F.R.I.B.A., selected in competition, and illustrated in the Building News for August 21, 1893. It is Renaissance in style, and is carried out in red brick and white stone dressings, with green slate roofs. There has been some delay in the acquisition of property that it has been necessary to clear away before the workshops could be undertaken, and that part of the Institute has therefore had to be left in arrears. The main building, however, apart from its range of workshops, is on the point of completion. It will be fitted throughout with the electric light.

Glasgow. — The Eglinton-street Congregational church, Glasgow, has for the last two months been undergoing a process of renovation internally, which has this week been finished. About six months ago the deacons asked Mr. W. J. Anderson, A.R.I.B.A., to submit drawings of a scheme of colour decoration, and suggest improvements in lighting, and the designs which he submitted are those which have just been carried out to his full-size drawings and directions. The ornamental work is largely founded upon Continental examples of Romanesque polychromatic decoration. A unique feature is the treatment of the eastern wall, extending for the full width of the structure, and blank except for a small circular window; the motive being a veil of gold cloth divided by illuminated bands, hung vertically at irregular intervals and of different colours. On these are emblazoned in gold the emblems of the Saviour, as found in Early Christian buildings, suggesting to some degree the iconostasis of an Eastern church, with the important difference that it does not intervene between the people and the ordinances. Mr. James Moodie, of Sauchiehall-street, carried out the painting, while Messrs. J. Milne and Sons, of Edinburgh and Glasgow, supplied to the architect's drawings the wrought-iron and copper coronas.

Middlewich, Cheshire.—The parish church of St. Michael and All Angels, Middlewich, was reopened for service last week, after having been restored from plans by Messrs. Douglas and Fordham, architects, Chester. The principal work executed is the new carved oak reredos; this has been executed by Mr. J. J. Millson, sculptor, City-road, Manchester, at a cost of £214, and was exhibited at the Manchester Corporation Arts and Crafts Exhibition. The style is Late Decorated. There are five vertical divisions. The central panel represents the Nativity; the subjects on the left are the Annunciation and St. Michael, and on the right the Adoration of the Magi and St. Gabriel. The backgrounds of the panels are gilded. The work was from the designs of the architects to the restoration of the church. The great east window has been raised to a height of 3ft. above its former position; this contains stained-glass representations of St. Michael, with the dragon at his feet. The chancel and sacrarium have been re-tiled by Messrs. Maw, a deeply-coloured enamelled centre tile being surrounded by others of terracotta hue. The masonry of the chancel wall has been repaired. The raising of the windows and construction of the side windows has been carried out by Messrs. Beckett and Co., of Hartford, whose contract amounted to £205. The organ has been repaired by Messrs. Young, of Eldon-street, Manchester, and several improvements have been made in the instrument. The total outlay on repairs and decorations has been nearly £700.

Newcastle-on-Tyne.—The Stephenson branch public library at Newcastle, which has been built on a corner of Elswick Park at a cost of £4,000, borne by the present mayor of the city, Alderman W. H. Stephenson, is approaching completion. The architect is Mr. John W. Dyson, of that city, and the contractor, Mr. Walter Scott, also of Newcastle. The style is English Renaissance, the building, which consists of ground and first floors, and occupies an area 43ft. by 86ft., being constructed of red Leicestershire bricks, with stone dressings, and roofed with red Ruabon tiles. A small tower stands over the western entrance hall, and the end and central windows of both the north and south elevations are projected from the front and finished with a gable, that over the centre on the north side being surmounted by a stone pediment. A stone shield immediately beneath bears the arms of the city, and another over the side of entrance has on it the crest of the donor. The mullioned windows have leaded panes of clear glass, except at the west end, where the hall staircase is lighted with a stained-glass window. The central doorway from Elswick-road gives access to the ground floor, on which are provided a refreshment room, committee-room, ladies' reading-room, a large general reading-room, smoke-room, lavatory, &c. The basement is occupied by a kitchen and the heating apparatus. The lower rooms are 12ft. high. Upstairs, the chief feature is the hall, 70ft. by 35ft., which it is proposed shall serve as the library and also for meetings, &c. It has a hammer-beamed roof, of yellow pine, the ceiling being formed in panels with moulded ribs. The height from floor to ceiling is 23ft., and to wall-plate 14ft. 3in. At the east end there is a platform, and there are also on this floor retiring, committee, and caretaker's rooms. Stained canary wood has been utilised for the construction of the doors and most of the internal woodwork, though the hall staircase is in pitch-pine with canary-wood handrail. Ventilation has been provided all over the building by air-shafts, the vitiated atmosphere being carried away and discharged through a turret at the south-west corner. The premises are to be illuminated by electricity.

Wistanstow. — The reopening of Wistanstow parish church was recently performed by the Bishop of Hereford. The improvements comprise building a new vestry and organ-chamber, partly reseating the body of the church, making sundry improvements to the organ, restoring the old oak (Perpendicular) roof of the nave, recolouring the outside walls and roofs of the building throughout, making a new dormer window in the church, and various other small additions and alterations. The architect is Mr. A. E. Lloyd-Oswell, Dana-chambers, Shrewsbury. The organ, which was originally built by Hill and Son, London, was taken in hand by Messrs. Halmshaw, Camp-hill, Birmingham, and is very much improved. The church, which is a cruciform building, has a Norman doorway, and also a Norman font. Until lately the organ stood in the chancel, which was much blocked up; the effect of putting it into a chamber has been to exhibit the fine proportions of the old chancel and the encaustic pavement, which some years ago was laid down by the present rector. The new arrangements necessitated the making of a dormer window in the chancel roof. The building of a vestry has supplied a want that has been felt for many years: there appear to be no traces of one ever having existed before. The removal of the old high pews in the body of the church (though only partially done), has had a good effect in showing the proportions of the nave, with its 15th-century carved oak roof. A light wooden chancel-screen has been erected.

CHIPS.

The committee for the erection of the Adam Smith and Beveridge Memorial Halls, at Kirkcaldy, have finally adopted the plans of Messrs. Dunn and Findlay. The buildings will be faced with red stone from Corncockle, and will cost about £14,000. To meet this outlay the committee have £16,000 in hand, but the contracts have not yet been let.

A new font, octagonal in form and Perpendicular in style, has been dedicated at Empingham parish church, co. Rutland. It was designed by Mr. J. C. Traylen, diocesan surveyor, Stamford.

An organ has just been erected in the parish church of Plaistow, by Messrs. Henry Jones and Sons; and another, built by Messrs. H. Speechly and Son, has been placed in the neighbouring parish church of West Ham.

The ceremony took place on Monday of laying the memorial stones of the new Calvinistic Methodist chapel in Warren-road, Rhyl. The present chapel was built some 25 years ago, and despite frequent additions the building has become too small to accommodate the worshippers. The site of the new building is in the same street, a few yards higher up. The building is in the Elizabethan style, and will seat about 600 people. The total cost is about £2,000. The architect is Mr. Thomas Parry, J.P., of Colwyn Bay, and the contract has been intrusted to Mr. Hugh Jones, builder, Rhyl.

Sanction has just been received by the Nelson Corporation from the Local Government Board to borrow £30,000 for private street improvement, £8,000 for works of sewerage and sewage disposal, and £1,641 for the construction of a bridge, and improvements in Leeds-road.

At the last meeting of the Bradford School Board tenders were accepted for a new infants' department at Princeville school, amounting to £2,642 5s., being at the rate of £10 17s. 8d. per head.

The Marchioness of Londonderry opened, on Monday, the new Workmen's Institute at Silksworth Colliery, where the whole of the miners are employed by the Marquis of Londonderry, who has been at the entire cost of the building and interior furnishings, amounting to about £1,000.

Further reports as to the mischief caused during last winter's frost to water mains laid too near the surface continue to come to hand. At the half-yearly meeting of the South Staffordshire Waterworks Company held at Birmingham on Friday, the chairman said that they had had to relay about nine miles of pipes, or 5,000 mains. The maintenance of works had been increased by the frost from about £2,000 to £6,000.

The new technical school which has been erected by the corporation of Accrington was opened last week by Alderman Snape. The building, the exterior of which is entirely of stone, is in the Blackburn-road. Accommodation is provided for the teaching not only of technical subjects, but of art and science. Mr. Henry Ross was the architect, and the cost was about £12,000.

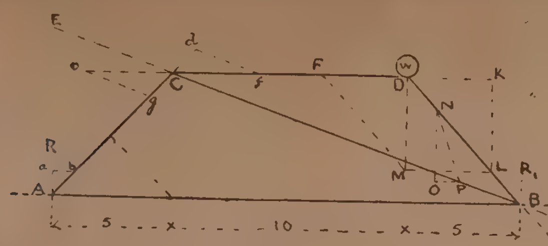


FIG. 1.

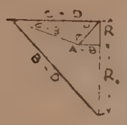


FIG. 2.

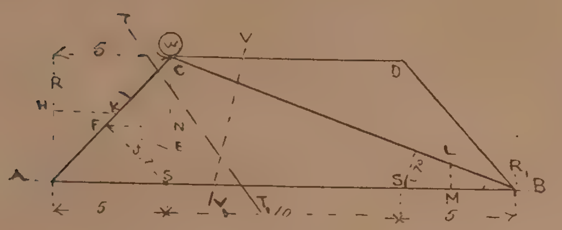


FIG. 3.

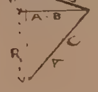


FIG. 4.

DESIGNING OF STEEL BRIDGES, THEORETICAL AND PRACTICAL.—XXII.

THE necessity for introducing additional members in open web-girders and trusses to prevent deformation, or, in other words, to fulfil certain theoretical requirements, has been freely demonstrated in previous articles. But, as has been already pointed out, it becomes indispensable in practice to supplement these theoretical extra members by others, which are not strictly required for the sole purpose of insuring indeformability and permanent stability to the entire structure when subjected to the action of only a uniformly distributed load. We have now, therefore, to consider the reason why these other members under certain conditions of loading must be added. Under these circumstances, they are termed counterbraces, and it remains now to investigate when they can be dispensed with and when not. It is a simple question of the distribution of the load, which, in bridge girders and roof trusses, is always more or less of a duplicate character. In the former the dead or permanent load consists of the weight of the bridge itself, together with that of the platform, permanent way, and any other insistent weight that may have to be provided for. This last-mentioned load in all railway bridges over the Thames now takes the form of at least one foot-bridge outside the principal girders, for, if we mistake not, the London County Council has laid it down as a rule that all railway bridges over rivers within their jurisdiction must provide this minimum accommodation from shore to shore. The railway bridge over the Thames at Charing Cross, which is provided with a foot-bridge, is not exactly a case in point, for that accommodation existed previously in the old Hungerford Suspension Bridge, and the South-Eastern Railway Company, in converting it into a railway bridge, was obliged to afford to some extent the facilities to the public which had been formerly accorded to them. But an example—or, rather, a corroboration of our statement, is to be found in the new railway bridge at Putney, just below the new stone roadway bridge. The former has a foot-bridge thrown out on cantilevers from the main lattice girders. As instances in which railway companies were bound by neither past, present, nor future regulations as to the provision of footpaths, may be quoted the majority of the railway bridges over our great Metropolitan river. An additional load of some 80lb. to 120lb. per square foot of pedestrian area must be allowed for in future London transpontine structures to meet the emergency.

In a railway bridge the live load, which is continually changing its position, is composed of the weight of passing trains, and the force or pressure of the wind, which has not hitherto, and possibly never will, admit of accurate calculation. It can only be estimated on assumptions, which are more frequently than otherwise based upon grounds and data which are both vague and uncertain. At the same time, its amount and violence cannot be ignored or disregarded, especially in large structures in exposed situations. The stresses allowed by the engineer of the Forth Bridge, under the three headings to which we have drawn attention, are the following:—

Stresses due to dead load	2,230	tons.
Stresses due to live load......	1,020	,,
Stresses due to wind load	2,920	,,
Total....................	6,170	,,

So far as roof-trusses are concerned, they are exempt from any actual travelling load, but are equally exposed to the force of the wind as bridges. It is worth mentioning in connection with wind pressure that the first experiments and investigations were made upon the effect of the wind upon inclined—that is, upon roof—surfaces. Counterbalancing is not restricted to the ends of girders for the sole purpose of providing for the want of uniformity in the distribution of the loading. It has to be employed to resist the lateral vibrations and oscillations due to the impactive violence of the pounding action of the enormous driving-wheels of the powerful locomotives in present use. When counterbracing is used in either vertical, horizontal, or inclined planes, to resist the stresses brought upon the girder or truss by the pressure of the wind, it is often included under the term "sway-bracing."

In Fig. 1, let A C D B represent a portion of a girder or truss which, from the general equation (1) and the rules already derived from it, is known to be deformable without the addition of the bar or member C B, or a corresponding bar connecting the points A D. For the present we will restrict our attention to the truss, rendered indeformable in Fig. 1 by the addition of the supplementary bar C B. It will be shown that, under different conditions of loading, this bar acts sometimes as a strut, and sometimes as a tie, and therefore must either be counterbraced in itself, or, as is the more usual method adopted, by introducing another bar in the opposite diagonal direction. In Fig. 1, let the truss be supposed to represent a portion of a railway-bridge girder, sufficiently near the centre to render it unnecessary to regard the influence of the dead load. This latter may be considered as uniformly distributed on each side of the centre, so that the opposite stresses of a different character will counterbalance one another. The manner in which this is accomplished will be demonstrated in treating of the subject in a subsequent article. We may now take the case of a railway train having advanced as far on the girder as the apex D. It is evident that there will be no counterbalancing live load in the form of another train on the other or left-hand side of the girder. In practice, there often is another train; but in the present instance it will be assumed that there is only one. The case of another train advancing on the bridge in an opposite direction will be discussed subsequently. The weight of the engine, which is really the maximum load to be provided for, may be therefore regarded as a concentrated load placed for the moment in passing at the summit of the apex D, and represented by the weight W. It remains to determine the nature and amount of stress induced upon the different bars and members of the truss by this weight, more especially with reference to the bar C B, in order to ascertain whether it is in tension or compression. There are two methods shown in Fig. 1 by which the stresses may be determined. We may either work directly from the weight W or from the reaction at the abutment A. It should here be particularly noted that the reaction R_1, although it is known at the abutment B, cannot be used at the present stage, because there are three bars—A B, C B, and D B—meeting at the point B, the stresses upon which are all unknown. It is, therefore, impossible to tell in what manner, and in what proportion, the reaction R_1 might affect any one of the three. For the sake of simplicity, make W = unity or one ton, from which a reference to the figure will point out that—

$$R = \frac{W \times 5}{20} = \frac{W}{4} = \tfrac{1}{4} \text{ ton.}$$

Similarly, we shall find—

$$R_1 = \frac{W \times 15}{20} = \frac{3\,W}{4} = \tfrac{3}{4} \text{ ton.}$$

It will be subsequently shown how the apparent difficulty attending the unknown values of the stresses on the three bars meeting at the point B could be got over, and R_1 used directly in determining the stresses; but, for the present, the methods demonstrated in Fig. 1 will be adhered to, and the direct action of the weight W first investigated. Make the dotted line D M equal one ton on any convenient scale. It is evident that this weight is transferred in the proper proportions to the supports by the bars or members C D and D B. From the point M draw M F and M L parallel to the two bars respectively, and F D and D L, and they will represent the stresses upon them. It is obvious, from the rule given in a former article, that as the direction of the weight W acts between the angle formed by the two bars themselves, they are both in compression. The stress F D on the bar C D, on arriving at the point C, will thrust against it, and induce stresses in the bars A C and C B, which tend to resist motion at that point. Make C *c* equal F D, and resolve C *c* into its components *c g* and C *g*, which will represent the stresses on the bars C B and A C. To find the nature of the stresses, produce C B to E, observe the direction of C *c*, and it will be seen that A C is in compression and C B in tension. Let it therefore be noted that in Fig. 1, with the load placed as shown, the bar C B will always be in tension. If C *g*, which is the stress on the bar A C, be made equal to A *b*, it is evident that when resolved into the two components A *a* and A *b*, these will represent the stresses on A B, and the support A. But the latter should equal—

$$R = \tfrac{1}{4} \text{ ton.}$$

If A *a* be measured on the same scale, it will be found to have this value, thus proving the accuracy of the operation.

Instead of using W, the working may be commenced by using the reaction R at the support A. The student and our younger readers will have no difficulty in following the various steps of this second method, so we shall do no more than draw attention to a few points in connection with it. The stress on A C when reaching the point C is made equal to C *d*, and resolved between the bars C B and C D, making the stresses *d f* and C *f* equal to *e g* and *c* C, which are the values already found for them. When the stress upon the bar C D arrives at D, it requires some attention, for at this point the weight W is situated. The direction and amount of this weight are known to make D K = C *f* = F D, and K L drawn parallel to D M will be equal to W, and D L = the stress on the bar A B. As the stresses on all the three bars are now known, we may select any two of them for working from. Take D B and C B, and make B N = D L equal to stress on D B, and B P = *c g* = *d f* = stress on C B, and draw P N. This last line is the resultant of the stresses on these bars, and if it be resolved into the two remaining stresses, it will give that on the tie-bar C B and that on the support B. If N O be drawn parallel to the vertical reaction at B, and O P parallel to A B, then we shall have O P = *a b* = stress already found for A B, and—

$$N\,O = R_1 = \tfrac{3}{4} \text{ ton.}$$

If the stress on B D were obtained as in the first instance, from the weight D, it might have been compounded with the known reaction R_1, and the resultant having been obtained, the stresses on the remaining two bars A B and C D readily deduced. By comparing the direction of the stress upon D B produced with the directions of the bars A B and C B similarly produced, it will be at once perceived that both the latter are in tension. In Fig. 2 is shown a diagram of forces, or stress diagram, in which the lengths of the lines similarly lettered as in Fig. 1 will be found to be equal to the lengths of the dotted lines representing the several stresses upon the different parts of the truss. They are in tons A B = 0·23, A C = 0·33, B D = 1·40, D C = 0·94, C B = 0·74. By commencing with the known direction of the reactions and following round the diagram of forces for each joint, the character of the stresses, whether tensile or compressive, can be determined, as explained when we were dealing with the subjects of stress diagrams and funicular polygons.

In Fig. 3 let the weight be placed at the point C, and let the amount and character of the separate stresses on the bars of the same truss be investigated under this new condition of loading. The value of the reaction will not be reversed, and we shall have—

$$R = \tfrac{3}{4} \text{ ton.} \quad R_1 = \tfrac{1}{4} \text{ ton.}$$

This case is clearly much simpler than that represented in Fig. 1, as two of the members become practically and theoretically redundant, and the parts of the truss undergoing stress are reduced to the three sides of a simple triangle. Commencing with W and following out exactly the same process as in the previous case, we obtain the stresses upon the bars A C, C B, B A, and the reaction A H = R on the support A. There are two points as to the arrangement of the loading, as shown in Fig. 3, on the truss which merit attention. One is that—as it is scarcely necessary to refer to except as affecting the bar C B as a counterbrace—the brace C B is now in compression. The other is that there are no stresses on the members C D and D B. It might have been not unreasonably supposed that as there are the same number of bars and forces acting at the support B in Fig. 3 as in Fig. one, they would all undergo some stress, although not necessarily of the same amount or character. But the reason why these two bars, C D and D B, are exempted from stress is easily explained. The resultant of the two stresses on the bars C B and A B is L M. If this resultant could be resolved into the two remaining stresses, one supposed on the bar D B, and the other in a vertical direction on the support B, there would be a stress on D B. But the line L M is the stress, or the reaction R_1 at B, which manifestly cannot be resolved in only one direction. If it were not that it is essential that every step in the determination of stresses should be thoroughly investigated and understood, the operation might be shortened as follows. From the point F, in Fig. 3, draw F N parallel to A B, then F N will represent the stress upon the tie-bar A B, and will divide the line C E into two reactions—

$$R = CE, \text{ and } R_1 = NE.$$

All the stresses are similarly lettered by corresponding lines of the same lengths in the reciprocal stress diagram in Fig. 4, which requires no further explanation. Summing up, the stresses by scale are in tons, A B = 0·67, A C = 1·00, C B = 0·73. From this summation it is evident that the amount of the stresses on the counterbrace C B is identical, and independent of the disposition of the load, but the character only is reversed.

As there is no ambiguity with respect to the direction or amount of the stresses upon the three bars meeting at the support B, those upon the different members of the truss may be checked by the method of sections. First, for the stress upon the bar A B, supposing a section made along the line VV_1. Take moments about point C, where the reaction at A = 0·75, and the leverage = 5. Put S for the stress on A B, and 5·5 for the leverage or arm, which is the distance C S, or the depth of the girder. Then we have—

$$S \times 5{\cdot}5 = R \times 5,$$

from which we obtain—

$$S = 0{\cdot}68 \text{ tons.}$$

Next, for the bar A C. Take moments round point S, and we have, by similar reasoning, putting C for the stress on A C—

$$C \times 3{\cdot}7 = R \times 5 = 1{\cdot}07 \text{ tons.}$$

Finally, for the counterbrace C B, putting C_1 for the compressive stress, we have, taking moments about S_1—

$$C_1 \times 1{\cdot}70 = 0{\cdot}25 \times 5 = 0{\cdot}73 \text{ tons.}$$

These stresses agree sufficiently near for all practical purposes with those already found by the other methods. The question of one or two more different arrangements of loading still remains to be considered.

PROPOSED FIREPROOFING TESTS IN NEW YORK.

A COMMITTEE of architects, engineers, and representatives of insurance companies in New York have arranged to make an extensive series of tests of fireproofing materials, on a scale comparable with the conditions which exist in the case of fires in actual buildings. Until now, all tests made have been undertaken in a more or less contracted manner, and, in most cases, simply to determine some special result. It is now proposed to carry out experiments on a large scale, and, among other things, to test the effect of an intense fire on the structural iron and steel so universally employed at the present time, and the effect that the different fireproofing materials may have in protecting the same. The committee has been jointly selected by the fire-insurance companies, the architects and the engineers, and consists of Mr. S. A. Reed, representing the Tariff Association of New York; Mr. George L. Heins, the Architectural League of New York; and Messrs. H. de B. Parsons and Thomas F. Rowland, jun., the American Society of Mechanical Engineers. It is satisfactory to learn that the manufacturers of fireproofing materials will not be allowed to subscribe towards the cost of the proposed experiments, but are asked simply to defray the expenses of erecting and removing their materials to be tested. The time of the members of the committee is freely given to the advancement of scientific knowledge, and their names are sufficient guarantees that thoroughly impartial tests will be adopted. The committee has organised, and has commenced to build the required plant at the Continental Iron Works, New York. There will be a gas-producer to supply the fuel-gas, so arranged to receive a spray of petroleum in case higher temperatures may be required than those obtained from the combustion of the gas alone. Furnaces for testing full-sized columns and floors will be erected. The foundations of these furnaces will consist of side walls with an arch between them, thus making a safe place for the introduction of the gas-pipes and for the hydraulic cylinder. On the top of this foundation will be erected a room built of the materials to be tested. The columns will be loaded by pressure from the hydraulic cylinder, and, during the tests, a safe load, such as is prescribed by the building laws of this city, will be put upon it. The arches for the floors will be loaded by dead weight. Every precaution will be taken by the committee to make the tests uniform as regards temperature, draught, cooling by water-streams, &c., so that the results may be comparable. The committee will take minute notes of all details and publish them, together with the results, in its final report. The committee would be pleased to communicate with anyone who may be interested in this matter. Its address is—The Committee on Fireproofing Tests, Room 104, 22, William-street, New York.

* * *

A stained-glass window, Early English in style, and representing the Four Evangelists and the Four Latin Doctors, has been placed in the south transept of St. Columb Church, Cornwall.

At the Auction Mart on Friday, Messrs. Fuller, Horsey, Sons, and Cassell offered a freehold property in the City of London, known as Botolph Wharf, situate on the Thames almost adjoining London Bridge. The ground area of the land is 15,023ft., which, with the buildings thereon, was knocked down for £52,050.

At the Shoreditch County Court, on Friday, before Judge French, Q.C., Charles Boswell, 17, recovered £60 damages from Messrs. Corder and Sons, sawmill proprietors, for the loss of two fingers, caused by defects in an overhand planing machine belonging to the defendants.

The district committee of the Mid-Lothian County Council have just replaced an old iron bridge over the river Esk at Polton by a new and heavier steel bridge. The old bridge was only closed for road traffic at noon on Saturday, and the old bridge was removed and the new bridge placed in position and riveted complete, the concreting and foundation of roadway finished, and the roadway opened for traffic within about 36 hours. Messrs. Alexander Findlay and Co., Motherwell, were the contractors for the steel work, which comprised two steel lattice girders, 54ft. span, weighing 5½ tons each; while the roadway, 16ft. wide, was formed by Messrs. Findlay and Co.'s special cambered steel troughing.

COMPETITIONS.

Liverpool.—The city council received, on Wednesday, a report from the Liverpool Museum and Arts Committee as to the proposed competition for the extension of the museum buildings in William Brown-street. The committee recommended that Mr. Aston Webb, V.P.R.I.B.A., London, be appointed assessor in connection with the competition for designs of the proposed extension, at a fee of 150 guineas. It was suggested that the competition should be a limited, and not an open, one. Consideration of the report was adjourned until Wednesday next, when it is probable that a discussion will be raised on the question whether the competition shall be restricted or thrown open to all comers.

Warrington.—In response to the request for sketches for shop-front, for Mr. S. Garland, ironmonger, Bridge-street, there were 24 drawings sent in. The generality of the competitors treated the subject in a very similar manner, and it was somewhat difficult to select the most suitable plan. After careful consideration as to which sketches were most suitable, and which satisfied the conditions of the competition, the first premium was awarded to a design by Mr. T. E. Hardy, 12, Aberdeen-place, Maida Vale, London, W.; the second premium to a design by Mr. Andrew Gray Bengeo, Hertford, Herts; and the third premium to a design by Mr. Chas. Kempson, C.E., A.R.I.B.A., Leicester; and cheques have been posted to these gentlemen.

CHIPS.

Two lights in the north choir aisle of Truro Cathedral have just been filled with stained glass. One contains the figures of St. Athanasius, St. Basil, and St. Chrysostom, and below a scene from the history of the first-named father of the Church, his triumphant entry into the city of Alexandria after his return from exile. The other light contains the figures of the Empress Helena, Origen, and St. Jerome. Below is given the scene of the discovery of the true Cross at Jerusalem by Helena, commemorated in the Calendar on May 3rd.

A Bill has been introduced, and will be passed without opposition, for the purchase of the block of buildings between Parliament-street and King-street, Westminster. The amount asked is £450,000.

The islands opposite the city front at Philadelphia, so long a restriction upon the commerce of the port, have been removed by the United States Government, after the appropriations of millions in money and three years of work. Work upon the site of the islands will be continued until a depth of 32ft. at high water is obtained. As a result of the removal of the islands, new piers, ranging from 600ft. to 1,000ft. in length, are being constructed, which will afford greatly increased room for vessels directly on the city front. The Federal Government has continued the work of deepening the channel of the Delaware River, the intention being to secure a depth of 32ft. at high water and a width of 600ft. to the sea.

The parks and galleries committee of the Glasgow Corporation have recommended to the town council that a grant of £5,000 be made to the building fund of the new School of Art. By such a grant the directors would be enabled to secure an additional gift from the Bellahouston Trustees, and the grant will also relieve the town council of future obligations to the school.

An addition to Winchester College, the gift of Dr. Freshfield, is now nearly completed. Fromond's Chantry, the chapel used by the junior scholars, is enriched by a reredos of cedar-wood exquisitely carved, and an altar of Purbeck marble, having on its face an inlaid porphyry Byzantine cross, copied from one in the Mosque of Ste. Sophia at Constantinople. There are corner crosses copied from the corner stones of the Golden Gate, and of the Order of St. John of Jerusalem, of which Dr. Freshfield is a member. Mr. J. Oldrid Scott, F.S.A., of Spring-gardens, S.W., is the architect.

At St. Bartholomew's Hospital on Friday, Mr. Langham held an inquest respecting the death of James White, 52, a builder's labourer, of Wells-road, Upper Sydenham. On August 16 the deceased was working at the newly-erected building in Southampton-buildings, Chancery-lane, for the Birkbeck Bank. A "skip" was being used to lower concrete into the basement, and while being drawn up empty it caught underneath a plank and dislodged it, and the plank fell endways on the man's head. He was removed to the hospital, where he succumbed to a fracture of the skull and other injuries. Witnesses were of opinion that the accident was unavoidable. The jury returned a verdict of accidental death, and expressed the opinion that the plank ought to have been securely fixed.

Engineering Notes.

◆

EDINBURGH.—Good progress is being made with the work of demolishing the old North Bridge, and of laying the foundations of the structure which is to take its place. Mr. Blyth, C.E, of Edinburgh, is the engineer. The contractors, Messrs. William Beattie and Sons, Fountainbridge, Edinburgh, began in April last, and already nearly the east half of the bridge has been taken down, save the central arch, while simultaneously those parts of the two buttresses of the new bridge which can be got at are well under way; the south pier foundation is up to the rail level, and the north pier foundation is about half finished. The arches, before being touched, were centred with heavy timber. Half-a-dozen cranes of various sizes and styles are in use to lift the material from one stage to another, for about 6,000c.ft. of stone have to be dealt with in taking down the bridge, besides 500 tons of iron, which were placed in position when the bridge was widened 20 years ago. The ashlar stone of the old bridge, which was erected in 1772, as it is taken down, is sent to a shed on the rail level to be cleaned, and it will be utilised in connection with internal work in the new piers. The rubble is sent to a stone crusher to be broken up for use in the concrete beds which constitute the foundations of the piers of the new bridge. The rubbish is shot down spouts into waggons beneath. Nothing of noteworthy kind has been got so far in connection with the demolition, save a few moulded stones from the rubble work, which are supposed to belong to Old Trinity College Church. As to the new bridge, in excavating for its foundations the contractors have gone down about 40ft. below the rail level—28ft. of that being through made-up ground. The south pier, extending from east to west, measures 100ft., and has a breadth of 22ft. 6in. Right round this area were driven a series of pitch-pine piles, 12in. by 6in.; then the soil was excavated to a depth of 40ft. There hard boulder clay was reached, and upon this the pier is founded. The whole of the interior was then filled with a solid mass of concrete—there being 4,000 tons of concrete in the base of this pier. Three feet below the rail level the contractors began to use a facing of stone, and the pier from this point up to the street level will be of solid brick, set in Roman cement and faced with ashlar cubes. The abutments go down 50ft. below the ground, or 12ft. deeper than those of the old bridge, and measure from back to front 33ft. They are of rubble work, faced with ashlar. About 150 men are at present engaged upon the work.

◆

By an Act passed by the Legislature of the State of Ohio a clay-workers' school has been established at the Ohio State University, where the chemistry, mechanism, and manual work of everything connected with clay industries is taught. Professor Orton is the director of this school.

Greater Southampton will become an accomplished fact within a few days, the opposition to the provisional order extending the boundaries of the borough of Southampton, threatened by the Shirley and Freemantle district board, having been withdrawn. The provisional order only awaits the Royal Assent to come into operation.

The De Lank granite works, which have been closed for nearly two years, were reopened last week under new auspices. The Eddystone Granite Company, since their formation in 1889, have done much to develop these quarries, having opened out extensive beds of rock which have produced unusually large and fine blocks of fine granite. The company was selected by Mr. Wolfe Barry, C.B., and the contractors of the Tower Bridge to supply the granite for the greater part of that erection. Machinery of the most modern type has now been erected under the supervision of Mr. W. H. Stanger, C.E., of Westminster, the whole being worked by a 200H.P. turbine driven by water from the De Lank river.

At the town hall, Colne, on Friday, a Local Government Board inquiry was held by Mr. Clerke into an application by the Colne District Council for sanction to borrow £3,000 for purposes of sewage disposal. The clerk to the council said the council had already expended about £50,000 on the sewage farm. The area of the farm was 25 acres. The system of sewerage was downward intermittent filtration. There were six tanks at present in use, and by the proposed alteration there would be eight tanks. There were from six to eight miles of private street sewers in the town, in addition to the main sewers, and 150 streets were now being connected with the main sewers.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

ARCHITECTURAL ASSOCIATION.—The session for 1895-6 of the Association will be opened on Friday, Oct. 11, when the president, Mr. W. D. Caröe, F.R.I.B.A., will deliver his inaugural address. The subsequent meetings, all held on alternate Friday evenings at 7.30, in the R.I.B.A. meeting-hall, 9, Conduit-street, W., are as follows:—

Nov. 8.—"Pompeii" (with lantern illustrations). Mr. Talfourd Ely, M.A.
„ 22.—"The Municipal Control of Buildings." Dr. G. B. Longstaff, L.C.C.
Dec. 6.—"Scenic Art." Professor Herkomer, R.A.
„ 20. { "Brickwork." "Leadwork." Mr. C. Hill. "Woodwork." Mr. R. Rust.
1896.
Jan. 10.—"Municipal Buildings." Mr. Henry T. Hare.
„ 24.—"Copper." Mr. Nelson Dawson.
Feb. 7.—"Technical Institutes." Mr. Sidney H. Wells.
„ 21.—"The Modern Stencil." Mr. Arthur Silver.
Mar. 6.—"Masonry" (Practical Stonework). Mr. Hervey Flint.
„ 20.—"The Architecture of the Teutonic Order, with Particular Reference to the Restoration of the Marienburg." Mr. C. Fitzroy Doll.
April 24.—"The Present Position of Architecture at the Royal Academy." Mr. Francis E. Masey.
May 8.—"Fabrics." Mr. Aldam Heaton.

THE SOCIETY OF ARCHITECTS.—The anniversary meeting of the Society of Architects will be held at St. James's Hall, Piccadilly, S.W., on Tuesday, October 29th. The recently-published list of members shows a steady increase in numbers. The roll now contains 486 ordinary members, 18 honorary members, and 9 associates, a total of 513 names in the three classes, whereas at the corresponding period last year the numbers in the three classes were 453, 16, and 8 respectively—in all 477.

◆

CHIPS.

At a meeting held at Worcester last week it was decided that the services of the ex-mayor, Mr. G. H. Williamson, to the city should be commemorated by a portrait to be painted by Mr. Hacker, A.R.A., and to be hung in the city Guildhall.

A new public clock, manufactured by Messrs. W. Potts and Sons, of Leeds, is about to be placed in the lantern tower of St. Nicholas's Cathedral, Newcastle-on-Tyne. The clock is the largest in the United Kingdom, with the exception of the one on the Houses of Parliament. The cost, £650, in addition to £80 for new dials, has been borne by the city council of Newcastle. When the new clock is fixed, the old one will be transferred to All Saints' Church tower in the same city.

The fair and markets committee of the town council of Stamford have received tenders for the making of a new cattle market. The tenders range in price from £7,470 down to £5,530, and the committee have unanimously decided to recommend the council to accept the lowest tender, that of Mr. John Woolston, of Stamford. The committee estimate that the total cost of the market, exclusive of one of Ive's precipitating tanks, will be £7,283 19s.

A portrait of the Bishop of London, by Professor Herkomer, R.A., subscribed for by the clergy and laity of the diocese, is to be painted at a cost of £750, and then permanently placed with the portraits of past bishops in Fulham Palace.

The foundation-stone of a mission church was laid in Head-street, Pershore, on Friday. The hall will measure 50ft. by 24ft. exclusive of apse and classroom. Mr. W. Lunn, of Malvern, is the architect, and Messrs. Nicholas Brothers, of Pershore, are the contractors.

Memorial-stones of new Primitive Methodist Sunday schools were laid in Hewitt-street, Lostock Graham, Cheshire, last week. Mr. Robert Woodier is the contractor.

The town council of Shrewsbury have decided to purchase Monkmoor Farm, consisting of 172½ acres, with the residence, buildings, and three cottages upon it, for £22,500, as a sewage farm.

The Burt Memorial Hall, at Newcastle-on-Tyne, the headquarters of the Northumberland Miners' Association, has just been completed. The building, which has cost £7,000, has been erected from designs by Mr. J. W. Dyson, Grainger-street, Newcastle.

Mr. E. C. W. Prouse, a railway engineer, was measuring a large stone on a crane at Westbury when the jib of the crane broke, fell on him, and instantly killed him.

The three small pictures lent to the National Gallery by Mr. George Southey, and hung in the central octagon hall on Wednesday in last week, are "A Portrait of a Man," by Bartholomaus Bruyn; "Portrait of Costanza de Medici," by Domenico del Ghirlandajo; and a "Virgin and Child," attributed to Dierick Bouts.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to THE STRAND NEWSPAPER COMPANY, LIMITED.

TERMS OF SUBSCRIPTION.

One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India, £1 6s. 0d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front-page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No Front-page or Paragraph Advertisement inserted for less than 5s.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page Advertisements and alterations in serial advertisements must reach the office by Tuesday morning to secure insertion.

SITUATIONS.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is ONE SHILLING FOR TWENTY-FOUR WORDS, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., LI., LIII., LIV., LVIII., LIX., LX., LXI., LXII., LXIII., LXIV., and LXV. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

RECEIVED.—B. Lumley.—A Reader.—N. C. and Co.—L. W. (Rochester).—E. T. M.—S. D. and Co.

◆

Correspondence.

LYNN MUNICIPAL BUILDINGS.

To the Editor of the BUILDING NEWS.

SIR,—I have pleasure in answering the letter by Mr. Silcock, a gentleman from whom I received much courtesy when at Lynn obtaining particulars for the competition. By his letter the case appears in a nutshell, and I shall perhaps seem pig-headed if I still hold to my opinions, though I certainly would not withhold my apologies to Messrs. Tree and Price if I felt they were clearly entitled to them; but it would be premature to offer them at present. Before doing so I require to know the following:—1st. That all the accommodation asked for has been substantially provided. 2nd. When the final account has been sent in that the stipulated price has not been exceeded; and last, but not least, that all the costly, elaborate, and richly-moulded and ornamental stonework, so clearly expressed in the perspective, has been carried out in a substantial manner, and that the interior is, at least, a little in keeping with it.

But whatever Messrs. Tree and Price may accomplish, I still maintain that the large amount spent in an elaborate front is out of all proportion to the total sum to be spent on the building. That this ornate design of "It Speaks for Itself" "caught on" with the assessors is clearly proved by looking at Mr. Sedger's design (I only mention his on account of it being placed second; Mr. Sedger is a perfect stranger to me). In this design the plan is distinctly the best; by keeping to a more simple front, more money has been spared for the plan. In short, the appearance of Messrs. Tree and Price's design is quite inconsistent with the cost of the whole building. It has all the appearance of "money is no object," when the contrary was the case, according to conditions.—I am, &c., One Disgusted.

"IS A CONTRACTOR DESIRABLE?"

Sir,—The writer of the interesting article in last Friday's issue of your admirable journal on this subject scarcely refers to the fact that contractors and builders are every year more and more developing into mere factors, scarcely doing any of the work by their own men, and taking often large profits for doing precious little, while the sub-contractors have to execute the work and take all risks at a very narrow margin of profit indeed. A vast quantity of stonework is now wrought at the quarries, and so brought on to the jobs ready for the fixer; the brickwork is sublet more than often; the iron work nearly always is, of course, or if special makes are specified, the builder demands his 10 to 15 per cent. for actually doing nothing. The joiners' work more than often comes from Sweden; and as for working mouldings, even where the contractors retain their joiners' shops, we all know that foreign machine-made mouldings are bought by the mile. The rage for cheapness has much to answer for in this respect, and scamping work, of course, is the practical outcome obtained by the public not by any means infrequently, and architects find themselves meanwhile acting the part of technical policemen—"a life which is not a happy one." Boys are not put to the building trades as they used to be, and the problem of obtaining really skilled artificers is therefore exceedingly difficult, while the master builders becoming thus mere factors, all interest in good work is gradually and surely being lost.—I am, &c.,

An Old Tee-Square.

WAR DEPARTMENT SURVEYORS.

Sir,—To afford "Prospect" the information he seeks, "Traveller's" letter must be supplemented by explaining that had the assistant surveyor alluded to been allowed to complete the designs for the barracks at Malta, and had a satisfactory building resulted, it would have been triumphantly pointed to as the work of Royal Engineer officers when next their capacities as architects had been called in question.

The "assistant surveyor" is not invited to join the service of the War Office as architect or civil engineer to the War Department, but he is constantly employed in either or both of these capacities. His failures in them are duly scored against him when they occur, but his successes are systematically appropriated by the Royal Engineers.

As regards travelling, surveyors must, of course, travel at the public expense; the concession recently made to them allows them in addition to recover the actual railway and steamer fares of a wife and family.

For moving himself and family from Cork to Dover, or from Edinburgh to Plymouth, he would be allowed the cost of the direct railway and steamboat tickets with a limited weight of baggage and a small personal allowance *for himself only* (both based on military requirements). That neither of these journeys would ever be undertaken without a break; that wife and family must carry luggage as well as himself; that the expenses of moving household furniture and effects are considerable—are facts ignored by the War Office, although they may have to be met by the assistant surveyor once in every two or three years.

Compare the Admiralty service, in which C.E.'s are allowed all actual expenses necessarily incurred (hotel and other bills being accepted as vouchers), and a fair compensation is even allowed for such items as alterations required to carpets, &c., in moving from one house to another!

Since the correspondence in your columns in 1893, surveyors have been graciously permitted to affix to their names in the Army List and other publications such professional or university degrees as they may possess; but I have not heard of any other concessions to which "Prospect" can be alluding.

Certainly within the last two or three years the lack of training of Royal Engineers as architects and civil engineers has been very fully exposed in the professional journals, both military and civil. So if "Prospect" is of a speculative turn, and very hard up for employment, he may think it worth while to enter the War Department on the chance that "the new brooms" at the War Office may "sweep clean," rid the British taxpayer of all amateur architects and civil engineers at present in War Office employment, and give fair scope and adequate rewards to qualified professional men in their stead.—I am, &c.,

Verb Sap.

CHIPS.

The Barrett-Browning clock tower and institute, just erected at Ledbury, was formally handed over to the committee by the builder (Mr. George Hill) on Saturday.

Steady progress is being made with the works of drainage in course of execution in the Midlands for the Upper Stour Valley Main Sewerage Board. The engineers are Messrs. E. B. Martin and W. J. Fiddian, of Birmingham, and the contract for the supply of cast-iron pipes is being carried out by Messrs. Cochrane and Co., of Dudley.

A vocalion organ, the gift of Lord Tollemache, has just been placed in the parish church of Helmingham, Suffolk. The case is of Gothic design, and executed in carved oak. Messrs. Hill and Sons, of London, were the builders.

The Master Builders' Association of Bristol have made a protest against the acceptance of a tender for new board schools at Weston-super-Mare, as, though applications were invited from builders in the Bristol newspapers, the tender of Messrs. R. Wilkins and Son at £9,949, and Mr. G. H. Wilkins at £9,840, both contractors of that city, were below the tender accepted by the board, the amount of which was £10,291.

Some 500 members of the Manchester district of the Association of Operative Plasterers visited Chester on Saturday. They were accompanied by the Ashton Mills Brass Band, and marched in procession from the Northgate Station to the Roodee, where foot races were held. The annual dinner was afterwards held in the Temperance Hall, under the presidency of Mr. M. Dellar. A letter of welcome from the Cheshire Trades Council was received at the dinner.

An important addition to the facilities of the port of Southampton has just been completed in the south extension quay of the new sea wall. At this quay two of the largest vessels sailing from the port can be accommodated, and being a deep-water berth, ships of the greatest draught can approach or leave at any state of the tide.

A course of twelve Swiney lectures on "The Geological History of Man" will be delivered by J. G. Garson, M.D., V.P. Anthrop. Inst., in the lecture-theatre of the South Kensington Museum, on Mondays, Wednesdays, and Fridays, at 5 p.m., beginning Friday, 4th October, and ending Wednesday, 30th October. Each lecture will be illustrated by lantern-slides and limelight. Admission to the course is free.

The London and North-Western Railway Company having decided to construct a new station at Prestatyn, a rapidly-growing watering-place on the North Wales Coast, have let the contract for the work to a Liverpool firm, and work will be commenced almost immediately. The existing station is out of date, and inconvenient.

The election of officers and committee of the A.A. Camera Club, which took place at a recent general meeting, resulted as follows:—President, E. W. M. Wonnacott; vice-president, R. Elsey Smith; committee, J. P. Clark, Geo. Fleetwood, Matt. Garbutt, and A. J. Roddis; hon. secretary, Francis R. Taylor; hon. treasurer, C. H. Freeman.

After a long and painful illness Mr. William Clark, who was for many years surveyor to the Kingswood highway board, died at his residence at New Cheltenham on Saturday. Mr. Clark was 80 years of age.

On Saturday afternoon a new technical institute, which has been built at a cost of between £4,000 and £5,000, was opened at Runcorn by Sir John Brunner, M.P., the principal donor.

Mr. W. J. Bird Clerke, C.E., held an inquiry at the Salford Town Hall on Friday on behalf of the Local Government Board, with reference to an application of the Salford corporation to borrow £18,000 for the purposes of electric lighting in the borough. The town clerk stated that some time ago an application was made to the Local Government Board for power to borrow £50,000 for electric lighting, but £32,000 only was sanctioned, and the present inquiry related to the balance of that amount. Mr. Edward Manville, the engineer appointed for carrying out the electrical lighting in the borough, explained the details of the scheme, and observed that the works had been carried out in accordance with the plans originally submitted to the Local Government Board. The extensions were outside the compulsory area.

The construction of the section of the Central Siberian line between the town of Tomsk and the station of Tomsk-Taiezhni has just been taken in hand. Exile labour is being used for the embankment works.

Intercommunication.

QUESTIONS.

[11411.]—**House Sump.**—I have plans to prepare for villa on a plot of land which falls from back to front; there are no sewers in the village, and the house sewage will be drained into a sump that cannot be placed any further away from the house, than, say, 15 yards, and the only position available is near the entrance gates. Will any of your readers be good enough to describe the best construction for such a sump, disconnection of drainage, and ventilation?—Arran.

[11412.]—**Varnished Wood Ceiling.**—Some years ago I put up as above, but from gas and repeated varnishing it has now got to be very dark in colour, and giving no reflected light. Can any kind reader give me his opinion, as to what I could do to recover my lost light, and in the most effective and inexpensive manner? The ceiling is about 40 squares.—G. B. D.

[11413.]—**Geometrical Projection Drawings.**—Would any of your kind readers inform me as to where I can get a treatise on the above subject? Any information as to the principles on which the above subject is worked would be most acceptable.—Student.

[11414.]—**Stains in Stone.**—In a cream-coloured stone which I use there are reddish stains, also veins and spots of a deep brown—iron, apparently—which run in wet weather. Is there any chemical which will bleach out these defects, so as to bring them to match the rest of the stone, or even reduce the strong contrast between the parts. I do not wish to use paint if it can possibly be avoided.—Z.

[11415.]—**House Linings.**—Some time ago I read of an American thin, smooth-surfaced material for casing the interiors of houses if in an exposed situation, composed of rolled, pressed, glazed paper, upon a very thin slice of wood, ⅛in. altogether. Can any reader give me particulars of this, or any similar material?—Damp.

[11416.]—**Civil Engineering.**—Will some reader kindly give me the names of a few of the best works for the study of civil engineering?—W. H. H.

REPLIES.

[11398.]—**House Drains.**—Sir Robert Rawlinson, chief engineering inspector of the Local Government Board, states in his "Suggestions as to the Preparation of Plans for Sewerage," "The sewers should be at such depth as will effectively drain house-basements, and, when practicable, not less than twice the full diameter of the sewer below basement or cellar floors, to prevent house drains from being back-watered. Drains from basements to sewer should have a clear fall of not less than 1 in 60, and should enter sewer by a junction specially provided for the purpose." In many districts in London the levels of cellar floors do not give the requisite fall for house drains, and as a consequence, when a heavy rainfall happens, they are rendered inoperative, and the backwater forces its way into the basement. For falls and size of house drains, "A. B. M." had better consult Neville's Tables. A 4in. drain flowing half-full requires an inclination of 1 in 60, and a 6in. drain a fall of 1 in 85.—Civil Engineer.

[11399.]—**Rolled Joist.**—The formula I gave from Hurst is for rolled joists with top-flange only, and ought to have been so stated. "X." is quite right as to 7 being the constant for rolled joists of I-section, which is the most usual form. These, the same authority says, are about one-sixth stronger than single-plate girders.—G. H. G.

[11403.]—**Estate Management.**—In reply to the query of "Z. Y. X.," asking for the names of books which treat of the laying out of building estates, &c., I bought a book called "The Practical Directory for the Improvement of Landed Property," by R. Scott Burn. This can be obtained from a second-hand book-store situated in a narrow alley leading from Lincoln's Inn-fields to Holborn, London, but I have forgotten the name and the exact place.—No Sig.

[11408.]—**Church Screens.**—"Remains of Ecclesiastical Woodwork," by the late T. Talbot Bury, architect, F.R.I.B.A., and published in 1847, contains illustrations and sections of oak screens, Early English, Decorated, and Perpendicular. The work is a most excellent one, and can, I believe, be obtained at Batsford's, 52, High Holborn, W.C., at considerably less than the original price.—Harry Hems.

The President of the Local Government Board has ordered an official inquiry to be held into the recent failure of supply by the East London Water Works Company, and the means to be adopted to prevent the recurrence of any deficiency.

On Wednesday week, Colonel W. Langton Coke, on behalf of the Local Government Board, conducted an inquiry at Wednesbury with reference to an application by the town council for sanction to a loan of £7,500 for addition to the sewerage and sewage disposal works to meet objections to the effluent passed into the Tame from the works.

Members of the English Arboricultural Society held their eleventh annual excursion at Kelso last week. Numbering fully 70, the party arrived on Wednesday afternoon, August 28, and the annual meeting was held in the Cross Keys Hotel in the evening, the chairman being Mr. Maughan, Jervaux Abbey. On the following day the excursionists drove to Mertoun, Dryburgh, Bemersyde, and Abbotsford; and on their return they dined together. The visit was brought to a close on Friday, the programme including a drive to the finely-wooded estates of Springwood, Hendersyde, Floors, Newton Don, and Stichill.

Legal.

SUBTERRANEAN WATER.

THERE can be no legal property in percolating water. There are rights to a flow of water, and, of course, to water which is collected upon land, and so reduced into possession; but while the water is actually percolating through the soil, it seems to belong to nobody in particular. This point was well brought out by the House of Lords in a case affecting the Borough of Bradford as a water company (*Times*, July 21st). The corporation had taken over the Bradford Waterworks, and with it the springs called "Many Wells," which were part of their sources of supply. The owner of a farm on higher ground adjoining the lands through which the water ran to make these wells had lately decided to work the minerals beneath his land, and to do this economically he was about to make a drift or tunnel, so as to keep his mines clear of water without going to the expense of constantly using pumping engines. But it appeared that if he did this the effect would be to cut off the underground stream of water which supplied these "Many Wells," and so to reduce the supply of the Bradford Corporation. To this they objected, and brought their action to restrain making the proposed drift or tunnel, on the ground that it was an infringement of their rights in these springs or wells.

Although Mr. Justice North had granted the injunction asked by the Corporation, his decision was reversed by the Court of Appeal, whose ruling has now been confirmed by the House of Lords. Strictly put, the point decided came to this. The Act in question prohibited the taking water which belonged to the company; but it, of course, did not prohibit the taking of what was not theirs. The defendant, therefore, could not be prevented from draining his own mine simply because the effect of doing so would be to cut off the water from these wells: because, while it was percolating, the water did not belong to anybody. The result is that the defendant succeeded, and if the corporation wish to stop this cutting off of subterranean water, they will have to purchase his land—minerals and all—which is, after all, only what other trading companies often have to do in order to protect their own rights of property of this description.

Fred. Wetherfield, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

Architect. — Drawings. — Remuneration, &c. — (1) This would depend on the conditions of the competition. (2 and 3) There is no rule of law, nor any legally binding custom; but about half the commission should be charged.

Constant Reader. — Plans. — Payment. — The vicar and the charity committee would seem to be responsible for some remuneration.

Work.—Cottager.—Wall.—B. as a private owner would have no legal right to underpin A.'s wall without his consent.

* * *

The Bishop of Chichester visited Bognor on Thursday in last week, and dedicated a new church tower and a peal of bells.

The Queen will lay the foundation-stone of the New Mar Lodge next month. The Queen, it is stated, takes much interest in Mr. Mackenzie's plans, and in details of the materials to be used in building. The Duke is putting as much of the work as possible in the hands of local men and those whom they employ. It is expected that the New Mar Lodge will be finished by the end of 1896.

A mission-room in Oak-road, Northam, near Southampton, has been enlarged, raised in height, provided with a chancel, and was reopened on Wednesday week as a church for the deaf and dumb. The old plain square windows have given way to traceried lights. A dado has been run round the church, and a wood-block floor laid down. The chancel floor, steps, and also the other fittings are of oak. There are three stained-glass windows in the chancel, the centre one containing a representation of Christ healing the sick. In the side windows are figures of St. Mary and St. John. The chancel is a memorial to the late Mr. R. S. Pearce, late town clerk of Southampton, who died December 28, 1893. The architect for the new building was Mr. J. E. Batchelor, of Salisbury, and the builder, Mr. H. J. Kite, of the same city. The building will accommodate a congregation of about 100, and the alterations have cost about £500.

LEGAL INTELLIGENCE.

Wooden Shop on Wheels and the Building Act.—At Lambeth Police-court on Saturday, Mr. Joshua Keevil, of the Brixton Granaries, Stockwell-road, was summoned before Mr. Hopkins by the London County Council for unlawfully setting up a wooden structure without having first obtained for that purpose a license from the London County Council. The proceedings were taken under the 84th section of the London Building Act, 1894. Mr. Thomas Chilvers, of the Solicitor's department of the Council, appeared in support of the summons, and Mr. R. A. Kinsbury defended. Mr. Chilvers said the defendant was a corn-merchant, carrying on business in the Stockwell-road, and until June 24 of this year he carried on business at No. 246 in that road. He then disposed of those premises to Cooper's Stores, and between that date and June 29 he erected a wooden shop on wheels on an adjoining piece of land. At the rear there was a covered way and the defendant could either wheel the structure under it or keep it level with the pavement as he pleased. The structure was composed of wood, and was fitted up as a shop. The Council drew the defendant's attention to the matter, and served a notice upon him. To the latter no reply was received, and this summons was issued. Mr. G. S. Turner, a surveyor of the London County Council, stated that on June 2 he received a letter of complaint as to the structure in question. He afterwards made a survey and found that the place was used as a shop for the sale of corn, grain, and seeds. The building was entirely constructed of wood, but was covered externally with corrugated iron. It was 9ft. 9½in. in width, 12ft. 9in. in depth, and 11ft. in length. There was a counter in the middle, and the front was composed of a shop-window and doorway. It stood about 2ft. from the pavement, and was lighted by gas. The consent of the Council had not been obtained to the setting up of the structure. Mr. Parsons, the district surveyor, called for the defence, said the defendant called on him with reference to the structure, and he came to the conclusion that the building was not one that had anything to do with him as district surveyor. Mr. Hopkins adjourned the case until October 8, in order to give the defendant an opportunity of coming to an arrangement with the Council.

In Re Joseph Bates.—At the sitting of the St. Alban's Bankruptcy Court, held on Friday, the public examination took place of Joseph Bates, builder, of Chorley Wood. The summary of affairs showed gross liabilities £3,824 18s. 7d., and amount expected to rank for dividend £2,837 6s. 3d. The estimated assets showed £624 16s. 7d. which, after deducting £35 15s. 10d. for rent and taxes, left a deficiency of £2,248 5s. 6d. The report of the Official Receiver stated that in 1869 the debtor took to the business until then carried on by his father. The value of the business was about £50; he had no capital of his own; since then he has continued to trade as a builder and carpenter, in his own name. The examination was adjourned until Sept. 17.

Morden College v. Lethbridge and Prior.—This was an action before the Official Referee, Mr. Very, for dilapidations on property leased by Morden College, which lease expired Michaelmas, 1888. The claim was for £2,000. The defendants paid £300 into court, which they pleaded was sufficient to cover the dilapidations existing at Michaelmas, 1888, having regard to the repairing covenant having the words "the reasonable use and wearing" limiting its force, and also taking into account the class and construction of the houses. The hearings were on June 20, 21, 22, 24, and 25, and July 22 and 23 last. Mr. Gore Brown, instructed by Messrs. Reyroux, Phillips, and Co., appeared for Morden College. Messrs. Barnes, Williams, and Lawton R. Ford were the surveyors supporting the claim. Mr. Reginald Bray and Mr. Bartley Dennis, instructed by Messrs. Lethbridge and Prior, appeared for the defendants. Professor Banister Fletcher, Mr. H. Phillips Fletcher, and Mr. C. Jones were the surveyors giving evidence for the defendants. The referee has now given judgment for the defendants with costs.

* * *

The Cotham Wesleyan Chapel, Redland-road, Bristol, which has been closed for renovation, was reopened on Sunday. The work of improvement and decoration has been carried out by Messrs. Thomas and Son, of the Triangle, Clifton, under the direction of Mr. Herbert J. Jones, M.S.A., architect, Wellington-chambers, Bridge-street, Bristol.

The War Office has decided to largely extend the Military Hospital at Stoke, near Plymouth. Four new blocks, having accommodation for one hundred patients each, and further official residences and quarters for married members of the medical staff, are to be erected, at a cost of about £40,000. The authorities are in negotiation with the Ecclesiastical Commissioners for the purchase of a site of about four acres, which is at present glebe land, and for which the Commissioners ask £12,000.

WATER SUPPLY AND SANITARY MATTERS.

Edinburgh.—The Streets and Buildings Committee of Edinburgh Town Council took an important step on Friday in the scheme for covering-in the Broughton Burn, which, in one form or another, has been before the corporation for many years. The committee proceeded to open estimates which had been received, and resolved to recommend one amounting to £6,000. The work is to be done under the supervision of the burgh engineer. The portion of the Broughton Burn which remains to be covered in extends from the rear of the Catholic Apostolic Church at the foot of Broughton-street as far as a point near the North Leith branch of the North British Railway Company, in the vicinity of Powderhall Station. Part of the contract is also to cover in the Gayfield Burn, so far as it runs open, from near the foot of Annandale-street to a point at the north-east corner of the grounds of Gayfield House, where it will join the Broughton Burn sewer. The new main sewer, which will finally effect a junction with the Water of Leith sewer, will follow the line of a proposed new street from Blandfield Meadows to Bellevue, whilst the Gayfield branch sewer will follow the course of a proposed new street in line of Annandale-street. The sewers will be egg-shaped, measuring 3ft. by 4ft. 6in. and 2ft. 8in. by 4ft. respectively, and they will be constructed of 9in. brickwork set in cement, with stone sills. With the exception of a few hundred yards of the Figgate Burn which still remain uncovered from beyond the London-road as far as the municipal boundary, the works now estimated for will cover-in the last of the open sewers within the city bounds.

Morley, West Riding.—The corporation of Morley received on Monday a report from Mr. Charles Gott, C E, of Bradford, announcing the completion of the contract for the waterworks at Withens Clough. The total cost of the whole of the works of the reservoir and north and south conduits was £49,820, of which amount £47,700 had already been paid, leaving the final balance now due, for which a final certificate was inclosed. He had dealt with the whole of the claims of the contractors, and considered that the settlement was in every way satisfactory. His original estimate for these works was £45,903, and the excess of expenditure was £3,917, which covered the additional cost of the removal of the peat, the wing puddle trenches, the pitching of inner slopes, and all extra works. The reservoir has a capacity of 30,000,000 gallons larger than the original design, which was more than equal to the value of the additional outlay.

Shrewsbury.—The property-owners and ratepayers in the borough have received a voting paper as to the advisability of adopting a new water scheme. The paper explains that the present supply of water from the river is most objectionable; that the new intake will be further up the river—at Shelton—and that a pumping station, subsiding-tanks, and filter-beds will be provided within the borough boundary. The service reservoir will be near Hamond Railway Station, and 108ft. above the highest ground-level in the borough. The water will be as pure as that of any river supply in England. The probable cost will be about £48,000, and will entail an increased rate of 1¼d. in the pound.

CHIPS.

The exhibition which the directors of the Grafton Galleries propose to hold in May next will have to do with the drama and the stage. The walls will be hung with portraits of actors and actresses past and present, and with pictures of dramatic subjects. The cases will contain theatrical properties, curiosities, and objects of interest, and a certain amount of space will be given to playbills.

It was announced on Saturday that the anonymous donor who has contributed about £7,000 for the restoration of the old parish church tower and clerestories at Kidderminster is Mr. John Brinton, formerly M.P. for the borough. The work is practically completed, and arrangements are being made for a dedication service on October 31.

The great scheme of alterations and improvements at Bamburgh Castle instituted by the new proprietor, Lord Armstrong, is progressing satisfactorily. As many as 120 workmen are engaged upon the work, which is personally superintended by Lord Armstrong himself.

The foundation-stone of the extension to the infants' department of the National Schools of St. James's Parish, Haydock, near St. Helen's, was laid by Lord Newton on Saturday afternoon. At present the infants' school provides accommodation for 150 children, and by an expenditure of £160 the seating capacity of the building will be increased so as to find room for 220 scholars. The alterations are being carried out from plans prepared by Mr. T. Robinson, of Haydock, the contractors being Messrs. Mercer, of Haydock.

Our Office Table.

Several of the principal provincial art galleries opened their autumn exhibitions on Monday morning, and, as usual, most of the leading pictures of the year are rehung at one or other of these institutions. The pioneer of these municipal art exhibitions in the provinces is the Walker Gallery at Liverpool, which this year celebrates its twenty-fifth anniversary with a display of canvases of special excellence. In the central positions of the principal room Millais's too dramatic "Speak, Speak!" is hung *vis-à-vis* to Leighton's "'Twixt Hope and Fear," a study of a girl. Other noteworthy exhibits, including G. F. Watts's "Outcast Goodwill," the late Henry Moore's last landscape, "Glen Orchy"; Ralph Peacock's woman with flying drapery bearing the uncomplimentary legend from the Persian, "A rose, a lily, a dove, a serpent, a little honey, and a handful of clay"; Frank Dicksee's "Reverie" (which has been purchased for the permanent collection by the Liverpool Corporation), Henrietta Rae's "Apollo and Daphne," Solomon J. Solomon's "Echo and Narcissus," Shannon's portrait of "Joseph Hoffman," and Melton Fisher's interior of a draper's shop, entitled "Vanity Fair," may be particularised.

The show at the Manchester City Art Gallery, the thirteenth of its class, is scarcely equal to the average display in that city. Leighton is represented by two figure subjects, G. F. Watts by his "Charity" from the New Gallery, and Millais by "St. Stephen," "Time the Reaper," and "The Empty Cage," James McWhirter by his "Austrian Tyrol," one of the works purchased by the Chantrey trustees, Briton Riviere by his "Phœbus." The best landscapes are by H. W. B. Davis, Alfred Parsons, Alfred East, David Murray; the chief portraits by J. J. Shannon, Professor Herkomer, Hon. John Collier, and Luke Fildes. Noteworthy works recently seen in London are Clausen's "Mowers," Walter Crane's "St. George and the Dragon," Rupert Bunny's "Forerunners," and Gotch's "Death the Bride." The principal work in sculpture is Onslow Ford's bust of a girl.

At Birmingham, a collection of more than average interest has been brought together under the auspices of the Royal Society of Artists. The president for the year, Alma Tadema, is represented by two small portrait groups from the New Gallery, "George Simonds and Family," and "Mrs. Roland Hill and Her Children." A prominent landscape is Millais' "Halcyon Days," which is flanked by Wetherbee's "Chalk Pit" and Donovan Adams's "Sunshine and Shadow," beyond which is the Chantrey work of last year, Briton Riviere's Sunset in the Arctic regions, entitled "Beyond Man's Footsteps," while to balance it on the other side is David Murray's "Dorset Downs," a scene near Corfe Castle. Mrs. Alma Tadema shows a cabinet work, "The Pain of Parting," Val Prinsep his panoramic "A Versailles," W. B. Richmond his "Persephone and Psyche in the Shades," and G. F. Watts his "Jonah." In this exhibition also are seascapes by Brett, Napier Hemy, and Moffatt Lindner; landscapes by La Thangue, Alfred East, James Orrock, and Oliver Baker, and *genre* works by Dendy Sadler, Walter Langley, and Yeames.

The corporation of Ipswich adopted at their last meeting a scheme for utilising the Elizabethan mansion in Christchurch Park, an historic building of red brick, with stone dressings, built on the site of Holy Trinity Priory in 1548 by Sir Edmund Withepol, and recently presented to the town by Mr. Felix T. Cobbold. The mansion, which consists of 16 rooms on ground floor, and 13 on the first floor, stands in the park recently purchased by the corporation, and was illustrated in the Building News for August 25, 1893. The art school built in High-street, from Mr. Horace Cheston's designs in 1882, has long been overcrowded, and under the scheme just adopted, it has been decided to remove to Christchurch all science and technical classes excepting chemistry. The rooms vacated at the High-street buildings are to be used by the Art School. The committee will also take over the entire organisation of the Working Men's College in Tavern-street, and close the present buildings, carrying on at Christchurch the commercial classes suited to the needs of the time. The kitchens at Christchurch will be fitted up for cookery classes, and the entrance hall at Christchurch will be reserved for a museum of local antiquities and ethnological museum; the three rooms on the first floor of the east wing to form a picture gallery. This would enable some part of the mansion to be always available to the public. The centre tower will be fitted up for meteorological observations, with rain gauge, anemometer, sun-register, barometers, &c. The mansion is to be renovated, and adapted for its new possessions, at an estimated cost of £600, from plans prepared by Mr. John S. Corder, of Ipswich, and the work will be carried out by day labour under Mr. Corder's direct supervision.

The quarterly communication of the Grand Lodge of English Freemasons was held on Wednesday night at the Freemasons' Hall, Mr. W. W. B. Beach, M.P., presiding. The principal business of the evening was the consideration of a motion by Mr. W. Woodward, A.R.I.B.A., a Past Master of the Eurydice Lodge, No. 1920: "That a circular be issued from Grand Lodge setting forth the scheme suggested by him, under which the Freemasons of England would contribute to the decoration fund of St. Paul's Cathedral a sum sufficient for the completion of the cupola and transepts; and the opinion of the craft be ascertained through such circular, and that such steps be taken thereafter to secure the end in view as may commend themselves to Grand Lodge." After a long discussion, in which the Revs. R. J. Simpson and C. J. Martyn and Mr. Philbrick, Q.C., Alderman Dimsdale, Mr. C. E. Keyser, and Mr. Richard Eve took part, the motion was by leave withdrawn, it being generally considered impolitic in a Masonic point of view for Grand Lodge to send out such a circular as was suggested, because Masonry, being universal and recognising no distinctions of creed, it might be tortured or misconstrued into a departure from that great principle.

The excavations promoted by the Cumberland and Westmoreland Archæological Society along the line of Hadrian's Wall have just come to an end. One very important and interesting discovery has been made at Appletree, about a mile west of the Roman fort of Birdoswald (Amboglanna). It has long been observed that at this spot a deep fosse interposes itself for nearly a mile between the wall and the vallum, running roughly parallel to these two works, but finally running into the wall about a mile and a half from Birdoswald. No one has professed to explain the existence of this fosse. Usually it has been held to be a "first shot" for the line of the wall, afterwards altered. It has now been made certain that this fosse is the ditch in front of a turf wall, built, like the vallum of Antoninus in Scotland, of regularly-laid sods, and extending probably the whole length of the ditch. This is the first trace yet found of a turf wall along the English Wall. It remains to be seen whether the clue given at Appletree will result in the detection of further traces, or whether the Appletree turf-wall is an exception. Whichever be the true explanation, the Cumberland Archæological Society is to be congratulated on one of the most interesting "finds" of the year.

Mr. Peter Bibby, architect, of Wrexham, has just patented an improvement in polling booth or secret voting desk compartments. The new booth, instead of being square like the booth now generally used, will be made in the form of a triangle, and fitted with hinges, and a drop desk also on hinges. According to this arrangement, two frames make one desk or compartment, three frames two desks, four frames three desks, and so on. Each additional frame will provide an additional desk or compartment, and these frames will be so hinged together that they can be opened and folded in the same manner as an ordinary draught or fire-screen, and the desks are so arranged that when the compartments are opened they fit into a socket, so that the booths are made quite secure and steady. The special advantages claimed for the invention are greater secrecy for voters, a very much diminished cost of manufacture, and being so much lighter in construction they will be more convenient for handling, will cost less for transit, and will not be so liable to be damaged. These advantages may be illustrated in the following manner: The booths now in use each consist of three frames—two sides and a back—so that supposing six compartments were required it would take 18 frames, whereas, according to Mr. Bibby's arrangement, only seven frames are required to make six compartments.

The Bill for the Registration of Surveyors in the Colony of Victoria appears to have fair prospects of being passed, the Government having promised to consider it immediately the Tariff has been disposed of. A verbal change made by the Parliamentary draughtsman is of some interest, being the substitution of the term "authorised" for "licensed" surveyors. Some objection is likely to be raised to a clause which would make the Bill operative as regards surveyors certified in those colonies (and those only) which pass reciprocal measures; but the majority of the profession are displaying a liberal and federal spirit in the matter. Other Australian colonies are taking analogous action. A similar Licensing measure promoted by the Surveyors' Institute of South Australia was blocked in committee last session, but under the Lapsed Bills Continuation Act will be taken up again this year. A like Bill is before the Legislature of New South Wales.

A novel co-operative system has lately been started among the carpenters and painters of San Francisco, through which the individual workmen are becoming owners of homes of their own without any cost of construction. As soon as any member of the local organisation has saved enough money to buy a lot and the necessary lumber, all his fellow-workmen turn-to the next Sunday and build the house for him. In one of the suburban additions of the city a little colony of these "Sunday homes" has already grown up. The houses are not pretentious, but are solidly built and comfortable.

The newly-built steamer *Penrhyn*, designed especially for carrying slates from the celebrated Penrhyn Bangor slate quarries consigned to the slate wharf, Bermondsey Wall, belonging to Messrs. Roberts, Adlard, and Co., is on her maiden voyage, and is expected to arrive to-day. The steamer carries electric light installation to illuminate when discharging at wharf. The voyage takes a few days, against two to twelve weeks by schooners. As instancing the present great scarcity of slates at Bangor, as elsewhere, we hear that on this occasion the *Penrhyn* is loaded in part with slates to meet another merchants' immediate requirements, Mr. Young, Lord Penrhyn's agent, finding himself unable to despatch two complete cargoes to London immediately.

A building eight stories in height has collapsed during erection in West Broadway, or South Fifth Avenue and Third-street, New York City, and has killed fifteen men, besides injuring several others. An investigation into the circumstances of the failure is being made by the superintendent of the Building Department of the City. The *Engineering Record* coments on the event, and truly says: "The fact that an extra story was added to its top should be a matter of no significance whatever, if the first seven stories had been properly designed." The writer very naturally suggests that the details may have been inadequate, especially the connection of columns and beams, as the cast-iron columns were badly broken. There can be little doubt the column sections or their junction with the beams will be found wanting, and it is hinted that the ends of these beams were connected to the columns by the usual ill-fitting brackets, details which too frequently are used in these erections. The want of proper jointing of these members has been the cause of many failures.

The late Evesham Rural Sanitary Authority employed Mr. J. Wilcox, engineer, of Birmingham, to prepare plans of a scheme for supplying some 15 or 16 villages with water from Broadway Hills, the length of pipes being about 36 miles, and the estimated cost about £12,500. The place of the rural sanitary authority has been taken by two rural district councils—those of Evesham and Pebworth—and these have now decided to adopt Mr. Wilcox's scheme.

The convener of the public health committee of the Edinburgh corporation has provisionally purchased, on behalf of the city, the farm of Colinton Mains for the sum of over £20,000. The farm is 131 acres in extent, and is situated immediately to the south of the Craiglockhart Poorhouse, extending eastward from Colinton-road to Greenbank Farm. The distance from the centre of the city is rather over three miles. The ground is under cultivation at present, and yields a rent of about 3 per cent. on the above purchase price. The farm has been provisionally acquired by the Public Health Committee for public health purposes, and should the purchase be homologated, the committee will propose that the hospitals for infectious diseases should be erected thereon.

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXIX.—No. 2123.

FRIDAY, SEPTEMBER 13, 1895.

GETTING AWAY FROM OURSELVES.

THIS is what we are just now all trying to do, or wishing to do, or regretting that we have failed to do. We "hate the squares and streets, and the faces that one meets," and so, like the lemmings, we set out on our annual march. Nobody knows why these animals go on that journey from which they never return. But naturalists conjecture that, like the poor child in Mr. Hardy's current novel who commits suicide, they vaguely feel that "there are too many of us." It is the same feeling amongst others, which sends out crowds from the cities into the country when summer draws near to what Northumbrians call "the back-end." Everybody likes now and then to stand clear, to feel the fresh air round him, and to see his shadow fall on the open ground and not on the adjacent crowd. To a large extent this is a modern taste. The Middle Ages delighted in society. Populous towns and fertile plains were then in fashion. Rocks and mountains were held to be the haunt of demons. The world lived in dread of supernatural terrors, and people instinctively flocked together. They were still fighting the forces of nature. Frost and flood, lightning and tempest, were far too much for them, and the very surface of the earth was almost unmarked by human action. Now the difficulty is to find a place near home where human activity is not too obvious. The Land's End is littered with stalls like Kew Green or Chingford, Kynance Cove is a site for fancy shops, there is a beer-house on the top of Snowdon, and every spot which becomes celebrated for its beauty is soon strewed with sandwich-papers and bottle-necks. Our ancestors lived in company by choice, but we do so by compulsion. We find it harder and harder to get away from ourselves. And yet, while all this is going on, there are thousands of square miles in England alone where a strange face is seldom seen. There are villages by the hundred where the cottagers stare open-mouthed at a tourist, as if they had met with an angel unawares. Many of these villages are full of interest—archæological, architectural, or scientific. But they do not attract the public. The railways do not run cheap excursions there. Nobody builds vulgar hotels there, or puts down asphaltic pavements, or lights the place with gas. You can see the stars at night as you walk about. In the daytime you smell roses or carnations, or mignonette, and not the vile compound of gas-tar and gravel with which progressive parish councils are now busily besmearing their causeways. These out-of-the-way districts have no money for such "improvements," and for want of money, Nature is once more getting the better of man. This does not mean prosperity, but it often does mean beauty. Gardens overgrown, farms run wild, houses in decay form a sad spectacle, and yet sometimes a lovely one. And it is one which, in these times, architects come across pretty frequently in the course of their studies, if not of their work. Their objects of interest are seldom those of the ordinary excursionist, and so they, more than others, do manage to escape from the crowd.

But it is not merely in a physical sense that our age wants to get away from itself; it is still more the case in art, and especially in architecture. The great Romantic reaction, which began a century ago and is not over yet, has only been a convulsive attempt of the modern world to escape from its modernness. The Gothic revival, and the phases which have succeeded it, are one aspect of this great reaction. It is a reaction which has chiefly affected the cultivated classes. Those who do not read and do not think, see nothing to react against; they are in the same mental state as their great-grandfathers, and are satisfied with the same things. With three meals a day, a house over their heads, and money in the bank, they are content; they do not trouble themselves about conceptions of the universe or ideals of life. It is otherwise with those whose souls are not quite atrophied by disuse. Looking back on the past, they see that "for man's boundless wishes there were then boundless hopes; but now reality is around them and only the wishes are left." So says Jean Paul Richter, one of the first and greatest of the Romanticists, and his words are still far from being out of date. People suppose—perhaps rightly, but perhaps, also, wrongly—that they cannot bring back the hopes, and, all the more, they try to bring back the outward things that went with them. It is in human nature to hold fast to something. When it can hold fast to a belief, as it did in the Middle Ages, it thinks nothing of varying its external forms. We see no looking back in art between the Pagan revival of the 2nd and 3rd centuries, and the Renaissance of the 16th. In Mediæval times the builder was still devising something new. But when beliefs are shifting, humanity seeks elsewhere for permanence, and demands it in its houses and its churches, its architecture and its decoration.

When a man of business makes a fortune in the City—perhaps as a merchant, perhaps as a manufacturer, perhaps even as a maker of what a great cement exporter was lately heard to describe as "that abominable stuff, Portland cement"—he commonly builds himself a house, and though he wants all modern conveniences in it for practical use, he seldom wishes it to appear as modern. What pleases him best is to find an architect who can put up something which, as soon as it gets weather-stained, will seem to have been standing for ages. The artful designer, knowing what is needed, inserts here, perhaps, a hall with great mullioned and transomed windows; there, a bit of tile-hanging; higher up, some external plaster-work; and round at the back a lot of half-timbering, or what nowadays passes for it. He sketches in a garden with evergreens clipped and twisted into cones and ninepins and peacocks' tails, and makes the whole place look, at least in a drawing, as if it had been altered and added to by every generation since the Wars of the Roses. Onlookers often fancy this skill misplaced. They say the owner is a *parvenu*, who is trying to pass as the scion of an old family. But this is not the whole account of the matter. Nearly as often, perhaps, he is a 19th-century man who wishes he had belonged to the 18th, or 17th, or 16th century. He cannot get there, but he loves to have suggestions of the olden time constantly round him. He is like an Englishman in the Tropics, who has been known to grow buttercups and daisies under almost inconceivable difficulties, not because they are fairer than Tropical flowers, but because daisies and buttercups remind him of the home where he would be.

It is the same in church-building. The architects who have found fame and fortune there are mainly those who have eschewed every appearance of modernness. The ablest of them, indeed, have adapted their designs to modern uses; but this adaptation has been skilfully disguised. If their works are not mere repetitions of what the ancient architects *did* do, they are, at the best clever guesses at what they would have done for purposes like ours. Such churches may satisfy our mechanical requirements. They may find room, and room in the right positions, for a modern congregation. Their acoustics may be good; their warming and ventilation and the like may be of the latest sort; but their whole feeling and character is that of times that are far away. In the ages of faith, men did not thus copy their remote predecessors. They were always pulling down the old; always putting up the very newest of the new. In that great church-building period—the first half of the 13th century—the one idea seemed to have been to replace what had gone before by what had then just been invented. There was no clinging to the past; no regret for its disappearance. And so it was, again, when the Perpendicular style arrived. Even when Italian architecture, pure and simple, came into vogue here—in the 17th and 18th centuries—it was accepted for churches without reserve. Witness St. Paul's and the towers which group themselves around it. People were in sympathy with their own time, and liked to see its productions everywhere. But we are not in sympathy with ours: we are sick of our inventions, our arts and our manufactures, our railways and telegraphs, our post-offices and newpapers, and the everlasting hurry and worry in which we all live. So we build our churches as our fathers built them before these things were that, for an hour or two on Sundays at least, we may be able to get away from ourselves.

These are not the conditions under which much original design can be expected. Taking them into account, we may be surprised that our time has produced anything new and characteristic. What it has done in this way is, for the most part, hidden under a superficial appearance of age. It seems to beg pardon for its novelty, and to protest that it will try hard to keep it out of sight. Yet, unless the future is quite unlike the past, it is the part of our work which we 19th-century architects have invented—and not the part which we have copied with labour and pains—which will interest our successors. To see the best Gothic detail, and the best Classic detail, they will go back, as we do, to the originals, and not to our imitations. It is only where we have added something, or varied something, or invented something which was good as well as new, that they will consider our productions worth notice. Contemporary judgments will be reversed: and not the man who copied most accurately, but the man who thought most deeply, will be held to have done most for the world of art. Our posing and transposing—our trying to think like ancient monks, and to build like Elizabethan farmers—will not impress future generations much. At best, they will pardon it as the fashion of the period, and will mercifully remember that nothing else could be expected in an age when men's dearest desire was to get away from themselves.

SURVEYOR'S WORK.

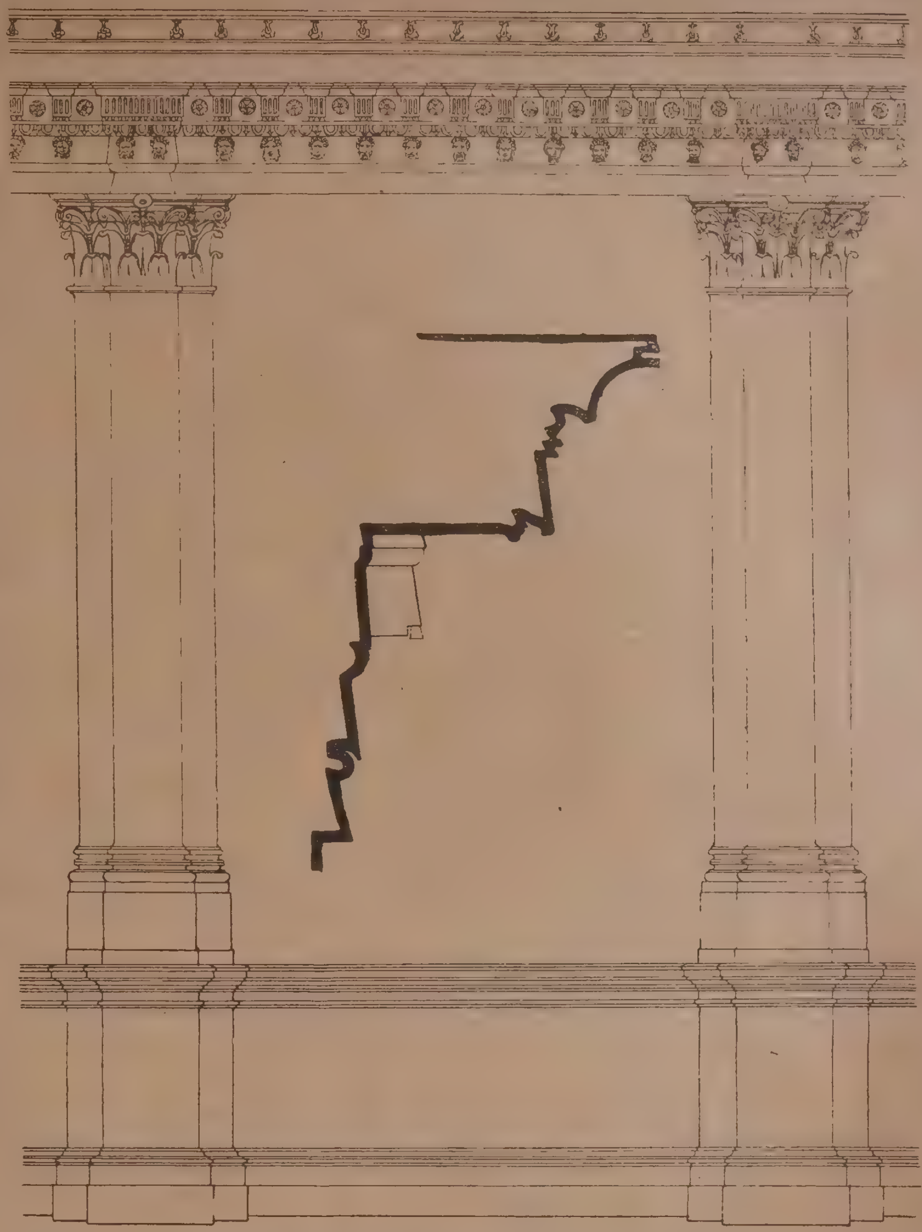
IT has been the habit to associate the surveyor's work with a perfunctory, business-like precision and method scarcely known amongst architects. His buildings seem to be seen through the "atmosphere," so to speak, of a bill of quantities, and his more regular practice of building surveying, house and estate agency, has a flavour of commission and percentages. But, after all said and done, the surveyor's work forms the backbone or substratum, so to speak, of modern architecture as a profession. Unless the country practitioner is well versed in quantities and valuations, knows a good deal about house property, and the responsibilities of landlord and tenant, he has very little chance of getting on. These branches of practice constitute the only reliable bases of the architect's business in a provincial town; without them he cannot move. The landowner who wants to develop his estate must first be sure of the ground-rents he can charge, the value of house property in the locality, and a number of other details which properly belong to the surveyor's branch. He would not benefit by consulting an architect whose chief work had been confined to the drawing-board and to preparing designs. The gentleman who wished to build a model homestead would naturally go to an architect who had some experience of such buildings; who had studied such matters as farm buildings, agriculture, land-drainage. Again, the owner of houses who desired to make any improvements, would expect his adviser to know how to survey dilapidations, to interpret the law of fixtures, or the law of easements. The first thing the client wishes to know is the estimate for carrying out additions or alterations, which necessitates a knowledge of pricing work, and the estimation of quantities. Or perhaps he wants his architect to give him an estimate for sundry repairs which presupposes a knowledge of dilapidations and fixtures. The valuation of a property for mortgage or otherwise is a frequent source of profit. And yet all these matters are as far removed from architecture proper as it is possible to be, and their attainment, so far from being a help, may actually be a hindrance in some cases. They are matters which never belonged to architecture in its best days; but now they have become tacked on to it simply because they are preparatory to the architect's business or accidentally belong to it, just in the same way as a medical man may have to inquire into the sanitary condition of his patient's house. It is, perhaps, a pity for the architect's sake that the public are so ignorant of the want of connection between these businesses, and that they will go to men who are surveyors first and architects afterwards. Mr. Brown does not for a moment suspect any dissociation between the two vocations. He believes Mr. Allround Jones, who has made valuations for him and given estimates for repairs, is equally strong as an architect. And there are plenty of uncritical Browns in the world who confound common sense and tact with artistic skill in design, who mix up the commercial and the architectural functions. One of the reasons which give the surveyor-architect the advantage is the greater care he bestows on estimates and contracts. Since the profession of the architect is chiefly concerned in the proper performance of contracts, it is his duty to become the negotiating agent between the owner and the builder. In this capacity, he has to exercise several offices more or less estranged from his true vocation. The preparation of quantities is an ungenial task, but one absolutely essential in the present position of the profession. If he does relegate that duty to another, he cannot ignore it. It means that his design will be resolved into its elements, and every part priced. He has to make his specification agree with it; consider the cost of every fitting, and the result of a too generous use of material and labour. The quantities hold a prominent place between the architect and his work, and as long as a bill of quantities is an inseparable part of a contract, the architect cannot altogether overlook the surveying element of his profession. A hindrance or not, we have to look on it as a part of the compact between owner and contractor. Then the architect has to be a master of contracts, which means a good deal. He must know something of the law of contracts, be able to make negotiations, enter into arbitrations, and what not. But what has all this to do with art? Absolutely nothing.

To what extent surveying has entered into the architect's province may be seen by glancing one's eye down the list of Fellows and Associates of the Institute, prosperous men in the professional ranks, clever in negotiations, in valuations, arbitrations, and so on, but few of them architects in the highest sense of the term. These men may have done good service in the committees who sit on professional practice and charges, and schedules of building contracts. But they cannot tackle business and art both: it is folly to suppose they can. No one will for a moment deny that the surveying branch is the most lucrative, that it covers the largest field for the professional man, enables him to earn something when there are no important buildings contemplated—and these are questions for the younger men of the profession to seriously consider in their preparatory studies. How much of their attention can they devote to both vocations is the question. Now that the surveyors are represented by a separate institution, which has of late years been developing the studies of the young surveyor and examining him in three distinct sub-divisions—land agency, valuation, and building—it seems almost a useless rivalry on the part of the architect to attempt to become master of these branches.

Let us look at some of the subjects which the young surveyor has to learn if he is entering the class of "Professional Associates." Supposing he elects the sub-division of "Land Agency," he has to go through the subjects of land-surveying and levelling, book-keeping, construction and use of valuation tables, law of landlord and tenant, agriculture, farm buildings, forestry, land-drainage, geology, and agricultural chemistry. If he is going in for valuation, he has to learn, in addition to the three first, the law of fixtures, law of dilapidations, agricultural law, easements, enfranchisement of copyholds, algebra, including quadratic equations, &c. If he is desirous of becoming a building surveyor, in addition to some of the foregoing he has to learn modes of pricing work, estimation of quantities and measurement of artificers' work, and constructive and working drawings. The same student must know the laws of fixtures, dilapidations, easements, light and air, properties of stone and cement. Now these are subjects which, if properly studied, occupy a considerable portion of the student's time, and would leave him little leisure for architectural subjects. Few young men could attempt more than a "cram." What we say is, it is impossible to do justice to both businesses; one must suffer. And it is also a hindrance to a public appreciation of architecture. The ordinary commercial man is inclined to attach importance to those qualities which appear to him the most useful, and it is this fact which inclines the professional architect to give more attention to that branch of his business which is most lucrative. The businesses of surveyor and architect are also paid for on the same principle of commission—a basis which we have befors said is erroneous and injurious to the claim of art. So long as a man who makes his living by valuations and quantities can charge the same as one who has devoted his whole life to architecture, we cannot expect the better men to enter the profession. A talent for design, or a natural aptitude for art, cannot be appreciated so long as such conditions prevail. The instinctive artist is disgusted to find his taste and education no better paid for than his brother quantity surveyor. And the public will not see any difference if the profession themselves are satisfied with this mode of remuneration in placing both on an equality. Already we see signs of a revolt from this state of things. There has been a cleavage, distinct and eventful, going on in the profession. Those who have affirmatively declared that architecture is an art, not a profession, and cannot be controlled on strictly commercial principles, have gone so far as to decline to commit themselves to any examination scheme whatever. Art cannot be tested by any system of question and answer. Only lately the question of qualification for the Fellowship of the Institute showed the feeling of many members of the profession in their desire to restrict Fellowship in the future to real architects whose work is of exceptional merit. Men like Mr. Ernest George, Mr. Aston Webb, and Mr. Chas. Hadfield have clearly wished to eliminate the surveying element. Some would require evidence that the candidate was a *bonâ fide* architect, and not a land surveyor or estate agent. Many men—Institute members as well—protest against the commercial element to which the R.I.B.A. attaches so much importance. We have no better proofs of the divergence of the two classes. In the mean time, we must wait for the opportunity when able men in the art rank will be appreciated, and find their services valued. Encroachment on the architect's province is one of the drawbacks of the present state of things. The development of the surveyor and the inclusion of building in his work cannot fail to interfere with professional architects. Architecture, on the basis of building and agency, is the stronghold of provincial practice, and under present circumstances and the educational programmes of the great teaching bodies of the profession, it will be a long time before art will be able to reassert its claims and become recognised by the public. Measurement of artificers' work, valuations, and agencies are all useful branches; but we cannot think they should be confounded with the distinctive work of the architect.

OPEN-TIMBER ROOFS: A PLEA FOR THEIR DECORATION.

FASHIONS in architecture have generally been a series of reactions, more or less violent, according to the extravagant lengths to which their abettors have gone. In one direction alone—that of roof design—we have a singular instance of reactionary taste. In the earlier days of the Gothic Revival, which many of our readers remember, the timber-and-plaster imitation groined roof held for a time a supremacy; but it was quickly followed by what was known as the "open-timber roof"—a modern imitation of the old Mediæval roof. The late Messrs. R. and J. A. Brandon's work on the "Open-Timber Roofs of the Middle Ages," first published about 1849, increased the fervour for this form of roof, if it did not really introduce this mode of construction to the profession. In a very few years hundreds of new and "restored" churches were covered with roofs of this description. The Gothic apologist made a strong point in his argument against Classic—that its roofs were flat, and unsuitable to the climate, and he pointed to the open-timber roof as the only reasonable form of construction. There was no attempted disguise of material, the timbers were visible, and honestly framed, the high pitch gave height, and imparted an ecclesiastical appearance, which no flat roof could give. As usual with extremists, the open-timber-roof designer carried it too far. Architects vied with one another in trying to make the framing more complex and elaborate; they introduced "notches," "stopped chamfers," open tracery filling-in, and other kinds of detail. Every pair of principal rafters repeated the same design of framing, or they varied alternately. Looking upwards into a high-pitched roof of this sort was like looking into a dark cavern of timber: a perplexing mass of collars, struts, and braces. And the cost of a roof of framed principals was a considerable item in the expenditure of a church. Not only were roofs of churches in the Anglican Communion so treated, but every Dissenting chapel in the country was roofed on the same principle, and the wider the span, the more complex was the framing or trussing. As was to be expected, the scantlings of the



DETAIL OF CORINTHIAN ORDER, COURTYARD, FARNESE PALACE, ROME.
By Michael Angelo.

timbers in many buildings became reduced in size, and a pinched, starved appearance was presented by many roofs whenever the architect or contractor found it necessary to cut down the cost of the work. Other objections made themselves apparent. Where there were no direct tie-beams the rafters tended to spread from the collar downwards, sometimes thrusting out the walls, or when there were braces across the angles between collar and rafter, an injurious strain would be created on the tenon or connection of principal rafter and brace. The collar-and-brace roof is a common type: so is the cross-braced truss. Many of the hammer-beam roofs of this class failed from the want of thick walls, and the weight of the roof bearing upon the end of the hammer-beam. As a matter of fact, the designers of modern open-timber roofs tried to give the appearance of the ancient examples, but with less ample means for obtaining strength and stability. The walls were generally too thin to use double wall-plates. The latter, when used, were not strutted or trussed, as in the old examples, from the feet of the principals to the centre of bay, so as to form one horizontal plate to resist the rafters' feet. Curved or ornamental braces were introduced, again, where straight braces would have been stronger. Thus a very usual type of roof-truss is one in which the collar, principal rafters, and hammer-beams are framed with curved braces suitable only for small spans. Such trusses ought not to be too far apart, and the older examples of them to be found in Norfolk and Suffolk are generally not more than 20ft. in span, and are spaced often at less distances than 10ft. The hammer-beam roof was at one time a very favourite form; it could be made ornamental, and the old examples of Norfolk, like those of Trunch and Wymondham, supplied models. In these double-framed roofs the rafters were framed into the purlins, which, in turn, were framed into the principal rafters. Some have collar-beams stiffened by curved braces above; others have no collars, but the roof is framed with curved braces tenoned into the hammer-beams and principals. These curved braces keep to a certain extent the principals together, and act as an indirect tie to them. A more elaborate class have all these members—collars, struts, and hammer-beams—connected by curved braces. The ecclesiastical architect and builder delighted to use them, as they gave an enriched and decorative look to the interior. But the number of joints and the want of a direct tie made them costly, and not always safe, roofs, and in several cases iron tie-rods were introduced between the hammer-beams. After the elaborate-framed principal or truss, a less expensive and plainer type of roof followed, in which the curved rib or brace took the place of the hammer-beams and curved struts and braces. To the introduction of French Gothic we, no doubt, owed this change. In many of these a wooden tie-beam carried a king-post, a very usual type of roof in France during the Middle Ages, in which collars and braces were used, and sometimes stirrup-pieces. Viollet-le-Duc illustrates several examples of these cradle roofs. • Semicircular ribs connected with the principal rafters are boarded internally, and form a waggon-shaped vault, which assist sound and avoid the defects of the acutely-pointed roofs as an internal covering. Various kinds of polygonal barrel roofs, boarded underneath, or with arched principals, are to be noticed, and these have continued to the present time. Their boarded surfaces are often divided by moulded ribs into panels. The construction is simple; the principals are framed with collars and braces, or diagonal braces, which cut off the upper angle of the roof. In many recent churches, the boarded vault, whether barrel-shaped or polygonal, has a tie-beam at the springing, and often a post at the centre, as in the French roof. Occasionally, the vault is plastered. The merits of this form of construction are many. (1) The boarded or plastered vault prevents the loss of sound upwards, and its resonant qualities are helpful. (2) The boarded or plastered surface admits of colour or decoration. (3) A serious defect of the open roof, boarded on the outside of rafters, is obviated; we mean the condensation of moisture during the winter months or when a sudden change of temperature occurs. The slates are fixed on the rough boards placed on the rafters, through the joints of which the condensed vapour from the slates trickles down or falls in drops.

The question of the treatment or decoration of roofs is a large and interesting one, and we have witnessed a few changes in taste. When the open-timber-roof craze was at its height, the timbers were universally stained and varnished underneath. The darker shades of staining produced a gloomy and dark effect in the building; even the light-varnished roof got dark in course of time. These dark-stained rafters plastered between were certainly not decorative, and had a gridiron look about them. Roofs are now seldom stained and varnished in this fashion.

A revolution in taste has, happily, set in, and architects have learned that all wall and plain roof surfaces, whether boarded or plastered, are intended for decoration. But very little has yet been done to our roofs. It is true we have a few successful examples of painting or distemper decoration; but a large number of our finest halls and churches are still destitute of any scheme of decoration. In, we believe, a few cases, the mural and roof decoration in the panels has been done in thick linoleum, or some similar material, and fixed by a damp-proof process. The boarded vault divided by arched principals, often supported by marble shafts with moulded caps and bases, is almost absurd without some sort of decoration or scheme of colour.

CLASSIC DETAILS AND THEIR APPLICATION.*

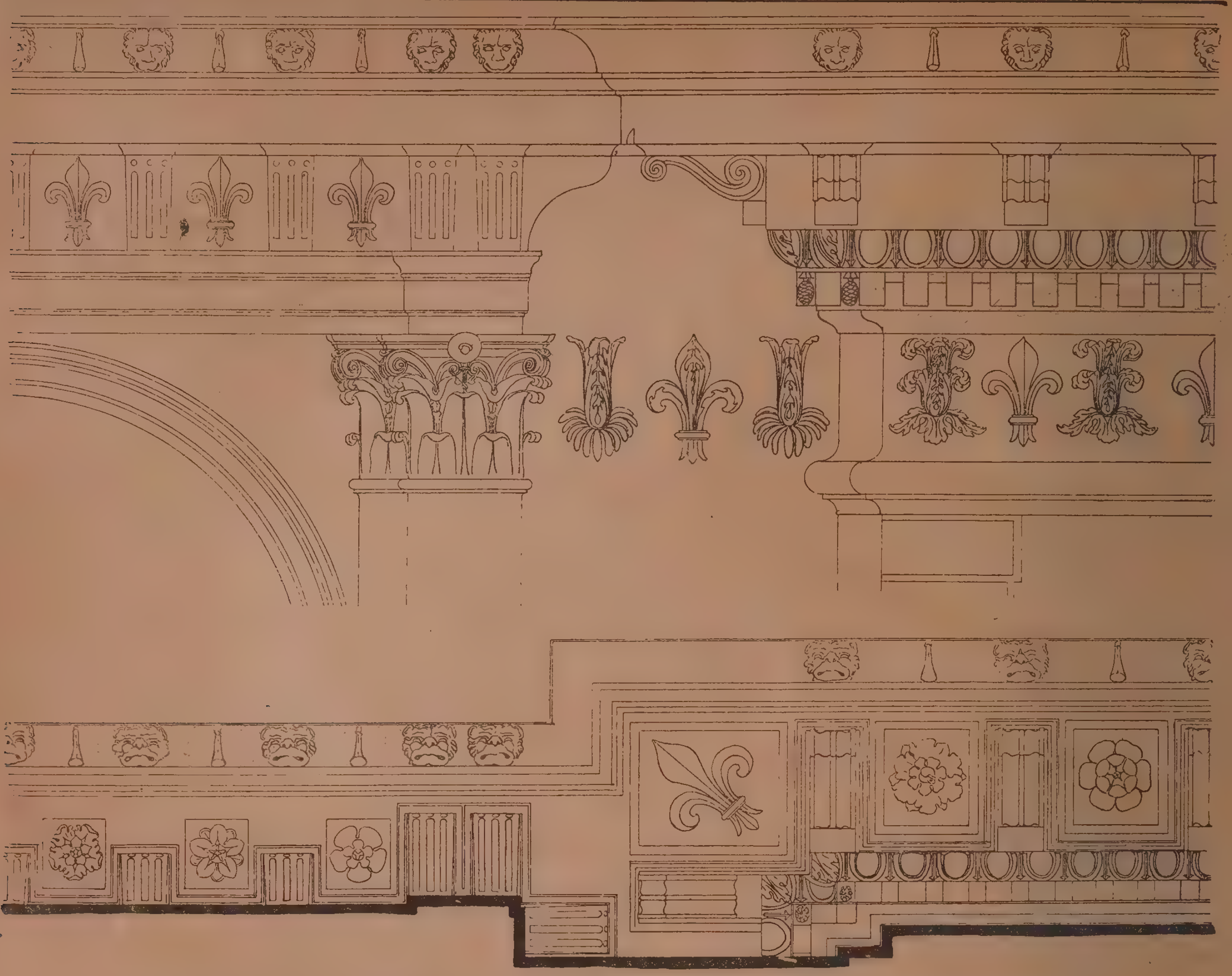
By G. A. T. Middleton.

X.—ITALIAN RENAISSANCE: DETAILS OF APPLIED ORDERS.

IN the details of their orders, as in all else, the architects of the Italian Renaissance allowed themselves considerable liberty. To illustrate all the variations employed would consequently be impossible, for no two examples are precisely alike. The old Roman precedent is followed as to the general proportions and

---

* All rights reserved.



DETAIL OF MAIN CORNICE OF THE FARNESE PALACE, ROME. By Michael Angelo.

general scheme, and that is all. Consequently, the accompanying illustrations must be considered as typical only, and not as examples of hard-and-fast rules which are not in one iota to be departed from; and very beautiful types they are, being the details of the orders of the Courtyard of the Farnese Palace at Rome, of which a general elevation was given in the last instalment of this series, designed by Michael Angelo, and applied to the general outline of the building as laid down by San Gallo.

Writing, then, upon the text of the illustrations, and bearing in mind that the spirit of freedom evinced is the spirit of the Renaissance, coupled as it is with the highest application of the beauty of proportion, we are struck at once, in each of the orders, with the wonderful fullness, and appropriate richness, of Michael Angelo's details. In this respect the drawings must speak for themselves, as no words can so well point out in what their beauty consists. It lies just in that exact appreciation of form and correct use of ornament, with restraint to avoid its employment where unnecessary, which evidences the true artist and architect in whatever style he may be called upon to work.

In the Doric order, the details of the arch impost are most noticeable, forming almost a complete order, with guttæ curiously placed, and with crowing cavetto moulding, all dying into the semicircular Doric columns. These are themselves on quite simple Attic bases, are unfluted, and have ordinary caps, save for the enrichment in the form of the fleur-de-lys, which occurs round the necking, and is employed again and again upon the building elsewhere, as such armorial badges commonly were in all European countries at that date. The architrave is in two faces, and is shallow, while the frieze is deep, with prominent triglyphs, and with the metopes bearing sculptured coats of arms, while the cornice so far departs from the traditions of the Doric order as to contain a row of dentils upon the bed-mould. The arches to both the lower stories are restrained in treatment, and the spandrels simply and successfully filled with circular pateræ.

The Ionic order, perhaps, conformed more nearly to tradition than either of the others, the only marked difference being in the sculptured swags upon the frieze: but, then, the Ionic frieze has at all times been open to great divergences of treatment.

The Corinthian order, on the other hand, shows considerable change and adaptability to its position. High up, and only to be viewed from close beneath it and directly in front—for it faces a comparatively narrow courtyard—it needed special treatment. Pilasters are used in place of columns, and the leaves of the capitals are simple in outline, but well projecting, giving richness of effect by sharp contrasts of light and shadow. Then, from the section, it will be seen that neither the architrave, the frieze, nor the corona of the cornice are vertical, but slope backwards, and so, according to the laws of perspective, appear much deeper when viewed from below than they are in reality, being foreshortened. The architrave and frieze particularly need this extension, for in elevation they appear shallow. The use of triglyphs in in place of modillions (or consoles) under the cornice is also remarkable, and not so happy.

The great feature of the Farnese Palace, however, is the main cornice, crowning the exterior. Again it is best to leave the detail to speak for itself. There is no architrave, and the frieze is enriched with the *fleur-de-lys* alternating with an anthemion composed of acanthus leaves, while as for the rest there is no point which can be called uncommon; but it is strong and beautiful and suitable—and what more can or need be said? It is an example of power and restraint combined, and worthy to serve as a model; but as in it forms are used for which there is precedent, without copyism, so to copy this itself would not be wise, but rather it is the spirit in which it was devised which should be cultivated.

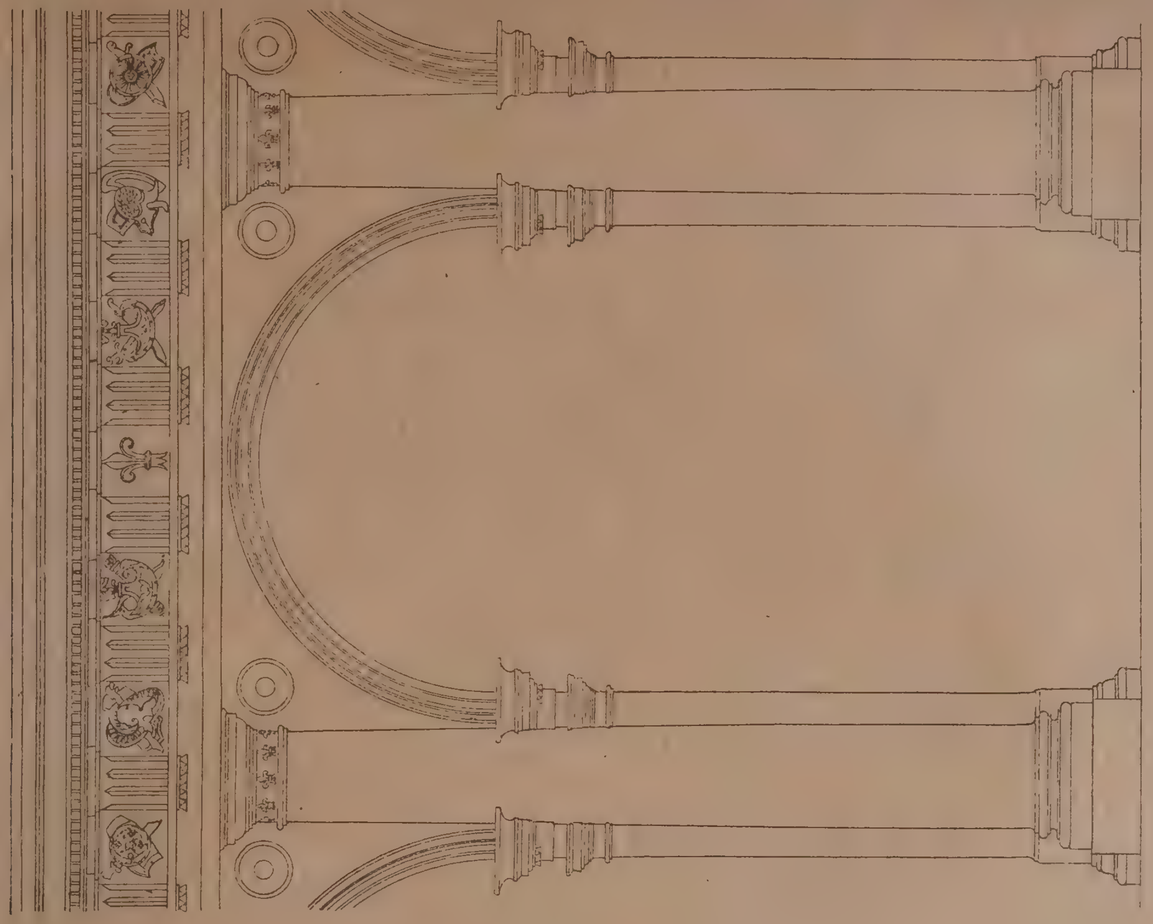
THE CITY AND THE ENGINEER.*

(*Continued from p.* 329).

HOW to provide a government for a city of metropolitan dimensions is a matter of difficulty not yet worked out, for a metropolis does not need the same amount of governing in all its parts. There are governmental functions which affect all parts alike, such as we usually see exercised by counties; there are others which are locally, but not universally, required, such as we see exercised by our city and village corporations. General policing, courts, criminal and civil, the care of the poor and helpless, asylums for insane, gaols and houses of detention, are matters in which the sparsely-populated parts of a metropolis are as much interested *per capita* or unit of value as the densest. To these may be added main thoroughfares for traffic and public buildings. Next in possibility of extended interest is drainage, sanitary and surface, but the interest will not be uniform. It will be limited usually by watersheds, and will vary with the user of the ground. Closely following in extent and variation of interest is that of water supply. More narrowly local, are sewers for complete sanitary or surface drainage, the making, maintaining, cleaning, and lighting of streets, and many other functions that belong to local affairs. An organisation suited to the conditions presented by a metropolitan city in the United States must of necessity be complex—a goodly measure of autonomy should be reserved to certain component parts, and the more general powers vested in a superior body. The proposition introduced in the Illinois Legislature a few weeks since, to confer special powers of legislation upon a local assembly for Chicago, is by no means absurd. It contains an element of adaptation to obvious needs. The country representative has

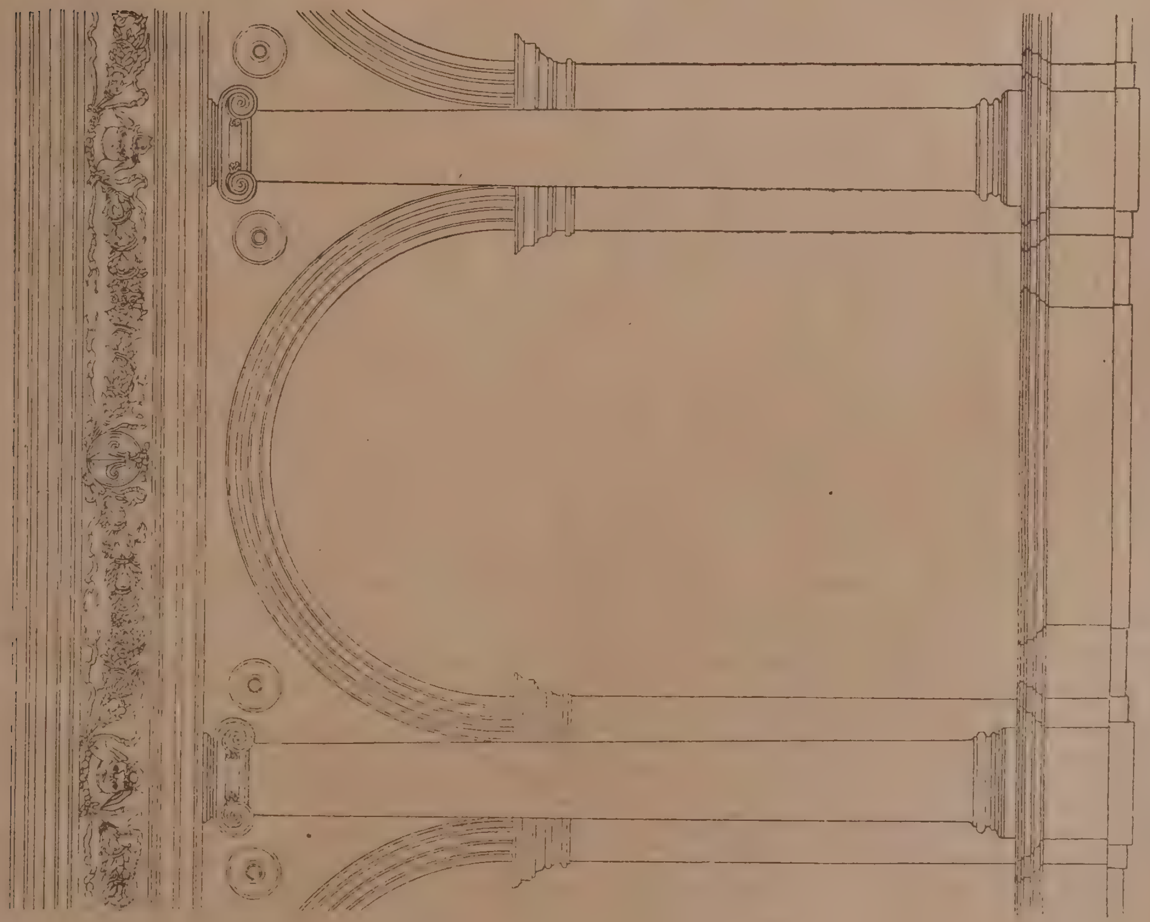
---

* A paper by Robert E. McMath, M.Am.Soc.C.E., President of the Board of Public Improvements, St. Louis, Mo. Reprinted from the *Transactions* of the Association of Civil Engineers of Cornell University.



DETAIL OF DORIC ORDER, COURTYARD, FARNESE PALACE, ROME.

By Michael Angelo.



DETAIL OF IONIC ORDER, COURTYARD, FARNESE PALACE, ROME.

By Michael Angelo.

no appreciation of the needs of cities, and too frequently is influenced by a spirit of hostility to the city. A goodly measure of autonomy is essential to a metropolis. Building along more familiar lines, the functions of the county may be expanded to include all needed by the whole metropolitan district; but the machinery of county government would need to be entirely remodelled, whether it be of the representative form common to the northern and eastern states, or by county court, as in the south and some western states. But the essential idea of counties with township organisation is the one that seems to be most practicable. But schemes of government are not usually worked out by engineers, and I pass to considerations more immediately pertinent to my audience, and the first is the manner of inaugurating and controlling public works. In a great city there are several departments of public works, each of which will be of sufficient importance to justify its having a chief technically and practically familiar with that department, and broad enough in his constitution to understand that his department is part of a whole, and to rightly estimate its relation to each other part, and to the whole. If so constituted, each chief will be a fit and valuable member of a controlling board of public works. Such departments may be specified as:—1. Streets: their laying-out, gradation and construction, maintenance, cleaning, sprinkling, and general supervision. 2. Waterworks: design, construction, extension, distribution system, operation, and oversight of use. 3. Sewers: studies of system, plans, construction, maintenance, oversight of use. 4. Electricity and gas: all matters pertaining to lighting of streets, public places, and buildings. Subways or conduits, construction or use. Also all overhead wires and their supports. Control of measures to insure public safety as affected by the distribution or use of electricity, gas, or other means used for light, heat, or power furnished beyond the limit of the premises where it is produced. 5. Buildings: oversight of construction, repairs, and care for public buildings. Also supervision of erection, repair, and condition of private buildings so far as needed to insure observance of regulations. 6. Transportation: railways, switches, harbour and docks, and other services by corporations semi-public in character. 7. Parks and recreation grounds: laid out, improved, maintained, and controlled. 8. General superintendent, or chief, to whom may be given the supervision of matters not specially assigned, but better if without departmental duties, who shall exercise control over expenditures, shall sign all contracts, approve all appointments of subordinates, issue all special tax bills, and keep the general records. If you will consider these departments, you will see that each requires a man specially fitted; also that their inter-relations are so intimate as to suggest a grouping. If these heads constitute a board, then the grouping suggested points out the appropriate committees to prepare and consider all measures brought before the board. The heads of departments should not directly have to do with legislation of a general character, but all measures providing for public works, and the manner of their execution, also the estimates of cost, should originate in the board, be subject to approval or disapproval by legislative body or councils and mayor, but not to amendment by them without consent of the board. The board should let all contracts, approve of all final estimates, and order the making of special assessments. No measure or order contemplating work to be paid for by special assessment should be recommended or issued without giving parties to be assessed an opportunity to be heard by the board, or a committee thereof, as the importance of the matter may justify. Neither the board nor any of its members should have anything to do with the collection or disbursement of moneys. Some of these heads of departments would, by logical necessity, be engineers without its being required by law; others might not, and I would be disposed to require that qualification for street, water, sewer, and electric departments. Buildings should be given to an architect. The other positions might be left open on condition that the five named officers are limited to men of technical and practical training; otherwise the last or general superintendent must be an engineer. This last should be an elected officer, and rank as high as the highest, for he will at times need to be independent of mayor, council, or other authority or influence. His function within his sphere is something like that of the doctor or councillor—legal or spiritual; he will have to give unwelcome advice, oppose pet schemes, and perhaps resist evil. The other heads of departments may properly be appointed by the mayor, but at a time and under conditions that will farthest separate them from being dictated by purely political considerations. An organisation such as I have sketched will be able to handle the public works of the largest city, and do so economically. Of course, there must be a number of sub-departments and many subordinates in each case. What is commonly called engineering work will be done in and under the sub-departments. A prominent feature of this scheme of municipal works organisation is specialisation. As a schooling place for young engineers of unformed intentions I do not recommend city employment. It is better by far that such take their first practical initiation in connection with private parties engaged in general practice of city work. There are useful traits or habits of mind that prepare one for department special work, which can be better obtained where strict economy of time and means are enforced and study made to reach ends by the shortest road than in any public office. The unofficial engineering in a great city is greater in volume than the official, and will doubtless increase in volume and importance. For no small part of the extension of improvements must be made under private engineers, representing and serving individuals or corporations, who will develop and improve new quarters more rapidly, more consistently, and more cheaply than is possible under official restraints. And, in fact, I anticipate that it may be found practicable to turn over to the private practitioner much of the routine and detail work of profiling, cross-sectioning, staking out, estimating, and possibly superintendence of construction, especially in case of assessment work. Men who can find, or make and hold, their place in this unofficial practice will be found better qualified to assume the headship of a sub-department than persons exclusively trained inside of the department. And the same is true for department chiefs, for the outside man has spurs and inducements to special studies, and the development of that valuable faculty known as executive ability, that the inside man does not feel. The inside man tends to fall into routine ways, to cling to traditional methods, and to resist new suggestions as troublesome innovations. I have in mind a city which in its early stages of growth was limited to the broken ground adjacent to the river on which it was situated. A practice which became a canon was to make the minimum of street gradient 1½ per cent. In time the city grew beyond the rough ground near the river, and extended into the nearly level uplands. It required time and almost drastic measures to check and prevent the extension of the traditional minimum into districts where it involved the heaping up of summits and formation of artificial depressions into a series of short, meaningless waves. In fact, a considerable area of territory was permanently defaced before a thorough reorganisation of departments made it possible to cast aside the arbitrary minimum of the early days. The co-ordination and co-operation of official and private engineers is practicable, for it exists, to a considerable degree, in all large cities. My suggestion is to extend and systematise a relation found to give good results. In my experience a decided advantage results from bringing into contact the private engineer who looks at plans and propositions from the property-owners' peculiar point of view, and the official whose point of view may be too far-reaching for him to notice that he would overtax the resources of to-day in the effort to provide for a distant future. Bringing these elements together is productive of the happy working mean. The board of public works should be the central authority which forms general plans and determines the policy to be pursued, vested with authority to revise, approve, or reject all projects for improvements within metropolitan limits, from the laying of a house drain or the building of a shed to the development of a system of railway terminals or the building of a business palace. This oversight should be so exercised as to afford the maximum of freedom to individual or corporate enterprise, subject always to the condition that the public safety and convenience must be provided for; because the official board is first of all the guardian of public interests. The plans and policy of a board of public works are subject to limitations of a financial nature. It must cut the garment to suit the quantity of cloth furnished. Engineers, and especially specialists, are not qualified to handle questions of finance; but they must familiarise themselves with the limitations which financial considerations set to their plans, and must adapt themselves to such conditions as much as to physical. Three methods of providing means for improvements under city authority are in use:—(1) Borrowing, on credit of municipality or subdivision thereof; (2) general and special funds of municipality; (3) assessments upon property benefited. Many improvements are now being made by private enterprise which bring the engineer close to financial considerations. In my opinion, this practice will greatly increase. To some extent improvements are made in this way, after the streets are opened as public, by consent of the constituted authorities, plans, materials, and methods of construction being approved, and the work done to the satisfaction of the officials. Some claim that better results are thus obtained, and at less cost than if done in the routine way prescribed for improvements under city authority; as to the probability of such comparative results I say nothing, for no general statement can be made. It ought not to be so, and when it is there is something loose or wrong in the conduct of public work. By far the larger part of improvements made under private supervision is done in anticipation of putting property on the market. To that branch of the subject I will return. Of the methods of municipal works finance named above, an engineer is at times called on to express an opinion. Borrowing is advocated generally upon the plea that the improvements are for the benefit of the future rather than of to-day, therefore posterity should foot the body of the bills. I have in mind cases in which the only evidence posterity has that improvements were made is the burden of paying for them. Borrowing by municipalities may be advisable or not, just as in the case of individuals or corporations; the outcome may be prosperity or bankruptcy. It is never well to borrow for living expenses or for matters of temporary use. If the use of borrowed money is to create a value or asset greater than its cost, then posterity has no ground to complain, and this is as near the enunciation of a general principle as it is possible to come. The attempt to provide for improvements out of general and regular municipal revenues will always fail. A large revenue in sight, not specifically pledged, leads to extravagance and wasteful expenditure in every department of city administration, and when a scale of expenditure is once established it becomes practically impossible to curtail it, as reformers who have undertaken the task well know. The only way to keep fixed expenses down is to keep general revenue within close limits. The ideal plan of revenue might be to fix general revenue at an unalterable percentage of assessed value and shut off all other sources of income. Special funds for special objects may then be created to which all income, other than property taxes, may be devoted, and such special rate of property tax as the people may authorise, the question of such authority being resubmitted to the voters at short intervals. There are many improvements in a city so general in their character that their cost must be borne by the whole city. There are others which, with equal certainty, are so clearly local that beyond question they should be paid for as local benefits—that is, by special assessments. Though, as I have said, the engineer is not a financial expert or in form a financial officer, he comes very close to the question of special assessments, for his plans must be studied with reference to an equitable distribution of the cost of proposed works. He virtually defines the boundaries of benefit districts, and must see to it that they include all beneficiaries; with details he has nothing to do. Grading streets and all expenses by way of costs and damages incident thereto; paving all streets, except main thoroughfares, and these in part; sewers, almost without exception, in great cities; water distribution, except mains, and these in part; repairing, cleaning, and watering streets, and the removal of garbage, ashes, and rubbish, are each and all properly the subject of special assessments; and you will notice that the list includes nearly all the public works of a routine type. A great city is impossible upon any other principle than that the beneficiary must pay for what he enjoys. Equally fundamental is the axiom that if he enjoys he must expect to pay proportionately. Further, he who lives and prospers in a city must expect to have a scale of necessary expenses approximately in proportion to the size of the city he lives and prospers in. It is altogether a mistake to put among the supposed reasons why the drift of population is towards large cities, the idea that they can live more cheaply. So far as economical reasons may influence the tide, it is the expectation that more of comfort and pleasure can be had as the result of one's efforts in the large than in the small town or country; and then there is in the minds of some the chance of winning one of the grand prizes of fortune of which they read so much. The way to realise a municipal millennium is to impress upon the minds of the working people of America that their case is hopeful; that if they will exercise industry and cultivate habits of thrift and tastes for home and modest social enjoyments, a good degree of comfort for themselves and a hopeful future for their children may be had, as well under the new conditions of life we are coming to as has ever been possible. To dispassionate consideration there is nothing to be said against, but much for, the segregation of people according to their circumstances. The palace and the hovel, if near together, are the occasion of envy and mutual dislike. To such segregation the tendency in the large cities is manifest and irresistible. You will have already observed that this address has running through it a thread of optimism to the effect that, when a tendency towards a certain line of action by large masses of men, and especially if the same line of action is independently adopted in places widely differing in their race and industrial characteristics, then I interpret the facts to mean that a natural development is being worked out, and that such are likely to prove themselves to be of the beneficial order rather than of the contrary. I suggest the study of such unfolding tendencies, so that an intelligent policy be pursued towards them. Now this segregation of classes becomes possible only in large cities, and develops just to the degree that it is possible, and therefore may be claimed to be in accord with the nature of men. These segregations superficially appear to follow the freaks or whims of fashion, but in truth there is reason why certain quarters should become favoured by the rich and why all who can afford it seek to live near to if not in them. One consideration is the possibility of passing to and fro by public conveyance without coming in contact with people of filthy or repulsive habits, or passing through burnt districts whose scenes and sounds are not fit for the eyes and ears of wife and children. Associations of every nature are more and more becoming organised and developed along the lines of congeniality of tastes, identity of interest, accordance in principles. It is, therefore, to be accepted that there will be residential quarters exclusively occupied by the very rich; others by those in well-to-do circumstances, and so by degrees down to the lowest condition that can be allowed to exist. The city engineering that undertakes to apply an invariable grade and kind of public improvement to all parts of a town is mistaken and wasteful. True skill adapts itself to conditions and spends in view of probable returns. Beginning with the layout of the ground; a high-grade residence section should have wide streets, deep lots, and liberal frontage to lots, with restrictions as to character and position of building. No alleys should be allowed. In other words, for such a purpose the appropriation of land should be lavish to be in keeping with the character of improvements and with the luxurious life of residents. For well-to-do residence sections the same principles should apply with less width of streets, depth, and individual frontage of lots, but the appropriation of ground should be generous. For the comfortably circumstanced, who must consider limited income, a third scale in appropriation of ground is called for, and for those who must live close, a fourth. A good limit for width of street for fourth-class districts is 60ft., which fixes the least possible distance between house fronts. Eighty feet for lot depth is also a good limit, for the depth of lots should be so small that ordinary sanitary restrictions concerning light and air will prevent tenements on alley fronts. Alleys in rear of lots for the third and fourth grades are a convenience, an approach being necessary. The limits named will permit and almost compel a space between buildings at rear equal to that in front. No consideration of adaptation to business purposes need be given in the layout of the two first-named grades; and the layout of the last two will be naturally adapted to such business purposes as are necessary and appropriate. Lands along or near lines of transportation by water or rail will naturally come to be occupied for business purposes. Also those immediately adjacent to principal courses of drainage. Along transportation lines the unit of subdivision may profitably be the block, for the tendency is towards a generous use of land area for industrial establishments. We commonly speak of cities as noted for their commerce, manufactures, art, and seldom think that the most important product of a city is the material for its own continuance and progress—the boys and girls reared within its borders. No direct measure of the importance of securing the highest quality for this human product is possible; we can best estimate it by considering the reverse side, the horrible consequences of failure. It costs more money to restrain the vicious and care for the wrecks of humanity than to provide safeguards against lapse into vice or against physical degeneracy. We commend the enterprise of the merchant who spends money freely to extend his business; of the manufacturer who throws out machines and processes, because better may and therefore must be had. We think well of the professional man who holds loosely the traditions of the past, and is ready to adopt that which gives promise of better results. Why, then, should municipal authorities, and especially the taxpayer, hesitate to meet necessities clearly arising by measures suited to the occasion? It costs money, and much of it, to build a city; also to maintain and operate it; the human as well as the physical part. Beginning with the bare site for a city, the first step is destructive of former value; the use of the land to bear crops is at an end. Streets must be opened and given a grade suited to traffic; the adjoining grounds, if not in due relation to the street as graded, must be brought into such relation by cutting or filling. In this passing from one use to the other there must be of necessity the loss of former value or damage on the one hand, and the substitution of a new value from adaptation to another use or benefit. When this change is made by the municipality by enforced proceedings the adjustment of compensation is one in which the view of the engineer, who sees what is to be, and that of the owner, whose view is backward, are far apart. The court comes in as an arbiter, and is usually strangely oblivious to the possible benefits and ready to take an exaggerated view of the passing values. What shall the engineer do? Break the alignment of the street to avoid buildings, or some tree which has become as the very apple of the owner's eye? Shall he sacrifice the grade and follow the natural surface so that the adjoining property may be at grade without cost or sacrifice? Or shall he consider that street and grade will remain long after building, tree, and owner have passed away?

(*To be continued.*)

THE BRITISH ASSOCIATION AT IPSWICH.

THE sixty-fifth annual gathering of the British Association for the Promotion of Science is being held this week in the picturesque and thriving county town of Suffolk, and the proceedings promise to be of considerable interest.

The inaugural address of the President, Sir Douglas Galton, D.C.L., F.R.S., was delivered in the Public Hall at Ipswich, on Wednesday, the topics being the conditions under which science was pursued at the time of the formation of the Association in 1831, and the claim was advanced that the Association had rendered considerable assistance in the progress that had been made. The greater accuracy secured in all machine work by Sir Joseph Whitworth's labours to get true plane surfaces and correct tactile measurements, the development of geological and geographic knowledge, in chemical, astronomical and physical sciences, and also in biology and bacteriology, were successively passed in review. Turning next to engineering matters, the President referred in detail to the question of sewage purification. The early reports to the Association showed, he said, that the laws of hydrostatics, hydrodynamics, and hydraulics necessary to the supply and removal of water through pipes and conduits had long been investigated by the mathematician. But the modern sanitary engineer has been driven by the needs of an increasing population to call in the chemist and the biologist to help him to provide pure water and pure air. The purification and the utilisation of sewage occupied the attention of the British Association as early as 1864, and between 1869 and 1876 a committee of the Association made a series of valuable reports on the subject. The direct application of sewage to land, though effective as a means of purification, entailed difficulties in thickly settled districts, owing to the extent of land required. The chemical treatment of sewage produced an effluent harmless only after having been passed over land, or if turned into a large and rapid stream, or into a tidal estuary, and it left behind a large amount of sludge to be dealt with. Hence it was long contended that the simplest plan in favourable localities was to turn the sewage into the sea, and that the consequent loss to the land of the manurial value in the sewage would be recouped by the increase in fish-life. It was not till the chemist called to his aid the biologist, and came to the help of the engineer, that a scientific system of sewage purification was evolved. Dr. Frankland many years ago suggested the intermittent filtration of sewage, and Mr. Baldwin Latham was one of the first engineers to adopt it. But the valuable experiments made in recent years by the State Board of Health in Massachusetts have more clearly explained to us how by this system we may utilise micro-organisms to convert organic impurity in sewage into food fitted for higher forms of life. To effect this we require, in the first place, a filter about 5ft. thick of sand and gravel, or, indeed, of any material which affords numerous surfaces or open pores. Secondly, that after a volume of sewage has passed through the filter, an interval of time be allowed, in which the air necessary to support the life of the micro-organisms is enabled to enter the pores of the filter. Thus the system is dependent upon oxygen and time. Under such conditions the organisms necessary for purification are sure to establish themselves in the filter before it has been long in use. Temperature is a secondary consideration. Imperfect purification can invariably be traced either to a lack of oxygen in the pores of the filter, or to the sewage passing through so quickly that there is not sufficient time for the necessary processes to take place. And the power of any material to purify either sewage or water depends almost entirely upon its ability to hold a sufficient proportion of either sewage or water in contact with a proper amount of air. Passing on to consider, in the next place, smoke abatement, Sir Douglas Galton remarked: While the sanitary engineer has done much to improve the surface conditions of our towns, to furnish clean water, and to remove our sewage, he has as yet done little to purify town air. Fog is caused by the floating particles of matter in the air becoming weighted with aqueous vapour. Some particles, such as salts of ammonia or chloride of sodium, have a greater affinity for moisture than others. You will suffer from fog so long as you keep refuse stored in your towns to furnish ammonia, or so long as you allow your street surfaces to supply dust, of which much consists of powdered horse-manure, or so long as you send the products of combustion into the atmosphere. Therefore, when you have adopted mechanical traction for your vehicles in towns, you may largely reduce one cause of fog. And if you diminish your black smoke, you will diminish black fogs. In manufactories you may prevent smoke either by care in firing, by using smokeless coal, or by washing the soot out of the products of consumption in its passage along the flue leading to the main chimney-shaft. The black smoke from your kitchen may be avoided by the use of coke or of gas. But so long as we retain the hygienic arrangement of the open fire in our living-rooms, I despair of finding a fireplace, however well constructed, which will not be used in such a manner as to cause smoke, unless, indeed, the chimneys were reversed and the fumes drawn into some central shaft, where they might be washed before being passed into the atmosphere. Electricity as a warming and cooking agent would be convenient, cleanly, and economical when generated by water power, or possibly wind power, but it is at present too dear when it has to be generated by means of coal. Our descendants may possibly learn so to utilise electricity that they, in some future century, may be enabled by its means to avoid the smoke in their towns. In other branches of civil and mechanical engineering, the reports in 1831 and 1832 on the state of this science show that the theoretical and practical knowledge of the strength of timber had obtained considerable development. But in 1830, before the introduction of railways, cast iron had been sparingly used in arched bridges for spans of from 160ft. to 200ft., and wrought iron had only been applied to large-span iron bridges on the suspension principle, the most notable instance of which was the Menai Suspension Bridge, by Telford. Indeed, whilst the strength of timber had been patiently investigated by engineers, the best form for the use of iron girders and struts was only beginning to attract attention, and the earlier volumes of our *Proceedings* contained numerous records of the researches of Eaton Hodgkinson, Barlow, Rennie, and others. It was not until twenty years later that Robert Stephenson and William Fairbairn erected the tubular bridge at Menai, followed by the more scientific bridge erected at Brunel at Saltash. These have now been entirely eclipsed by the skill with which the estuary of the Forth has been bridged with a span of 1,700ft. by Sir John Fowler and Sir Benjamin Baker. The development of the iron industry is due to the association of the chemist with the engineer. The introduction of the hot blast by Neilson, in 1829, in the manufacture of cast iron had effected a large saving of fuel. But the chemical conditions which affect the strength and other qualities of iron, and its combinations with carbon, silicon, phosphorus, and other substances, had at that time scarcely been investigated. In 1856 Bessemer brought before the British Association at Cheltenham his brilliant discovery for making steel direct from the blast furnace, by which he dispensed with the laborious process of first removing the carbon from pig-iron by puddling, and then adding by cementation the required proportion of carbon to make steel. This discovery, followed by Siemens's regenerative furnace, by Whitworth's compressed steel, and by the use of alloys and by other improvements, have revolutionised the conditions under which metals are applied to engineering purposes. Indeed, few questions are of greater interest, or possess more industrial importance, than those connected with metallic alloys. This is especially true of those alloys which contain the rarer metals; and the extraordinary effects of small quantities of chromium, nickel, tungsten, and titanium on certain varieties of steel have exerted profound influence on the manufacture of projectiles and on the construction of our armoured ships. A new branch of investigation, which deals with the micro-structure of metals and alloys, is rapidly assuming much importance. The President also referred to the measures taken by the State in Germany for the promotion of science teaching and of research, efforts which in Great Britain were mainly carried out by voluntary agency, which had the advantage of being unfettered by State control. In conclusion, he observed that the growing connection between the sciences placed their annual meeting in the position of an arena where representatives of the different sciences had the opportunity of criticising new discoveries and testing the value of fresh proposals, and the presidential and sectional addresses operated as an annual stock-taking of progress in the several branches of science represented in the sections. Every year the field of usefulness of the Association was widening, and he expressed full confidence that the future records of the British Association would chronicle a still greater progress than that already achieved, and that the British nation could now maintain its leading position amongst the nations of the world, if it would continue its voluntary efforts to promote research, supplemented by that additional help from the Government which ought never to be withheld when a clear case of scientific utility had been established.

The work of the sections was commenced yesterday (Thursday). In Section A, the President, Professor W. M. Hicks, took as the subject of his address, "The Fluid Theories of Ether and Matter." To-day (Friday) a joint sitting will be held with Section B, when Prof. A. Schuster will open a discussion on the evidence to be gathered as to the simple or compound character of a gas from the constitution of its spectrum. There will also be discussions in this section on the question of a new practical unit of heat, introduced by a paper from Mr. E. H. Griffiths, and on the teaching of geometrical drawing in schools, introduced by Prof. O. Henrici.

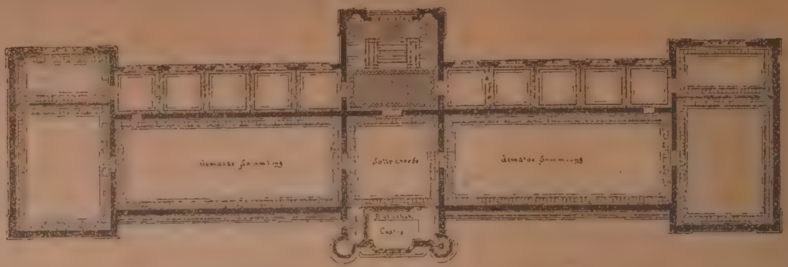
In Section B, the President, Prof. R. Meldola, dealt in his address, yesterday, with the relations of physiology and chemistry, and Monday next will be devoted chiefly to papers dealing with the relation of chemistry to agriculture, and Tuesday will be given up to papers on organic chemistry.

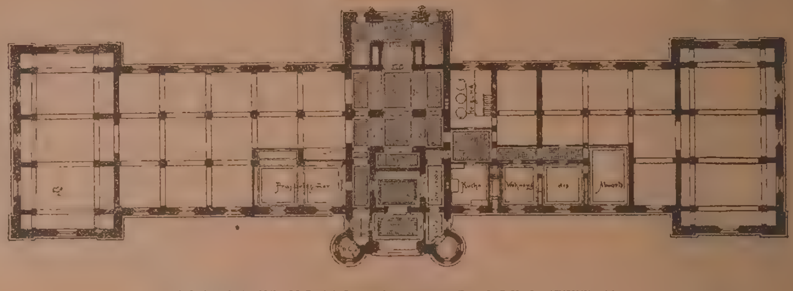
In Section C, the address of the President, Mr. Whitaker, will be devoted to the subterranean geology of the Eastern Counties, as exhibited in various deep borings and wells. Mr. Whitaker will also have a paper on the latest results in the boring for coal now being made at Stutton, opposite Manningtree, on the Suffolk bank of the Stour. The other papers on local questions will deal mainly with newer Tertiary geology; Ipswich being a convenient centre for the study of our Pliocene and Pleistocene deposits. Among the miscellaneous communications, Mr. Joseph Francis, the engineer to the New River Company, will have one on the method adopted to ascertain the direction of the dip in the Palæozoic rocks met with in the deep borings at Ware and Cheshunt. Papers are also expected from Mr. T. V. Holmes, on the ancient physiography of South Essex; and from Messrs. Reid and Ridley, on the Arctic and Palæolithic deposits at Hoxne.

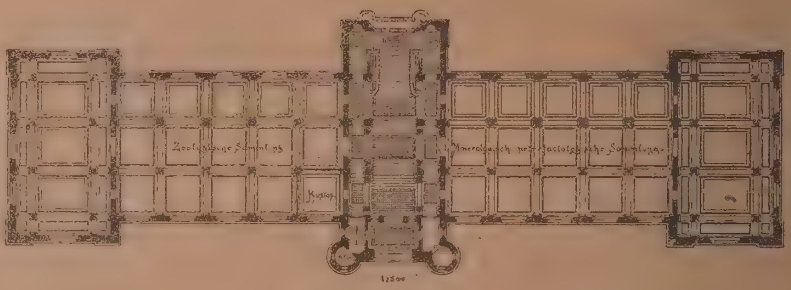
Section D will meet under the presidency of Professor W. A. Herdman, and, for the first time in the history of the Association, it is a section of zoology alone.

In Section G, Mechanical Science, the President, Professor Vernon Harcourt, gave his address yesterday, the subjects treated being the relations of mathematics, physics, chemistry, meteorolgy, and geology to engineering, and the benefits resultant from the growing specialism of branches of that science. Papers were also read on light railways in agricultural districts, by Major-General Webber; congelation of soil for foundation purposes, by Mr. M. Gobert; and on the coal borings at Bentley, between Ipswich and Stutton, by Mr. R. C. Rapier. To-day (Friday), the papers include the growth of the port of Harwich, by Mr. W. Birt; notes on the improvement of Maas in connection with Hook of Holland route, by the President; Snowdon tram-road, by Sir Douglas Fox; river-weirs and flood prevention, by Mr. F. G. M. Stoney. To-morrow (Saturday), dredging operations at Mersey Bar, by Mr. A. G. Lyster; deodorising sewage by Herzite process at Ipswich, by Mr. J. Napier. Monday will be devoted to electrical papers.

Professor Flinders Petrie inaugurated Section H with an address yesterday, in which he referred to the Neolithic invaders of Egypt. The excursions are varied in character. To-morrow (Saturday) afternoon the geologists will visit the well-known crag district, including Orford, Sudbourne, and Chillesford. On the same afternoon, there will be a dredging excursion down the Orwell, whilst other parties will go to Bury St. Edmunds, to Helmingham Hall, and to Southwold. Next Thursday afternoon, after the meeting, there will be another dredging expedition, and also an excursion to Colchester, to the Flint Knapping Works at Brandon, and to the Broads. The geologists on that day will go to the Norfolk coast to examine the Glacial and Pliocene deposits in the neighbourhood of Cromer.


UPPER PLAN, MUSEUM, SOLOTHURN.


BASEMENT PLAN, MUSEUM, SOLOTHURN.


GROUND PLAN, MUSEUM, SOLOTHURN.

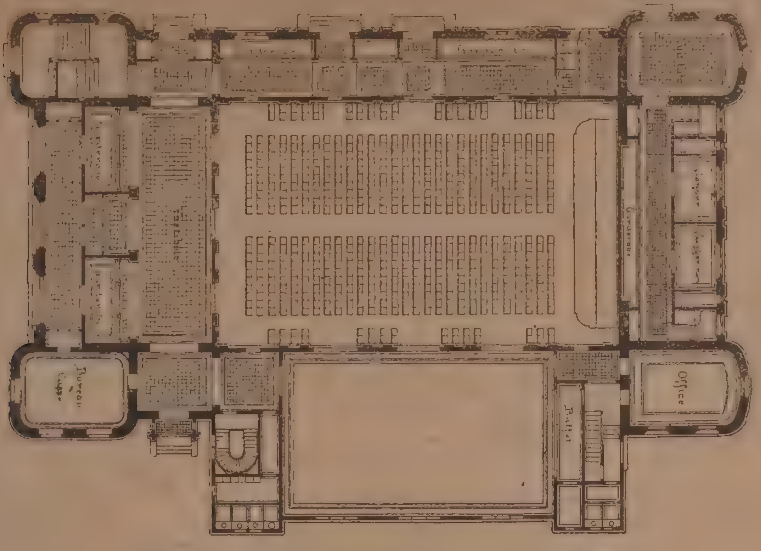
NEW MUSEUM AND CONCERT-HALL, SOLOTHURN.

MANY towns in Switzerland had fortifications, but Solothurn not only kept them the longest, but was the only town in the little Republic in which the building of the fortifications were ever finished. They were not completed in other places, partly on account of want of funds, and partly because, being expensive, the building extended through so long a period of years that they were outrun by the improvements made in the art of warfare, and thus rendered practically obsolete before they were finished. Solothurn was, therefore, up to a comparatively short time ago, a complete model of the fortifications of the 17th-century after the plans of Vauban. As in other places, so here—the fortifications were obliged to give way to the increase of the size of the town, and, unfortunately, have not been treated with much consideration. For instance, the beautiful Basel Gate (see view in Concert Hall) was already partly pulled down when a more enlightened view of the interest attaching to historical buildings was taken, and an order for its restoration issued and instantly put into practice.

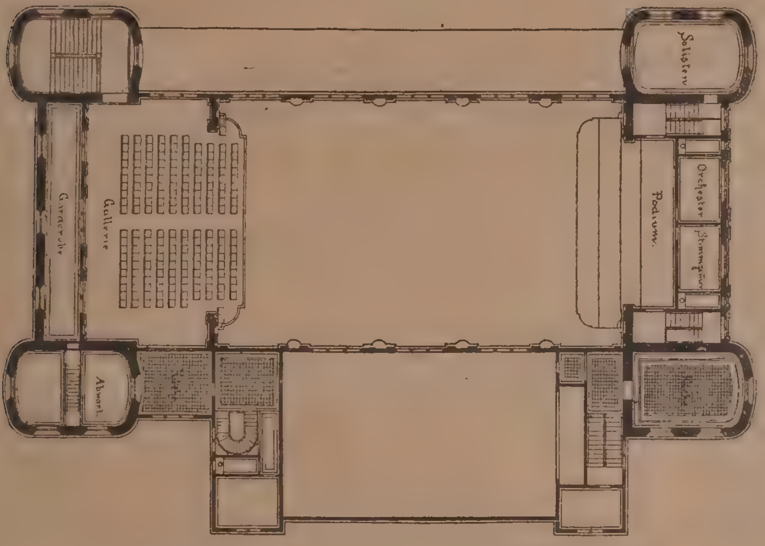
Even now the inner town has a most picturesque, artistic, and unique appearance, surrounded as it is by broken ramparts and numerous beautiful towers. Still, it is evident the inhabitants do not set much value upon this, as will appear when, on passing through one of the old openings into the outer town, one comes quite suddenly into broad streets with houses and gardens of newest date. One is astonished and hurt with the unsuitableness of this sudden contrast, these modern buildings being quite out of character with the old town, and very commonplace, too, in appearance.

In the designs illustrated to-day for a new Museum and a new Concert Hall, which are to be placed adjoining the old fortifications and the Basel Gate, it has been the endeavour of the architect to avoid this contrast by using for the elevations only those motives contained in the fortifications of Vauban and the old houses in the town, and especially has it been desired to make the new Music Hall form, with the old Basel Gate, one harmonious architectural feature.

For the museum the requirements provided



GROUND PLAN, CONCERT HALL, SOLOTHURN.



GALLERY PLAN, CONCERT HALL, SOLOTHURN.

one department for zoology, one for minerals, and another for painting, sculpture, copperplates, &c., consisting of a "salle carrée," several large galleries, and a number of cabinets. In the basement, not more than a yard underground, there were stipulated for a room for the practice of taxidermy, a dwelling for the attendant, and store-rooms for packing-cases, &c.

For the Concert Hall, to be built partly in half-timber, was required a large hall with gallery, and podium, size as given in the ground plan, a smaller room with restaurant in close connection, with the larger hall so that they could be combined if needed, cloakrooms, and usual offices for the public, and separate rooms for the artists, also a dwelling for the attendant. Mr. Alexander Koch, of London, is the architect for these buildings.

* * *

ARCHITECTS AND FIREMEN AT AMSTERDAM.

THE work of the architect and the work of firemen are so closely allied in combating the fire fiend, the one in erecting buildings so as to prevent the origin and spread of fire, and the other in extinguishing the enemy, that it behoves us to make some comments upon the International Congress to be held among architects, engineers, and firemen in Amsterdam from the 24th to the 28th instant.

The programme of subjects put down for discussion is long and comprehensive, divided under the following heads: (1) Measures for the prevention of fire; (2) extinction and salvage; (3) construction and planning of buildings in respect of danger from fire.

These heads are further subdivided for papers to be read upon the warehousing of combustible merchandise; the construction of furnaces, ovens, and chimneys; measures for the prevention of spontaneous combustion; inflammability of various oils; construction of lamps; lightning conductors; electricity, &c.

The second heading, on fire service, includes organisation of fire brigades in large cities and small towns, water supply, appliances for extinction of fire and saving life, means of lessening damage by water, and such-like matters of detail pertaining exclusively to fire service, interesting in themselves, but not so important to architects as those points provided for discussion in the third series. It may be mentioned, however, that under the second series the planning of fire-stations is included, and that Mr. Thomas Blashill, the architect to the London County Council, will contribute a paper upon the arrangements made in the London Fire Brigade stations, which have been erected from his designs and under his superintendence by the Fire Brigade Committee of the London County Council.

The papers under the last series will naturally be the most interesting to architects, and these will be mostly read by architects and engineers. Building materials and fireproof construction, construction and planning of the interior of houses, number and position of staircases, exits in case of fire, exterior balconies, &c., will form subjects of discussion. The important questions of the construction of public buildings, theatres, assembly-halls, will not be omitted. A paper upon the prevention of fires in theatres will be contributed by Mr. Ernest A. E. Woodrow, while Mr. Edwin O. Sachs, the honorary secretary in England for the Continental Section of the National Fire Brigade Union, will read a paper upon exits from places of public entertainment.

The third section will also embrace such subjects as the planning and construction of hospitals, shops, workshops, warehouses, and stores for highly inflammable materials.

In order that the Congress may be a success and of general interest, it will be necessary to have the collaboration of experts in the various branches of the fire service, and in the list of the committee published we see the names of Sir Eyre M. Shaw, Captain Simonds, of the London Fire Brigade, the chief officers of the Berlin Fire Brigade, as well as of the Amsterdam and other Continental fire brigades, architects, engineers, and well-known fire experts.

The importance of this conference to architects is sufficiently obvious from the outline of the programme we have sketched. We trust to be able to give some further notes as to the proceedings, which are of special interest to the profession.

* * *

BELFAST FIRE BRIGADE STATION.

[WITH ILLUSTRATIONS.]

AT the late conference of the Incorporated Association of Municipal and County Engineers, held at Portrush, Mr. James Munce, A.M.I.C.E., M.S.I., assistant city surveyor for Belfast, read the following paper:—In 1892 the staff of the Belfast Fire Brigade was composed of six permanent men and 29 auxiliary men, who gave their services when called upon, making a total of 35 available in case of necessity. During the day, as the auxiliary men were scattered over the city engaged at their ordinary avocations, messengers had to be despatched on cars for them; and at night, these auxiliary men had to be called up from their houses about 300 yards from the station. The horses were hired by contract and stabled on the premises; but, as they were frequently changed, it could not be expected that they would show much intelligence. It will be seen from this that some considerable time might elapse between the receipt of an alarm and the concentration of the whole strength of the brigade upon a fire. The urgent necessity for continuous improvement in the department will be seen from the following table, showing the increase in the number of buildings, and of the valuation for ratable purposes, and consequent increase of risk, since 1891.

Year.	No. of buildings erected.	Valuation of city on 1st January of year.
1892	2,212	£737,816
1893	2,533	761,840
1894	2,538	792,127
1895	—	844,714

The present superintendent, Mr. Parker, reported that in his opinion a permanent staff should be appointed and the station rearranged. This report was endorsed by a special committee, adopted by the corporation, and a permanent staff appointed, which now numbers 50 men. The author was instructed to prepare the necessary plans for additional accommodation. The old station, opened in 1872, occupied a portion of the present site. It was found impossible to convert these buildings into a station suitable for the accommodation of a permanent staff, with the necessary facilities for prompt turn-out, &c.: plans for an entirely new station were prepared and laid before the corporation, who decided to erect it. The author and superintendent were directed to visit some of the larger towns in England and Scotland, so that advantage might be taken of their experience. The object chiefly in view was what to avoid. About twenty stations were visited, and without exception the men complained of their quarters being confined and unfit for the accommodation of families. Firemen's children, like our own, do not remain babies, and accommodation sufficient for a family of small children is quite inadequate when they grow up. For this reason we were told many good men have been forced to leave the service and forfeit their pension rights. The site of the new station is shown by old maps to have been at one time the foreshore of the river Lagan; at a later date it became the site of a dock, afterwards a market, and for 25 years past it has been covered with buildings. The excavation for the tower foundation is carried down 15ft. below the surface. The new station comprises dwellings for 25 men, with laundry and workshops, residence for superintendent, offices, duty-room, engine-room, gymnasium, quarters for single men, six-horse stables, hose-tower, boiler-house, and dynamo-room. The old buildings have been converted into stables, stores,

&c. The buildings inclose a drill-yard, and are arranged fronting three streets. The main buildings are in Chichester-street, which is 80ft. wide and a leading thoroughfare. At the left side of the frontage is the gateway leading to the drill-yard. It is made wide enough to admit a load of hay, and is the only entrance to the interior except through the engine-room or duty-room. The foundation is formed of piles and concrete. Larch piles 40ft. long, 12in. diameter at base, and 8in. at point, were driven down, and sawn off level; a layer of old roofing felt was placed on the bed of the trench to prevent the cement mixing with the sleetch. Wood was specified in first contract, but was found unsuitable, owing to the yielding nature of the bottom. Portland cement concrete was then filled in to the level of pile heads. Cross sleepers 12in. by 6in. were spiked to the pile heads, and concrete filled in to the top, then longitudinal sleepers spiked to these, and concrete brought up 6in. above their top edge. On this the footings of brickwork in cement are built to ground line. The superstructure is of perforated brick and mortar; solid Annandale bricks were used for the external facing of the engine-house block. There are 49 piles under the tower, and 490 under the remainder of the building. The engine-house occupies the main portion of the front, and is 65ft. by 35ft. in the clear, and 16ft. 6in. to the ceiling. It consists of five bays, each with a door 9ft. 3in. wide and 12ft. high, so that an engine can pass out at full gallop. The doors are framed in four leaves, glazed in the upper panels with plate-glass, having the city arms ground on. The engine-house is a clear span of 35ft., this width being absolutely necessary to give space for working round the machines inside. The floor and roof are carried by steel girders formed of two 16in. by 6 I joists, with ½in. plates riveted on top and bottom. The front wall is carried over grate openings by steel girders formed of three joists and plates. The facing of the piers is a brown glazed brickwork, with Castlewellan granite bases. A brass brick with screw plug is fixed in each pier, so that the gates can be left open, and a rope fastened across in summer to hooks, which take the place of the plugs. The bay next to the superintendent's house is screened off as a duty-room by a wall 5ft. high, above which is a clear glass screen rising to the ceiling. Here is fixed a clock with a dial on each side, so that the duty-man and engineer can note times of arrival and departure of machines or men. The walls are lined with enamelled bricks of various colours, and the ceiling is of pitchpine, varnished. The floor of the engine-house is of Dutch clinkers, laid diagonally. The stable floor is similar, but has 4in. granite cubes in the stalls. Immediately behind the engine-house is the stable. The stalls are arranged so that the centre line of each pair is opposite the centre line of a gate. The doors open into the engine-house, and are lined on the stable side with sheet-iron, and fitted with galvanised rollers at the angles, so that a horse rushing out cannot be injured. Teak rollers were used at first, but the horses destroyed them by their teeth. At one end of the stable a washing-place is provided, where horses and machines can be washed under cover; it is also lined with glazed bricks, and supplied with hot and cold water. Over the engine-room and duty-room the gymnasium and single men's quarters are located. The gymnasium is 39ft. by 35ft. by 16½ft. high. It is used as a reading and amusement room for the men, and a sleeping-room for the men on night duty. The flat roof of the stables forms a promenade for men off duty, and is the approach to the gymasium, &c. It is reached by a spiral staircase at one end. The flat roof of the gymnasium forms a drill-ground, and is also used as a promenade by the men. The tower is situate behind the duty-room. It rises 103ft. high, and combines a chimney from boilers, ventilating shafts from stables, engine-house, and gymnasium, wire passage, electrical test-room, and hose-drying tower. It can also be used for look-out purposes. The hose used in Belfast is in fifty-yard lengths, and can be hung up without a kink. The tower is approached by an outside spiral stair, and has a wrought-iron balcony all round, at level of testing-room. This enables the men to deal with the wires without risk. Hooks and pulleys are attached to balcony at one side for drying hose in open air. All telephone wires and fire alarms are received in a room at top of tower, from which they are led down a tube to the switchboard in duty-room. The quarters for married men are arranged round two sides of the drill-yard. Each house is complete in itself, and consists of kitchen, bathroom, lavatory, and one, two, or three bedrooms. They are so arranged that one room can be taken off any house and added to the adjoining house to suit the number of occupants. There are two-roomed, three-roomed, four-roomed, and five-roomed houses at present. Each house is on one floor—i.e., there are no stairs in a house. Those on the upper floor are approached by a balcony formed of concrete on steel joists, built into the walls, with an iron railing, and stairs at each end and centre. The laundry and coal vaults are in the centre of the block at the corner of Townhall and Oxford-streets. The workshop occupies two stories at the end next the engine-house. All the buildings are covered with flat asphalte roofs, so that they can be raised hereafter without disturbing the occupants. The roofs over the dwellings form a playground for the children, who are not permitted to run about the drill-yard. Each house is provided with a supply of hot and cold water. The hot water is laid on from a cistern placed on roof over the coal-vaults. A dresser is fixed in each kitchen. The sink is of enamelled earthenware, and is fitted with a wooden cover, which forms a table when not in use. The walls are plastered in Portland cement for 3ft. in height. The floors of the kitchen and bathroom are laid in red and black tiles in concrete. The bedroom floors are of wood. All are deafened. The laundry is arranged so that five families can use it at once. The fittings consists of five washing-stalls, each containing washing-tub, boiler, scrubbing-bench, and drying-horse (all screened off so that one person cannot see the clothes being washed by another), a hydro-extractor, washer, wringer, box-mangle, ironing table, and iron-heating stove. Hot and cold water and steam for boiling are laid on. The fittings are all by Messrs. Summerscales, Keighley. The workshop contains on ground floor a fitter's bench, coach-maker's hearth and anvil, drilling machine, lathe, and an 18H.P. vertical engine. The upper floor is used as a carpentry and painting shop. A travelling crane, capable of lifting 10 tons, is fixed to raise an engine to the upper floor, and is so arranged that if a fire-alarm is given it can be left in any position with safety. A boiler well is constructed on the ground floor. A drill balcony, 70ft. high, is erected at one side of yard. It is of timber, and represents two bays of six-story building. It is used for training the men to climb, use escapes, &c. The gymnasium is fitted with bridge ladder, scaling ladder, vaulting-horse, parallel bars, horizontal bars, dumbbells, rings, climbing ropes, &c. Boxes and tables to cover the apparatus are arranged round the walls, and form seats by day and beds at night for men on duty. Book-cases are at one end, and a piano occupies a corner. The floor is laid like a ship's deck, and caulked so as to be perfectly watertight. The whole area of the buildings is covered with Portland cement concrete, 6in. thick, and Limmer asphalte below the floors. The stable fittings are by Messrs. Musgrave. A brass rail is hinged at end of each stall to prevent the horse backing out. The heel posts rise to ceiling and support the girders. A ventilator runs the whole length of the ceiling. The channel is flushed by a concealed pipe in wall at one end. The system of electric bells is so arranged that the duty man can call any individual, or, by turning a lever, the whole staff at once. A sick man or one off duty can be left undisturbed. The station is lighted entirely by electricity, the current being generated on the premises. A very compact Lancashire boiler, made by Galloways, of Manchester, supplies steam not only to the engines for driving the dynamos, but also to a separate engine for the workshops, for boiling hot water in the cistern, which supplies each of the twenty-five houses, laundry, single men's quarters, and superintendent's house, and steam to the heating coils in duty-room, engine-house, gymnasium, &c. It is kept at about 40lb. pressure during the day, and 80lb., whilst the electric light is turned on to the whole station—i.e., to 11 p.m. The exhausted steam is used for heating the feed-water, which is pumped into the boiler by a Worthington pump, through a superheater. The consumption of fuel has been as low as 30cwt. per week, which the author ventures to think is remarkable, and is due to careful attention in firing. The dynamos are driven by two high-speed engines built by Mr. W. Malcolm, of Belfast. Each engine is capable of developing about 18H.P., but the average load is about 10H.P. for each. The dynamos, which are the production of the contractor for the electric light, Mr. J. H. Greenhill, of Belfast, are placed on the same bedplates as the engines, and are driven by belts from the respective flywheels. To avoid any risk of failure in the lighting either machine can be instantaneously connected to any particular circuit by means of a very complete double pole, double break "throw over" set of main switches, also made by the contractor. There are three main circuits, termed the "ordinary," the "all-night," and the "emergency," and these terms explain their purpose; the "emergency" being switched on when there is a call of fire. The switch-board is placed in the duty-room, and, although at first sight it appears very elaborate, it is in reality extremely simple to manipulate, and renders it totally impossible for a mistake to be made. It contains all the corporation's telephone wires, the direct fire alarms, bells to each apartment and dwelling in the station, electric light switches, speaking tubes, &c., also gauges showing the pressure of the town water supply and the electric light volts and ampères. In short, the duty man at the switchboard has control of the lights, bells, and telephones of the whole establishment, and the out stations as well. The ordinary lights are switched out at eleven p.m., but there is an additional switch for each lamp in the dwelling-houses and in other sections by which any lamps not required may be cut off. When the fire alarm rings the "emergency" switch is operated, and instantaneously the special lights in the fire-engine room, stables, single men's quarters, and one light in each of the married men's houses are illuminated, so that no delay occurs in any section from want of light. These "emergency lights" are controlled from switchboard only. The current is on the direct low-tension principle, and in addition to 170 incandescent lamps there are two very powerful arc lamps for illuminating the open spaces of the station. The general effect of the lighting is extremely fine, and it has proved to be very satisfactory after two winters' experience. The gymnasium and single men's bedrooms have polished steel shafting fixed as poles for the rapid descent of the men to the engine-house. The engine-house and stable doors are fitted with Try's patent fittings. A gaslight is hung at either side of each engine for igniting the lamps. The flames are mere specks until taken in the hand, when they enlarge to the size of No. 2 gas-burners. When released they rise above the men's heads and again diminish to small flames. The harness is suspended and becomes free on the weight being taken by the horse. At 11 p.m. all lights (except those known as "all-night lights") are turned out by the man on duty at the switchboard. The other men on duty lie down in the gymnasium on stretchers with rugs round them. On an alarm of fire being received, whilst the telephone is at his ear the duty-man turns one handle. This lights up the bedroom of every man, the engine-house and stable, single men's quarters, and gymnasium; then the bells ring, the men on duty slip down poles, the first man pulls the cord, releases the stable doors, the horses trot out, passing under the harness, the driver takes his seat, the engineer sees that all is right and pulls the cords, releasing the doors, and in less time than is occupied in describing it the first machine is off, only fifteen seconds (on the average day and night) having been occupied between the receipt of the alarm and the engine responding. Immediately another machine, men, and horses take the place of those gone out. Of course, if the fire is an entensive one more machines follow. In planning the buildings the points kept in view were convenience and economy in working, facilities for prompt turn-out, comfort of men, and provision for future extension without undue interference with the working of the station.

The foundation-stone of the new grammar school for Southampton, now in course of erection on the West Marlands, was laid on Monday week. It is the third schoolhouse erected for the charity during the past three-quarters of a century. The first, built in 1821 at a cost of £1,200, was replaced in 1874 by one erected at an outlay of about twice that amount. This, in turn, has become inadequate, and the school now being constructed will cost £6,650, and with master's residence and grounds £9,730. Mr. A. F. Gutteridge, of Southampton, is the architect, and Messrs. Playfair and Toole, of the same town, are the contractors.

CONTENTS.

Getting Away from Ourselves 361
Surveyor's Work 361
Open-Timber Roofs: a Plea for their Decoration ... 362
Classic Details and their Application 363
The City and the Engineer... 364
The British Association at Ipswich... 367
New Museum and Concert-Hall, Solothurn... 368
Architects and Firemen at Amsterdam... 369
Belfast Fire Brigade Station 369
Our Illustrations 371
Competitions 371
The Building News Directory... ... ... xi.
Building Intelligence 390
Theatre Royal, Glasgow 391
Books Received 392
Appliances for Girder Erection... 392
Engineering Notes... 393
Correspondence... 393
Intercommunication 394
Legal 394
Legal Intelligence 394
Stained Glass 395
Water Supply and Sanitary Matters 395
Our Office Table 395
Trade News 396
Tenders 397

ILLUSTRATIONS.

"CHRIST AT THE HOUSE OF SIMON THE PHARISEE," BY JAN GOSSART. — MUSEUM AND CONCERT HALL, FOR SOLOTHURN, SWITZERLAND.—THE PORTE DE BAUDETS, BRUGES.—THE WEAVERS' HOUSE, GHENT.—THE STAIRCASE, "GODDINGTON," CHELSFIELD. — HALL STAIRCASE AND GALLERY TO COUNTRY HOUSE.—CITY OF BELFAST CHIEF FIRE BRIGADE STATION.

Our Illustrations.

"OLD MASTERS" ON THE CONTINENT.—XXIV.: "CHRIST AT THE HOUSE OF SIMON THE PHARISEE."

This painting, by Jan Gossart, usually called Mabuse, is now in the Royal Gallery at Brussels. Its painter was born about the year 1470 at Maubeuge, in Hainault, and he died in Antwerp in 1541. Records tell little concerning his history; but in the earlier years of his career he adopted the methods of his Flemish contemporaries, whose designs he soon surpassed, and it is certain that he visited Italy while he was still young. "The Adoration of the Kings," at Castle Howard is an elaborate and splendid example of his work at this time, when he was under the influence of Memlinc and the style then prevalent in Flanders. Mabuse rivalled the work of Memlinc for depth of feeling and conscientious finish of detail, and he severely competed with Gheraert David for the true spirit of religious sentiment exhibited in his works, while for warmth and excellence of colouring, his freshness of effect, no doubt, exceeded either of these famous masters. The "Enthroned Madonna" at Palermo and his "Madonna by the Fountain" in the Ambrosiana at Milan, are attributed to the same period with some others from his pencil; but the "Adoration of the Kings," already mentioned, is probably the finest of them all. Mabuse was probably the first among the Flemish masters to introduce the nude into his compositions. In 1508 we read of his going to Italy in the train of Philip the Bastard, of Burgundy; but the endeavour conspicuous in his compositions which he then designed, evidently intended to combine his native style with Italian art, are not to be reckoned as satisfactory, for the results were not altogether happy. The absence of conviction and feeling mars their labour engendered by his new fancy, which had so little in common with the early associations of his life's work. Notwithstanding this comparative failure on the part of Mabuse, it is perfectly clear that he had not ceased to produce paintings of unquestioned ability and striking skill, such, for instance, as that which we illustrate to-day, or his great altar-piece in the cathedral of Prague, wherein, in a palatial interior of a Renaissance building, St. Luke is represented drawing the portraits of the Blessed Virgin and the infant Christ. Mabuse, too, was one of the illuminators of the celebrated Grimani Breviary, preserved in the Library of St. Mark at Venice. At Vienna, Brussels, Munich, Antwerp, and other places in Belgium specimens of his work are to be seen, and there are two portraits of his in the National Gallery. One, a "Man Dressed in Black with Fur over his Shoulders," was purchased at Paris in 1860. He has a rosary in his hand, and appears to be standing in a church, as shown by the architectural background. The second picture is of a man holding his gloves in his left hand, his right resting on the table. He wears a gown furred with sable, and a flat cap. The work was a Wynn Ellis bequest in 1876. At Hampton Court there is a group by Mabuse of the children of Christian II., King of Denmark, and the likeness of Cardinal Carondelet in the Louvre should be mentioned. After returning from Italy he was largely employed throughout the Low Countries. His colouring remained fresh and clear, and his works are as neatly finished as a Mieris or Douw. His form of signature was generally "Johannes Malbodius."

NEW MUSEUM AND CONCERT HALL, SOLOTHURN.

(See description and further sketches on p. 368.)

PORTE DE BAUDETS, BRUGES.

This, one of the several interesting and picturesque gateways built to defend the bridges over the outer canal which surrounds the city, is probably of the 14th century, with later additions to the upper story. The circular apartments on the ground floor to the drum towers flanking the gateway have fine groined ceilings.

THE WEAVERS' HOUSE, GHENT.

This house, situated at one corner of the Vrizdagmarket or Marché du Vendredi, is a very well-proportioned and striking example of domestic architecture of apparently the 17th century; a very striking feature being the cylindrical turret at the corner. Some parts of the upper stories seem to have been added at a later date.

Ernest C. Bewlay.

[These two sketches are the last remaining unpublished from those for which prizes were awarded in the competition which we held in connection with the Building News for Drawings executed with a view to the Picturesque rendering of Architectural Subjects. Mr. Bewlay's sketches are bright and effective, without any loss of information of value to the architect.]

THE STAIRCASE, "GODDINGTON," CHELSFIELD.

This house, of which we gave an exterior view from the architect's Royal Academy drawing in the Building News for May 5th, 1893, has been erected for Mr. A. Miller Hallett, with parts of a smaller building incorporated in the new work. A special feature is made of the hall, from whence the fine oak staircase, which we now illustrate, leads up to the top of the house. This work is entirely of wainscot, and every care has been taken to insure good detail throughout. The general contractor was Mr. Thomas Crossley, of Bromley, and the oak parquet work was executed by Messrs. Howard and Sons. The electric-light was furnished by Messrs. Drake and Gorham. Mr. W. West Neve, of Bloomsbury-square, is the architect.

HALL STAIRCASE AND GALLERY TO COUNTRY HOUSE.

This elevational design, by Mr. W. H. Ashford, gives details of an entrance hall to a large country house, the hall on ground floor giving access to principal reception rooms, and on the first floor, by means of the gallery, furnishes the approach to suites of bedrooms. The materials are light wainscot oak for the panelling and general framing, with teak introduced for newels, balusters, handrails, &c. The upper portion of the walls of the hall are shown to be faced with, or built of, Corsham Down stone.

BELFAST FIRE BRIGADE STATION.

(See descriptive article on page 369.)

* * *

The contractors' estimates for building the remaining portion of the new aqueduct nearest to Loch Katrine were opened by the Glasgow Water Committee on Monday. It was found that the amounts ran from £40,450 to £58,480. The estimates were remitted for examination.

Colonel Yorke, R.E., held a public inquiry at the Barry Hotel, Barry, on Monday, into the circumstances attending the late fatal disaster at Aberthaw, on the line of the Vale of Glamorgan Railway, which is in course of construction by Messrs. Pethick Bros., the engineers of the works being Sir J. W. Szlumper and Mr. T. Forster Brown.

An International Technical Congress met at Zurich on Monday, for the purpose of arriving at an agreement securing unity of methods in the testing of building materials in all European countries. The United States were also represented, and Mr. Hennings, a New York engineer, was elected an honorary president.

COMPETITIONS.

Great Ayton Main Sewerage.—The parish council of Great Ayton, and the chairman of the district council, acting together as a parochial committee, have had under their consideration the subject of a system of main sewerage for the village. They offered a premium of 25 guineas for the best scheme, and in response the following engineers entered into competition, viz.:—Mr. H. W. Taylor, Newburn-on-Tyne; Mr. F. Beasley, Westminster; Mr. H. Bertram Nicholls, Birmingham; Mr. W. Spinks, Leeds; and Mr. R. E. W. Berrington, Wolverhampton. Mr. T. W. Stainthorpe, A.M.I.C.E. (the engineer and surveyor to the Eston Urban District Council), was appointed as assessor on the five schemes, and after paying a visit of inspection to the village, he recommended that the premium should be awarded to the competitor under the *nom de plume* "Salus," who afterwards proved to be Mr. H. W. Taylor, P.A.S.I., of Newburn-on-Tyne. Mr. Stainthorpe's report was unanimously adopted by the parochial committee, and Mr. Taylor's scheme, at an estimated cost of £2,990 (including Ives' patent system of filtration), will, after obtaining the sanction of the Local Government Board, be carried out with as little delay as possible. The village of Great Ayton, with a population of some two thousand, stands on the Leven, a small tributary of the Tees, near the head of the Cleveland Valley in the North Riding. It averages about three hundred feet above sea-level, and is one of the few villages that can boast of two greens, the area and character of which have been uninterruptedly maintained since the reign of James the First. The quaint little chamber where the parish council holds its meetings, and where the school plans were adjudicated upon, is the room where Captain Cook, the circumnavigator, received his education.

Skelmanthorpe.—Twelve sets of plans were submitted in competition for proposed new Wesleyan chapel here, and after several meetings the trustees selected those sent in by Mr. J. Berry, architect, 9, Queen-street, Huddersfield, who has since been engaged to carry out the work.

* * *

CHIPS.

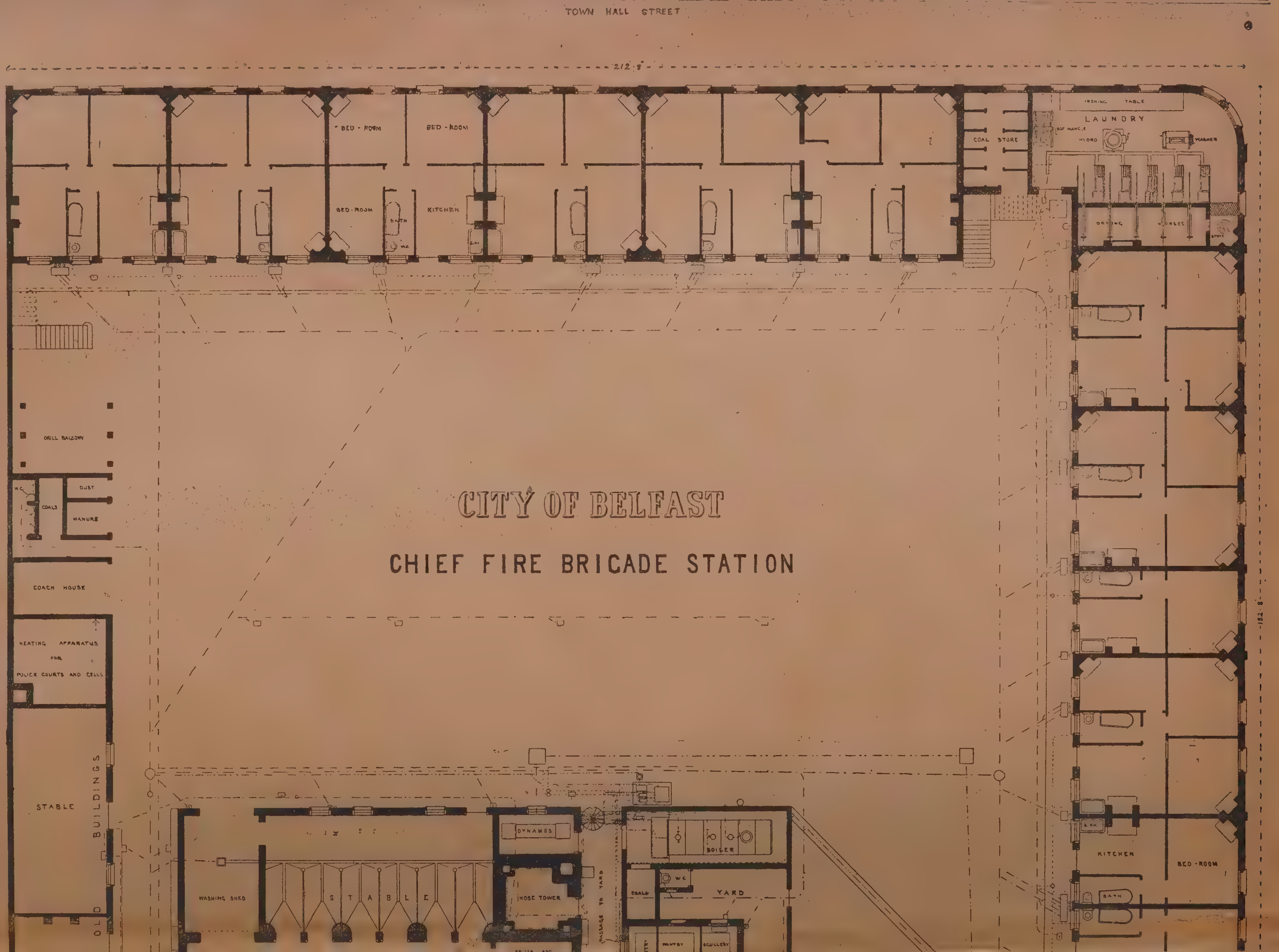
The town council of Rochdale have finally passed and adopted a revised code of building by-laws, of greater stringency than that hitherto in force.

The memorial stones have just been laid of new schools to be added to the Baptist Chapel at Small Heath, Birmingham. The main room will be 60ft. by 31ft. 6in., and there will also be five class-rooms. Mr. Hougham, of Small Heath, is the contractor.

A noteworthy change has just been effected in the appearance of the High-street of Kirkcaldy, at White House, the residence of the late Mr. John Fergus, for many years M.P. for Fifeshire, and where Carlyle was a frequent and welcome visitor. A high wall which inclosed the grounds formed part of the thoroughfare for some distance, and the trees behind formed a pleasant feature in the vista of the street. The house remains, but wall and trees and everything else are gone, and a row of shops is being built on the site. A 17th-century edifice of very irregular construction, at the opposite side of the street, is likely to be acquired by the Government as a site for a new post office, and another corner at the foot of the Kirk Wynd has just been appropriated for the Swan Memorial Hall and Young Men's Christian Institute.

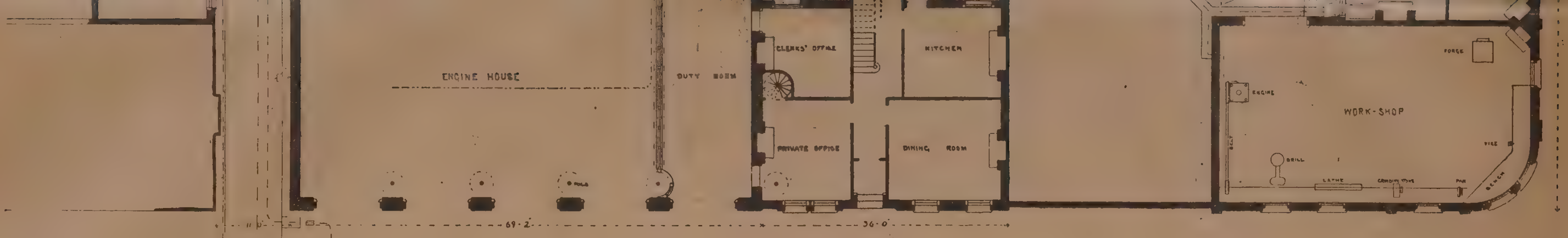
On May 1, 1896, there will be opened in Berlin an Industrial Exhibition of the first rank. More than 5,000,000 marks have been subscribed to the guarantee fund, and 5,000 exhibitors have engaged room. Round about the main building, which has a capacity of 60,000 square mètres, are grouped about 50 others, some of them being of very considerable dimensions. These buildings are set apart for special exhibits, of which there are 23 groups. Sheets of water, on the same lines as in Chicago, will be introduced into the exhibition, and will be made to combine with picturesque landscapes, and electric and elevated railways have been laid down between the city and the exhibition, which is situated at Treptow Park, on the Upper Spree, at a point where it broadens into several lakes.

The report of the Sheffield General Infirmary, presented at the annual meeting on Friday, stated that plans had been prepared for providing better accommodation for nurses; but it was felt that it would have been inopportune to put the scheme forward during the past year. Steps must, however, now be taken to mature the plans, and to appeal to the public for funds to carry them through.



CITY OF BELFAST

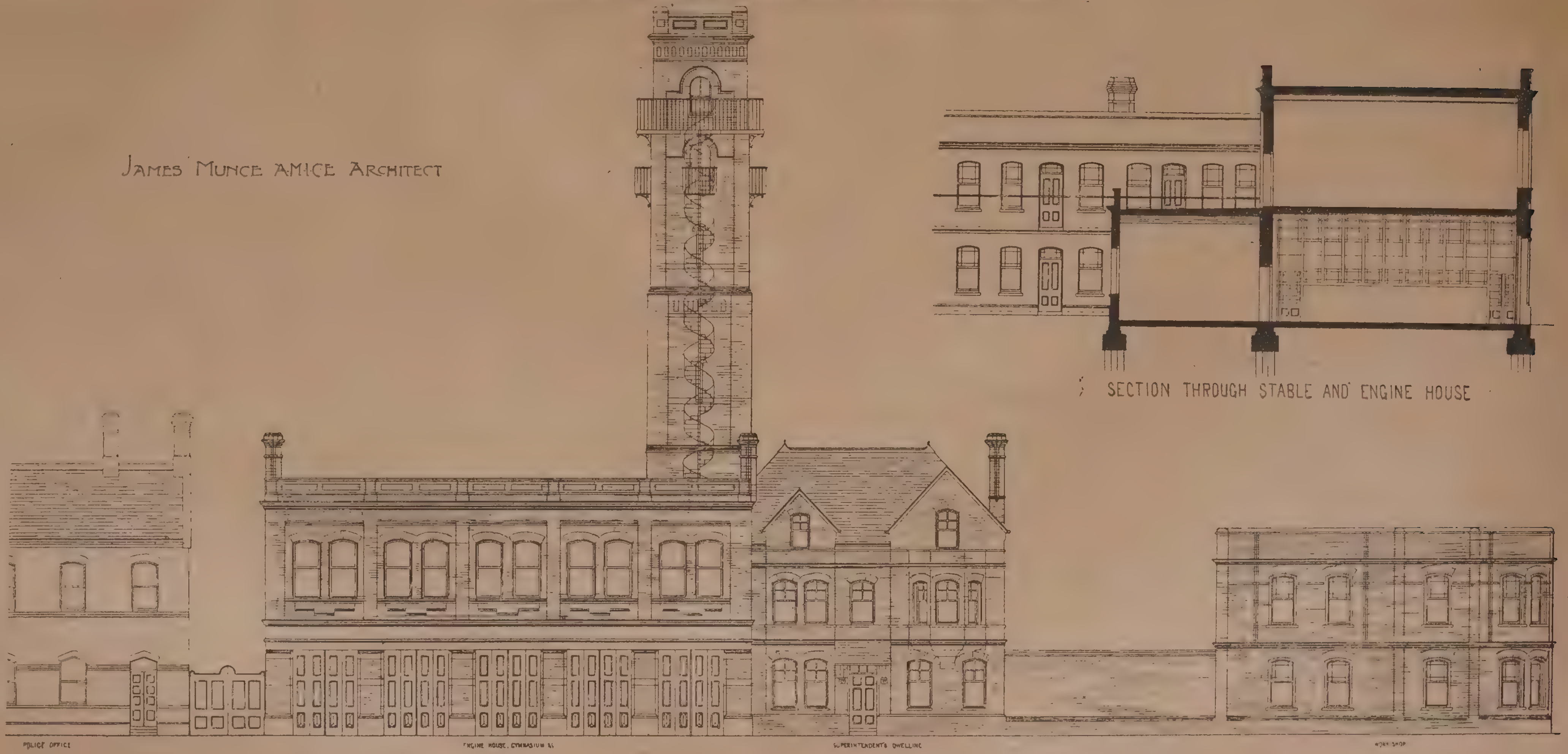
CHIEF FIRE BRICADE STATION



GROUND PLAN

SCALE OF FEET

JAMES MUNCE A.M.I.C.E. ARCHITECT



SECTION THROUGH STABLE AND ENGINE HOUSE

ELEVATION TO CHICHESTER STREET

SCALE OF FEET

Building Intelligence.

The Admiralty Offices.—The occupation of the new Admiralty Buildings will commence in a few days by the transfer of the chief engineer's department to its quarters on the top floor. The other departments will rapidly follow, for the whole edifice, which has been over five years in hand, has been practically ready for the past two months. The architects are Messrs. Leeming and Leeming, of Victoria-street, Westminster, who won the work in competition, by whom the drawings also were personally made. The contractors were Messrs. J. Shillitoe and Son, of Bury St. Edmund's, and the works have been carried out under the control of Her Majesty's Office of Works, exercised through their surveyor, Mr. John Taylor, C.B. The materials employed are red Fareham bricks, and Portland stone from the Weston quarries, which harmonise well with the old buildings. The new block is separated from the older buildings by a quadrangle, the two communicating on the south side by an open colonnade, by a wide path on the ground level, and by a subway. At the northern end, the quadrangle will ultimately be bounded by a block of further buildings, the drawings and quantities for which are now being got out. The new block thus extends further by 260ft. into the park. The new block, on its side next the quadrangle, is in accord, in its architectural details, with the original building. But its south and west faces, although more freely treated, are necessarily confined to a height of four stories, and an elevation of about 60ft. from the ground level to cornice. The grand entrance will be in the northern block, when that is erected, and will be surmounted by a dome; but the principal stairs are now at the south-east angle of the new block, leading first to the south corridor on the ground floor, running east and west, from which two long corridors run northward, having rows of offices on one side and two long central open courts between them, each 80ft. long and 25ft. wide, extending the whole height of the edifice, and affording excellent lighting and ventilation, the walls being covered with buff glazed bricks, with colour courses. The entrance to the stairs is from the Mall under a tower capped by a lead-covered domical cupola rising 75ft. above the main buildings, or 140ft. from the ground. This tower contains a tank for a supplementary water supply. The stairs as they ascend communicate with similar corridors and rows of offices on the first, second, and third floors, above which the corridors are lighted from the dormers, and the offices from the inner courts. The offices for the high officials are on the ground floor, with the exception of the First Lord's room, which is on the first floor. The naval constructor's and draftsmen's offices are on the third floor, the lighting of which is admirably adapted for its intended purposes. Below the ground level there is a sub-ground floor for clerks' offices, and under this a basement wholly covered in and divided off into numerous repositories and stores. The engine-room, pump, and boiler-rooms are placed outside the building in an underground station, with provision for steam supply for the heating services. The new block is practically built in a dry dock, for the reason that the foundations, being carried down into the solid clay, have passed the water-level of the soil by some 12ft. or 14ft., necessitating the dry-dock arrangement referred to, the walls of which are asphalted and made impervious. The north and south offices, and the central sanitary arrangements, added to the length of the open courts, give a total length of over 300ft., the extreme breadth from wall to wall being 100ft. Altogether, there are over 150 offices, all of which communicate with the messenger on each floor by a telephonic system. The electric light is employed, and gas altogether excluded. All the floors are of Fawcett's fireproof construction. The entire cost will be about £215,000. Illustrations of the Offices have appeared in the Building News for April 6, 13, and 20, and Oct. 5, 1888; and Feb. 20 and March 13, 1891.

Cardiff.—The extension of the Free Library at Cardiff is approaching completion, the hoarding having been removed from the frontages to the Hayes and Trinity-street, although the Working-street façade is still inclosed. Mr. Edwin Seward, R.C.A., of Cardiff, is the architect. The sculptural and carved work is being executed by Mr. William Taylor, representing Mr. W. Clarke, sculptor, Llandaff. This work includes two seated female figures, one-fourth life size, facing the main entrance in Trinity-street, and executed in Portland stone, and between them the coat of arms of the borough. A series of carvings is carried round the façade illustrative of the early marks of the great European printers. Many of these have been supplied from a collection of early specimens of printing and printers' marks formed several years ago by the architect, and from which Mr. Taylor has made reproductions. The series commences with the devices of William Caxton, the first English printer, and his successor, Wynkyn de Worde. There are also the serpent and olive branch of Robert Estienne, of Paris; and the Pegasus of André Wechel, the Globe of the Elzevirs, of Amsterdam and Leyden, and the twin shields and monograms of Fust and Schoeffer, the first printers; the Aldine anchor and dolphin of Venice, the hand and compasses of Christopher Plantin, of Antwerp; and the Adam and Eve of Phillipe de Giunta, of Florence. Most of the carvings are in white Portland stone; but yellow Ham stone has also been used in places, whilst the whole of the fronts are, otherwise, of Bath stone from the Combe Down Quarries. The Hayes front is crowned by a colossal bust of Minerva.

Scarborough.—Memorial-stones of a new Sunday-school about to be built at the rear of Westborough Wesleyan Chapel, were laid on Tuesday. The building fronts to Belle Vue-parade. It will consist of a central hall, 46ft. by 46ft., with galleries on three sides, three classrooms, about 11ft. by 13ft. 6in. each; a young men's room, 24ft. by 18ft. 6in.; and a book store on the ground floor, and five class-rooms on the first floor, one 19ft. by 12ft., and four about 11ft. 6in. by 13ft. 6in., which latter can be thrown into the gallery when needed. In the basement lavatory accommodation for both sexes will be provided. The boys' entrance will be on the western and the girls' on the eastern side of the building. Each will have an outer lobby, and an inner lobby communicating with the northern end of the chapel; also staircases giving access to the first-floor classrooms, the gallery of the central hall, and the chapel galleries. There will be a third entrance in Belle Vue-parade communicating directly with the young men's room. The elevations will harmonise with the chapel, and outside facings will be buff pressed bricks, with dressings of Cloughton stone. The central hall will have an open wood roof, ceiled at the collar-beam. The architect is Mr. William Watson, Barstow-square, Wakefield, and the contractors, Messrs. Bastiman and Sons for the bricklayers', masons', and plasterers' trades, Mr. Joseph Hargreaves for slating, Mr. Geo. Scales for carpenters' and joiners' work, Messrs. Thos. Craven and Son for plumbing and glazing, Messrs. Appleby and Brogden for ironwork, and Mr. Harry Jackson for painting, all of Scarborough. The contracts amount to £2,500.

Wembley.—Contrary to the popular notion, the erection of the Tower at Wembley has not been abandoned, but is making slow, but steady, progress. During the earlier phase of the undertaking, the four huge steel legs, reared diagonally to support the lofty edifice which is ultimately to be raised upon them, had to be shored and maintained artificially in their exact positions until the permanent steel ties were erected and the temporary stays removed. These works have now been completed, and the first section of the tower, with its platform of an acre in extent, at an elevation of 150ft. above the surface of the ground, is now finished. All the girders, weighing 28 to 30 tons apiece, for carrying the flooring, have been raised to this level and set in position, and are now being concreted over for the service of visitors. This lofty platform is only accessible as yet by the open lift used by the workmen in their various operations, but will be opened for public entertainment in the coming year. The underground chamber, 20ft. deep, is also ready to receive the powerful engines which have been designed for working the mechanical lift. These will raise freights of 70 passengers at a time to a height of 900ft., when the top platform shall have been finished. There will be then still another pinnacle above, rising to a height of 1,150ft. The engines, for which the bed-blocks and bolts are already laid, will work the lifts by steel wire ropes passing over four grooved pulleys next the engine, and single grooved pulleys at the point of highest elevation. The cages will travel in vertical guides, and will be balanced by counterpoises, hydraulic buffers being provided to prevent over-winding. The site of the boilers is some distance away from the Tower, and steam will be led from them in pipes to the engine-room. The Tower works are under the charge of Mr. Gilbert, the resident engineer for the contractor, Mr. Heenan.

Worksop.—The new college, forming one of the Woodard schools, was dedicated on the 4th inst. to St. Cuthbert by Dr. Riddings, the Lord Bishop of Southwell. Although the whole of the fabric is not yet completed, enough provision has been made to accommodate 200 boys. The college stands on Sparken Hill, about a mile from Worksop, and has been erected from plans by the architects to the society, Messrs. Carpenter and Ingelow. The buildings will be grouped round a large central, closed quadrangle, 170ft. square inside, and entered by an arched gateway in the centre, where will be the porter's lodge. Facing the entrance on the other side of the grassy quadrangle will run cloisters, passing the great schoolroom, while there will be dormitories above, and classrooms and dormitories below. Towards the east will project the chapel, and on the west is the dining-hall. Of all this something less than half is already finished. A portion of the quadrangle and the dining-hall stands ready, while a temporary chapel has been built for present use. The fittings have been designed by Mr. Kempe, with a view to their suitability to their future worthier abode. The walls of the dining-hall are of warm-coloured brick, and the hammer-beam roof is of pine, unstained and unvarnished.

CHIPS.

One of the most extensive undertakings yet promoted on behalf of a parish council is the scheme for a public water supply for the parish of Purton, to be carried out under the provisions of the Public Health Act, 1875. The scheme has been prepared by Mr. J. R. Shopland, C.E., of Swindon, is estimated to cost about £1,000, and when completed it will provide water for about 120 houses.

Mrs. Carr-Gomm, lady of the manor of Rotherhithe, will lay the foundation-stone of the new town hall for Rotherhithe on Tuesday next, the 17th inst. The building, which is being erected in Lower-road, with side frontages to Neptune and Moodkee-streets, will be Italian Renaissance in style. The architects are Messrs. Murray and Foster, whose design was selected in a limited competition in February last.

St. Anthony's Church, Padua, is being restored. The chief work is the reconstruction, according to the original plan, of the famous altar of Donatello, of which the fragments and figures in bronze have for a long time lain scattered about the church. The exterior of the church was illustrated by a double-page perspective in the Building News for January 20, 1891.

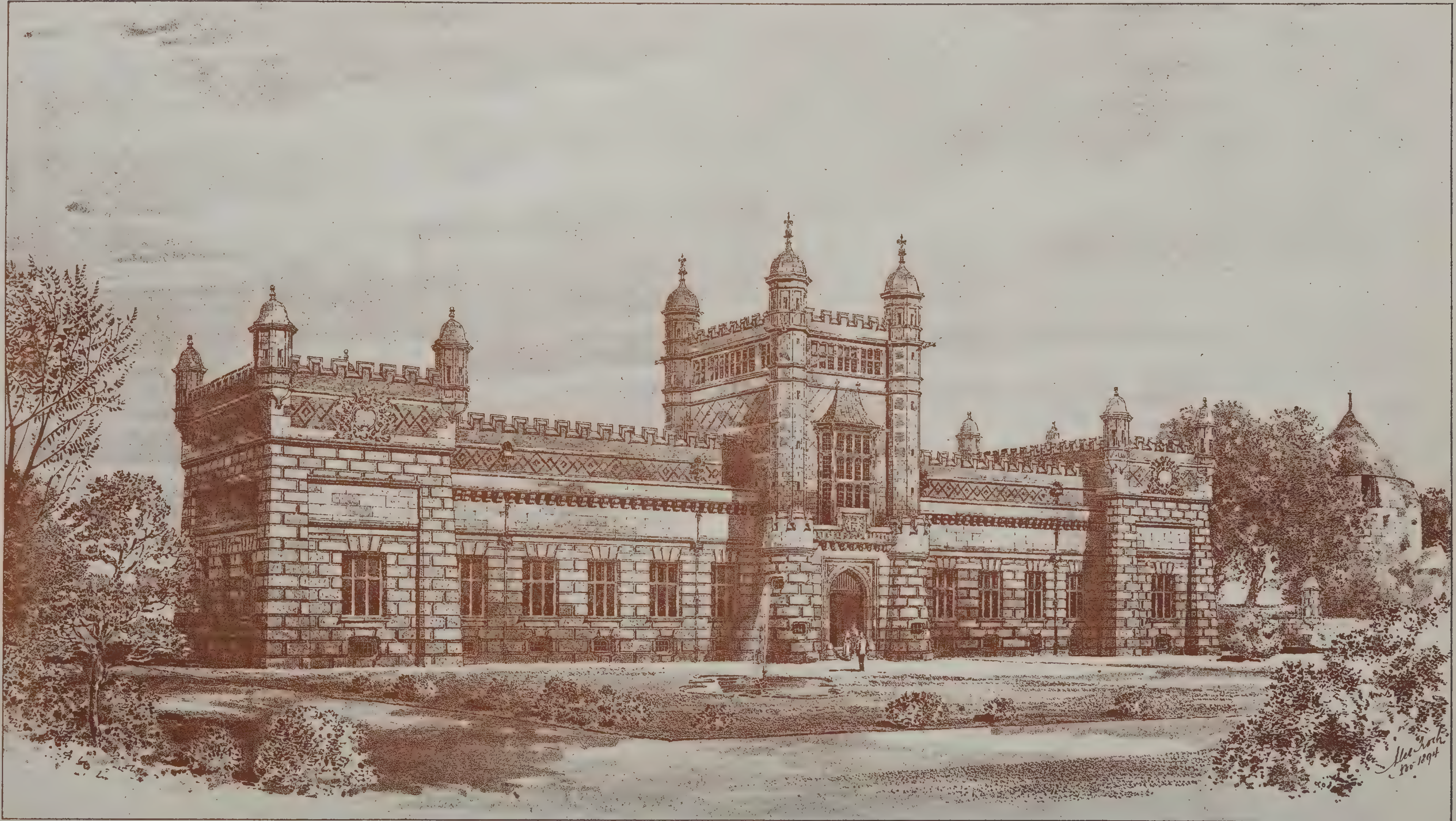
The new clock and chimes placed in the tower of the municipal buildings in course of erection at Croydon have now been put into operation. They have been constructed by Messrs. Gillett and Johnston, of Croydon, and are the gift of the mayor (Alderman Edridge), and cost a thousand guineas. It is anticipated that the new municipal buildings, which are being erected on the site of the old Central Railway station, from designs by Mr. Charles Henman, will be opened early in the spring by the Prince of Wales. We illustrated the buildings, which are Renaissance in style, and of red bricks with Portland-stone dressings, in the Building News for June 3, 1892. The cost has been £140,000.

The first sod of the Barnstaple and Lynton Railway will be cut on Tuesday next, the 17th inst. The line will be over 19 miles in length, and of the narrow gauge of 3ft.; it will form a junction with the South-Western system at or near the present Barnstaple Station, which will then be reconstructed.

The dulness of holiday time again prevailed at the Auction Mart last week. The supply of properties was small, and, with the exception of a brewery at Lewes disposed of on the Monday for £16,100, the demand limited.

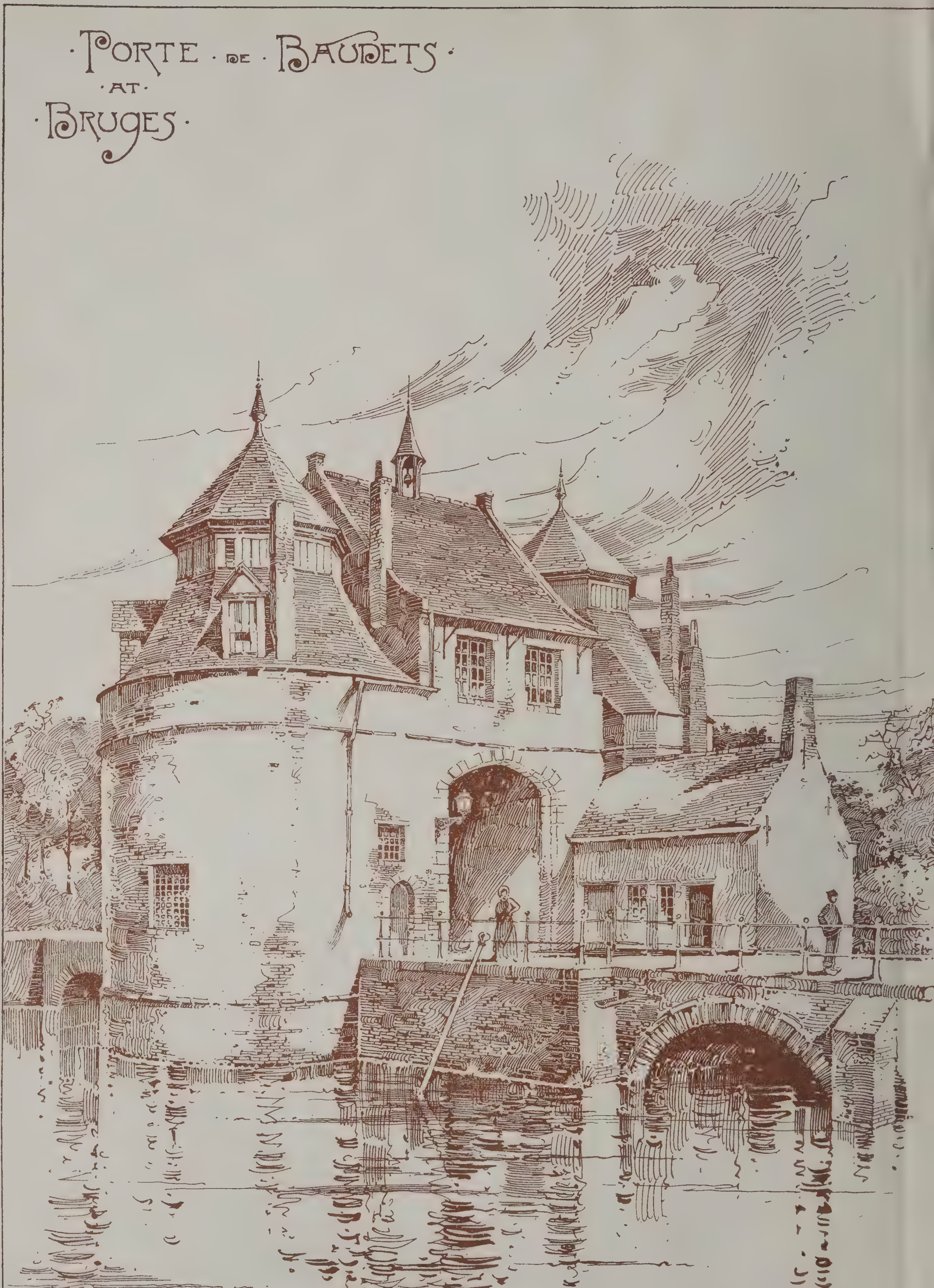
The parish kirk of Auchtertool, Kirkcaldy, was reopened last week for public worship after extensive alterations, which included the removal of a gallery, the reseating of the church, the introduction of hot-water pipes, and the providing of communion and other church furniture. A stained-glass window, by Messrs. Ballantyne and Gardiner, Edinburgh, has also been placed in the church.

During Sunday night the West Bromwich Theatre, which has recently been improved and altered to seat about 2,000 persons, was completely destroyed by fire, nothing but the bare walls being left. The outbreak originated in the room of the manager of a refreshment business connected with the theatre.



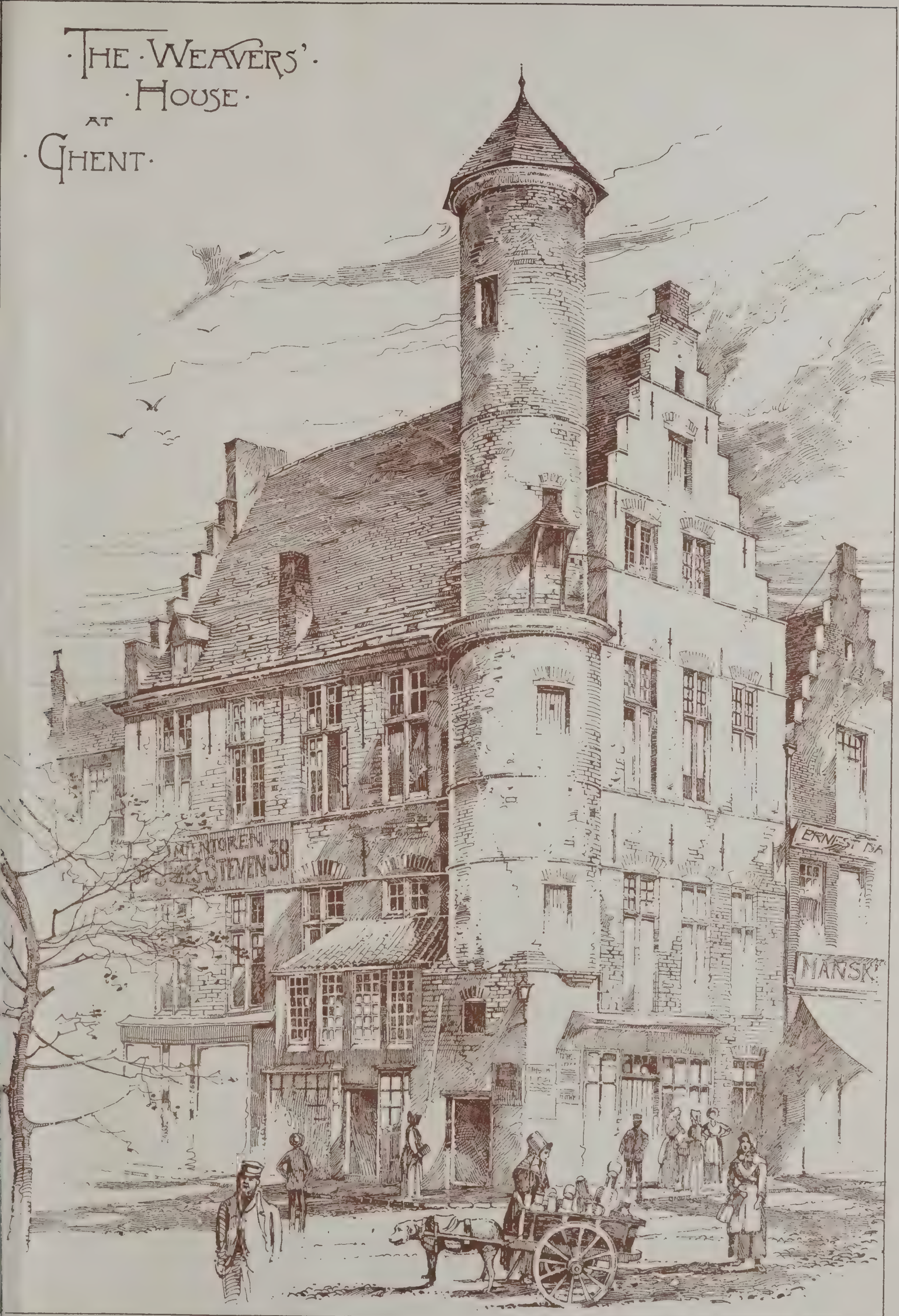
"PHOTO-TINT," by James Akerman, 6, Queen Square, London, W.C.

MUSEUM · FOR · SOLOTHURN · SWITZERLAND · ALEX · KOCH · ARCHT



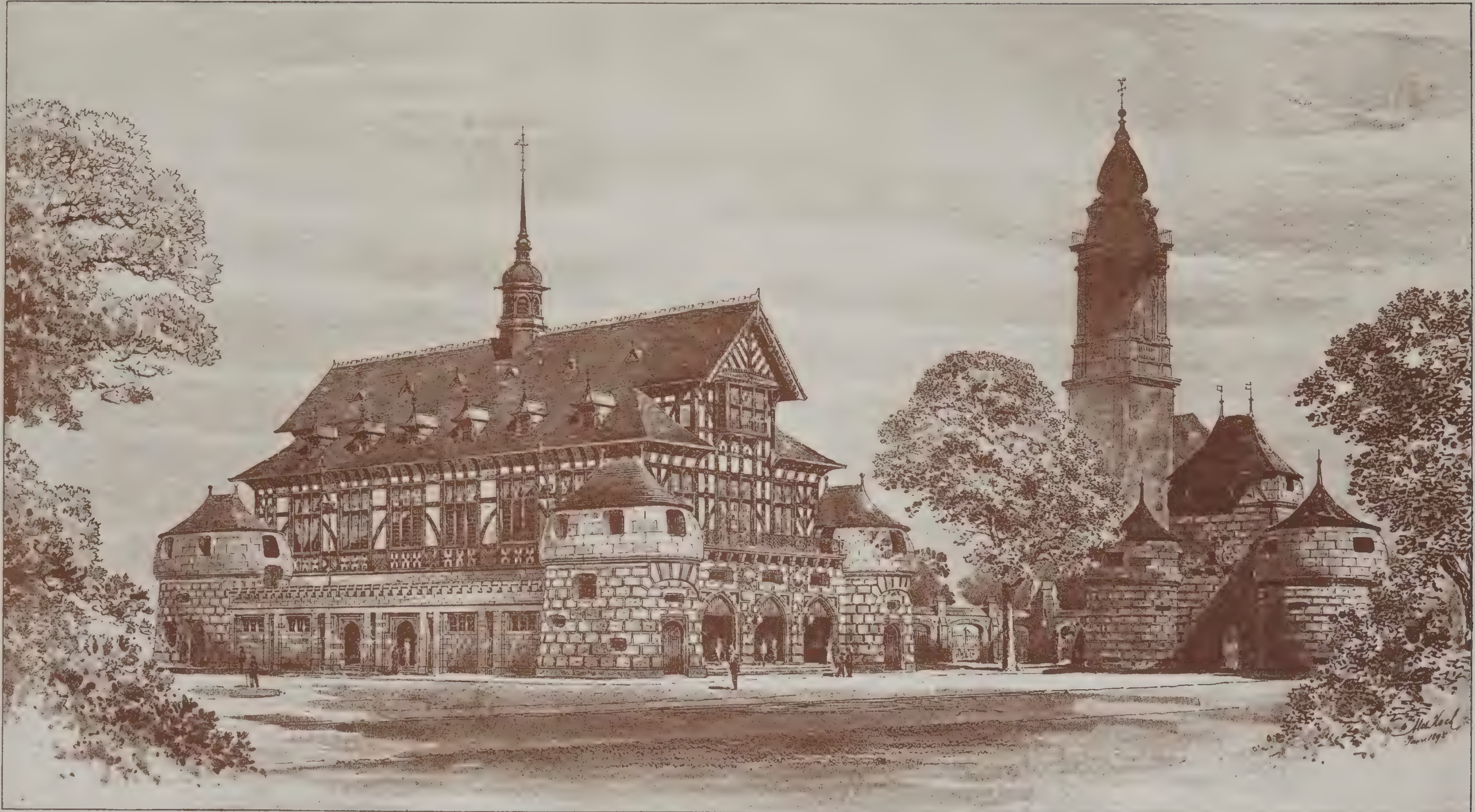
PORTE DE BAUDETS AT BRUGES

ERNEST · C · BEWLAY · DELT ·



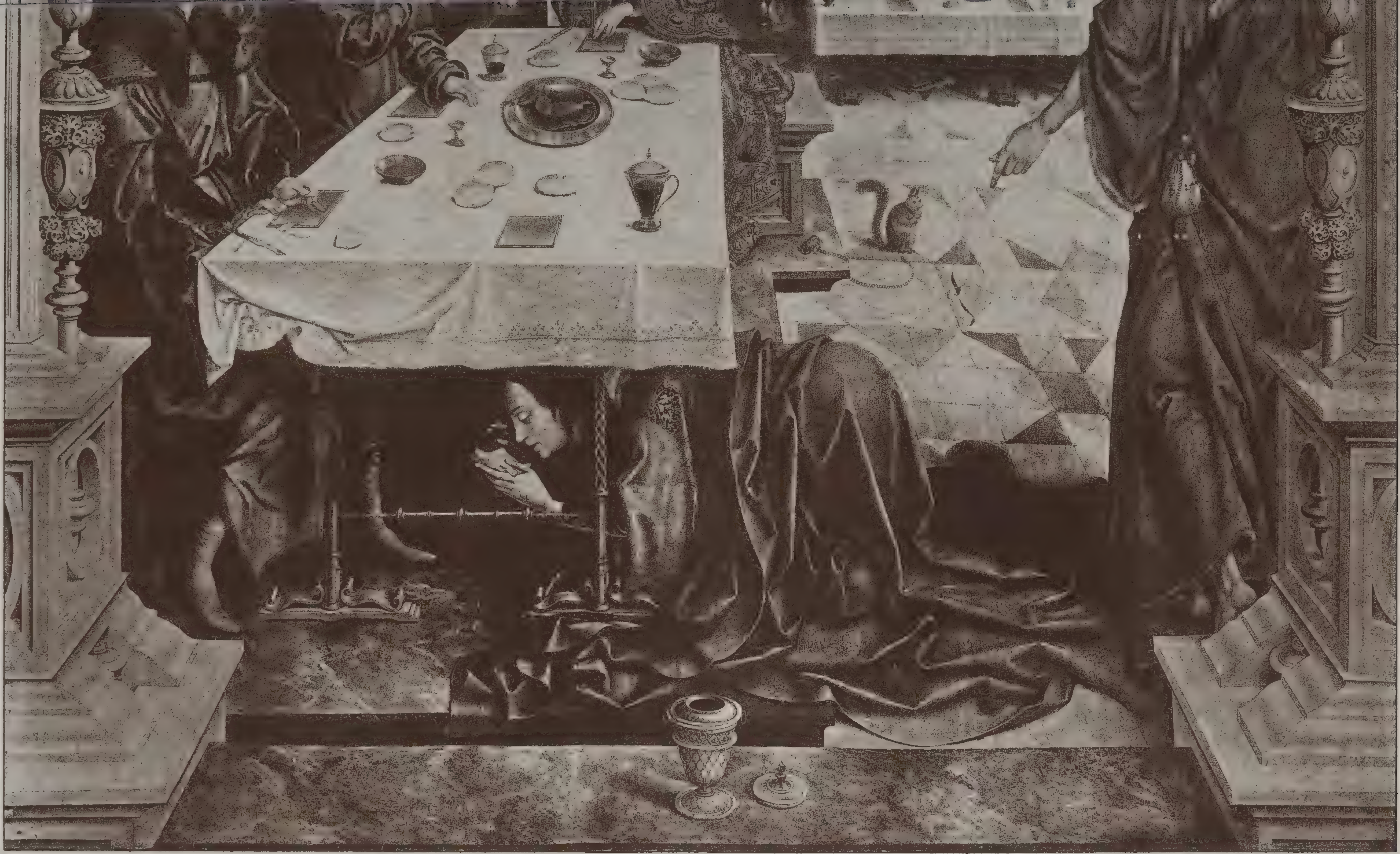
·THE·WEAVERS'· ·HOUSE· AT ·GHENT·

Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C.



"PHOTO-TINT," by James Akerman, 6, Queen Square, London, W.C.

CONCERT-HALL · FOR · SOLOTHURN · SWITZERLAND · ALEXR KOCH · ARCHT



– PHOTO·BY·FRANZ·HANFSTAENGL.–

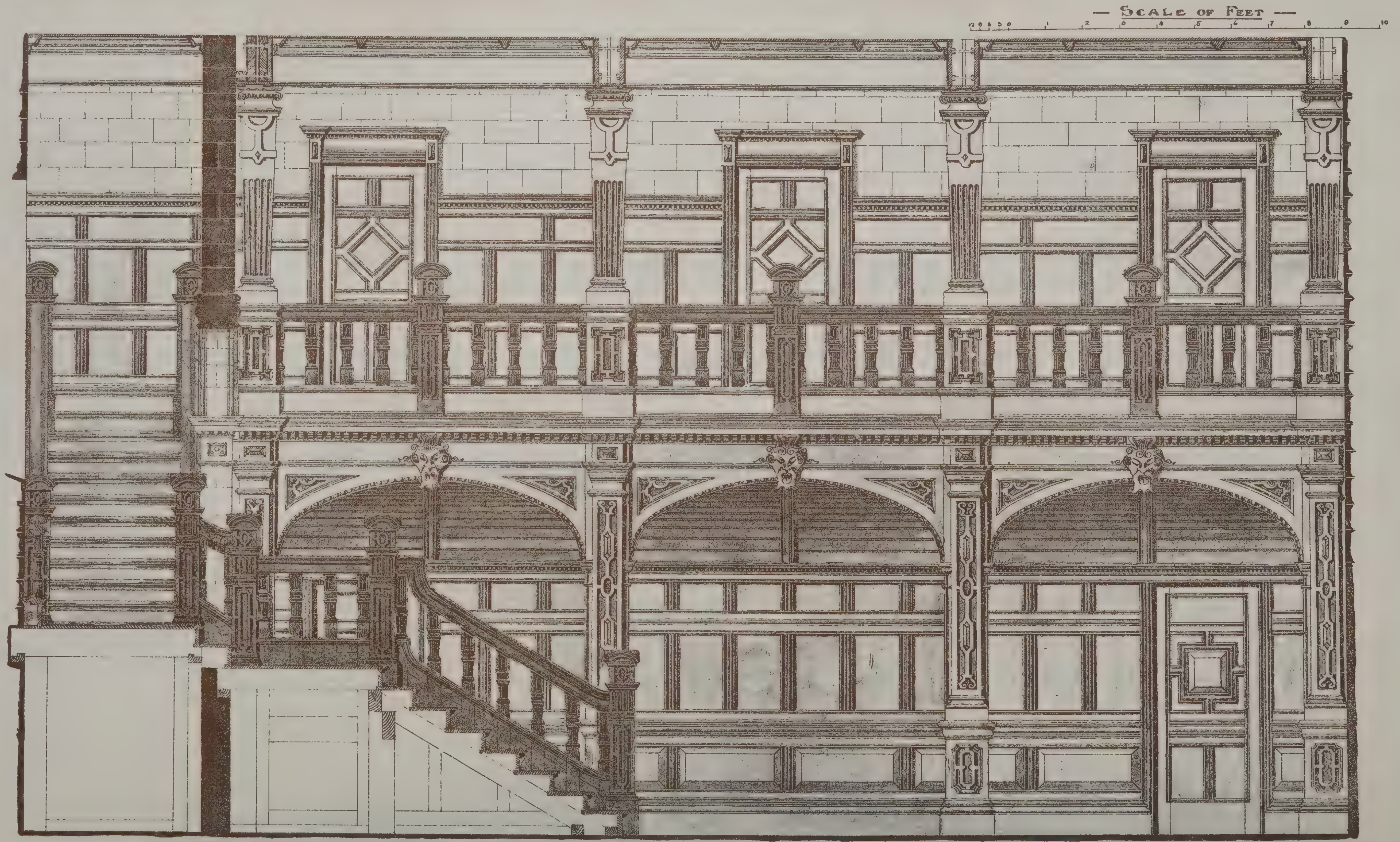
"PHOTO-TINT", [illegible]

OLD·MASTERS·ON·THE·CONTINENT·N°24·

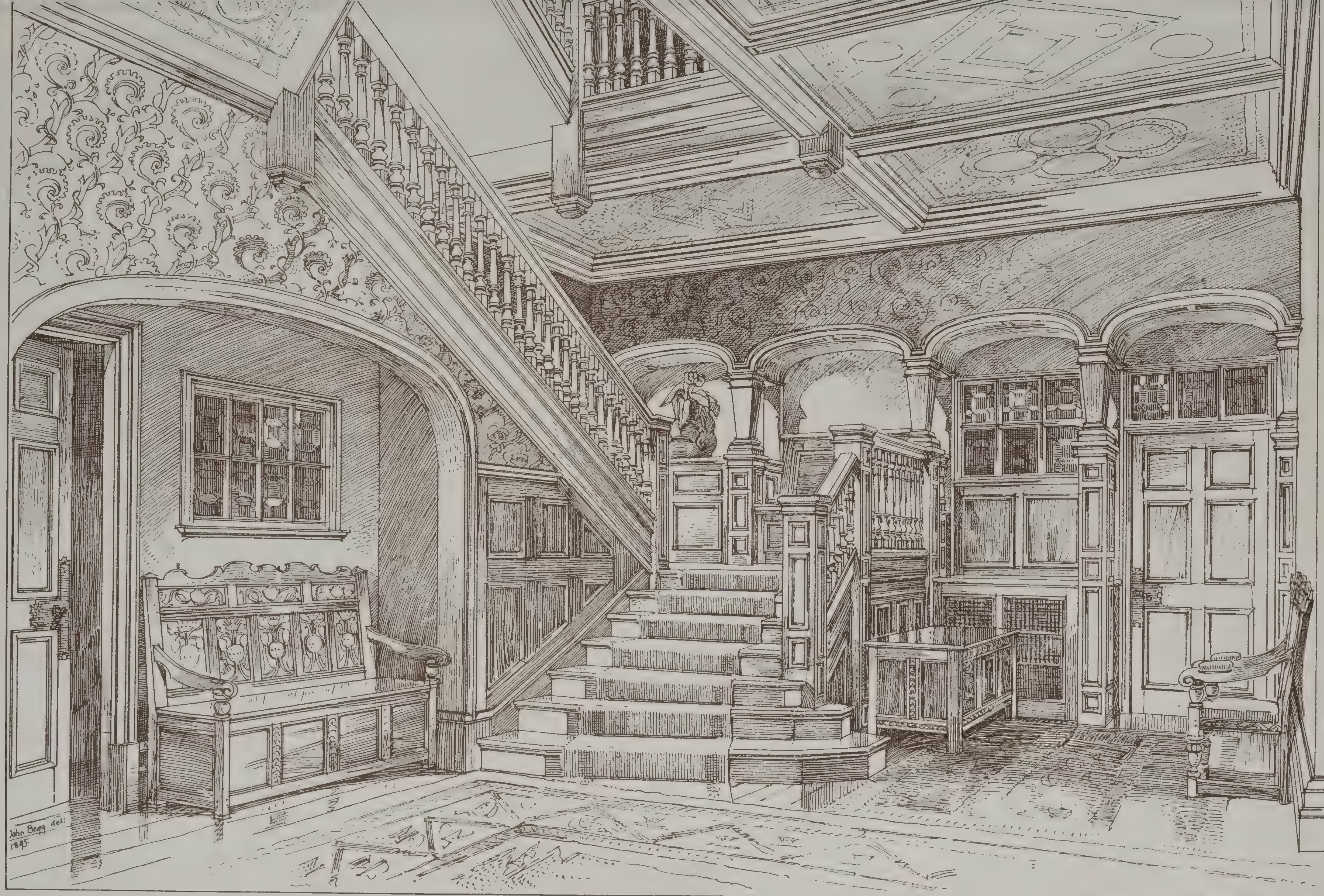
CHRIST·AT·THE·HOUSE·OF·SIMON·THE·PHARISEE·(BRUSSELS) BY JAN·GOSSART (B·1470? D·1541) FLEMISH SCHOOL

— HALL STAIRCASE & GALLERY TO COUNTRY HOUSE —

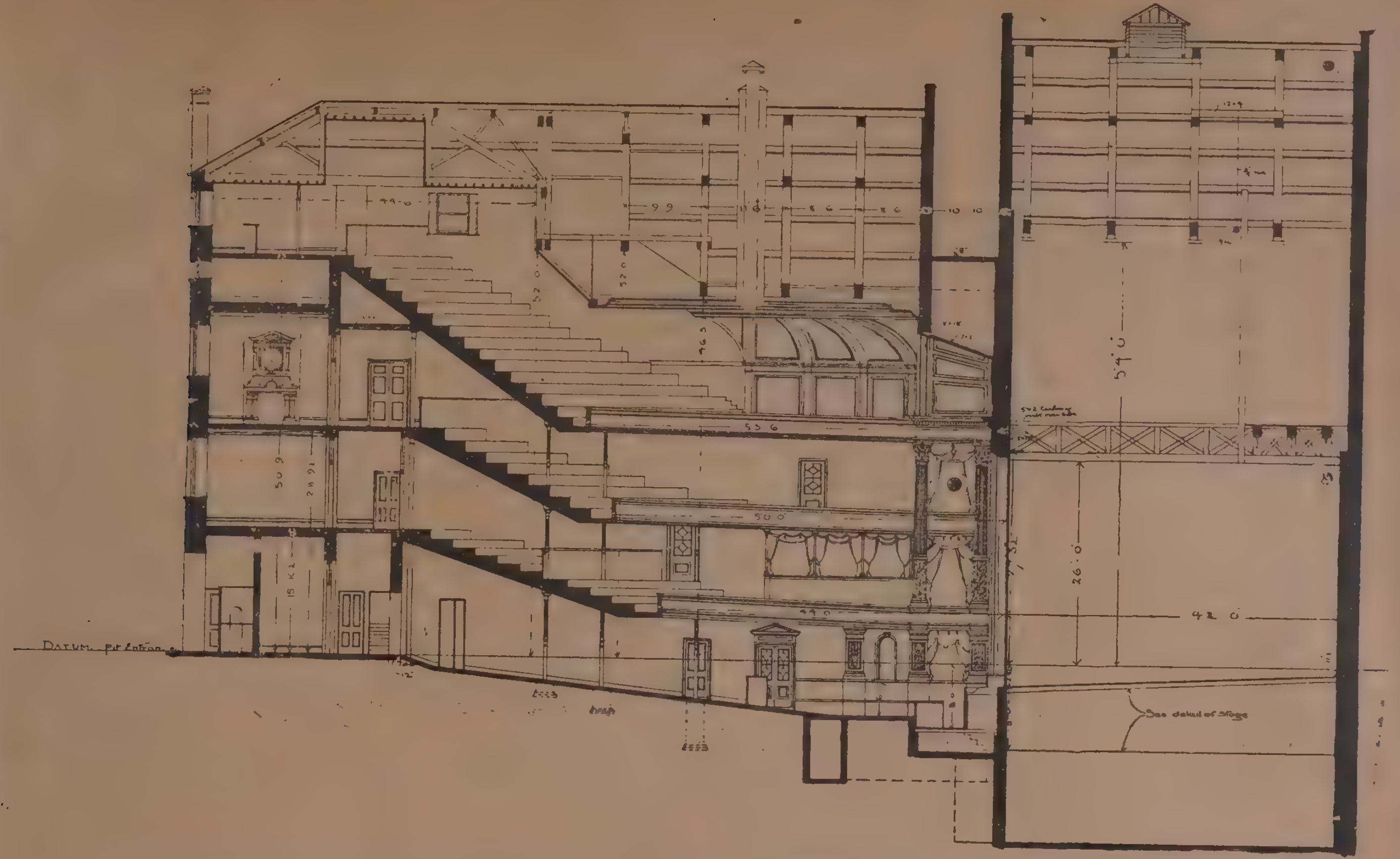
BY W. H. ASHFORD. A.R.I.B.A



The Staircase, Goddington, Chelsfield:
A. Miller Hallett Esquire:
W. West Neve, Architect.


John Begg del:
1895.

[illegible]



LONGITUDINAL SECTION, THEATRE ROYAL GLASGOW. RESTORATION OF AUDITORY AND STAGE.

C. J. Phipps, F.S.A., *Architect.*

THEATRE ROYAL, GLASGOW.

THIS theatre, opened last Monday by Mr. Geo. Alexander's company from St. James's Theatre, has been designed by Mr. C. J. Phipps, F.S.A., architect, of London. The internal arrangements of the building, together with the entrances and exits, remain exactly as they were in the theatre that was burnt last March. Briefly, it may be said that there is an entrance and exit to each division of the audience on either side of the theatre. The ground floor, level with the street, is occupied as before, with stalls and pit. The stalls are entered by the vestibule in Hope-street, and will have seven rows, accommodating 170 persons. The pit comes behind, and is enlarged to the extent of some 8ft. or 9ft. from front to back; this space has been taken off the stage, which in the old theatre was unnecessarily large.

The first tier, entering from the vestibule by the principal staircase, is occupied by a dress-circle of five rows and a family circle behind of six rows. The dress-circle accommodates 166 persons, and the family circle 158. The back wall of the circle is arranged in a series of arcades filled in with glass, so that persons standing in the corridor may see the stage without going into the auditorium. There are five entrances to this tier from the corridor. Both here and in the stalls the seating is in armchairs with turn-up seats covered in frieze velvet.

The refreshment-room is at the back of the corridor; but the position of the counter has been somewhat altered, affording more accommodation for the public, and less chance of sound being heard in the auditorium. The proscenium has three private boxes on either side, one on the stalls level, one on the dress-circle level, and another on the upper-circle level. There are also on the dress-circle level three private boxes on either side behind the first row, all of them admirably adapted for perfect sight of the stage. The second tier is occupied by the upper circle of nine rows, with the refreshment saloons and other accommodation as before. Above this, on the third floor, is a very spacious gallery raised at the sides, and the curve of the front of this tier is so designed that there is not a single seat in the gallery that has not a full and perfect view of the stage in every part without the necessity of anyone standing up or leaning over. This gallery has seating accommodation for some 700 or 800 persons. The stage is of ample depth for the production of any class of drama or pantomime, being 42ft. in depth by 72ft. in width. In addition to this, there is ample storage at the back in a separate dock for stowage of scenery.

One very important part of the construction of this theatre, which has never before been attempted, is that there are two proscenium walls, 10ft. apart, and following somewhat the lines of the pillars in the proscenium boxes; these walls are carried right up, and the stage roof and the auditorium roof are thus entirely distinct, and separated with a clear space of 10ft. between them, there being also a fireproof roof formed immediately above the proscenium arch. This arrangement is shown by the accompanying section, which we have reproduced from the architect's drawing for this purpose.

The stage opening is filled with a fire-resisting curtain worked by hydraulics. This curtain is so constructed of iron framework, on both sides of which are fixed asbestos boards, ¼in. thick, in sections; the space thus formed between these boards is filled in solidly with silicate of cotton, so that both a fire-resisting and a heat-resisting curtain is provided, and the architect maintains, with this curtain down the stage might be burnt out and the auditorium remain intact, there being now no continuity between the two.

In addition to this, water from the high-pressure mains is laid on, with hydrants on every floor of the theatre and on the stage.

The stage itself is constructed with every mechanical contrivance, and will be lighted entirely by the electric light; gas is not laid on to any part. This means an immunity from danger which cannot be equalled, and with the fire-resisting curtain and the two proscenium walls it is hoped that this theatre may have a long life.

The dressing-rooms have been very much enlarged, a new house behind the stage in Hope-street having been included in the present scheme. All staircases and passages to and from them have been reconstructed in iron and concrete, for, although the late fire did not destroy the dressing-rooms, it was thought advisable to improve them in every particular.

The dimensions of the new theatre are as follows:—

	ft.	in.
Curtain line to back of pit	76	6
Ditto ditto front dress-circle	44	0
Ditto ditto upper circle	50	0
Ditto ditto gallery	53	6
Ditto ditto back wall stage	42	0
Width of stage	72	0
Ditto proscenium opening	34	0
Height ditto ditto	29	0
Ditto stage to gridiron floor	59	0
Ditto pit floor to ceiling	50	0

The ventilation has been considered so as to get fresh air without causing draughts. In the centre of the ceiling is a sunlight of novel construction, being the first of the kind ever put up, it being a new patent. Immediately above it are two iron flues leading through the roof into the open air, so arranged that there is no possibility of a down-draught, but simply an up-cast. This sunlight is quite as much for ventilation as for lighting, and it will act equally as well when only turned down to one ring of lights; its object is to act as an extracting flue. Flues from the gallery ceiling also lead into this centre ventilating flue, and while fresh air is brought in through proper channels, precautions have been taken by the erection of additional doors in passages to prevent draughts.

The lighting of the theatre being mainly by electricity, which is placed not only round the box fronts, but in the interior, it has been found necessary in practice at all theatres to have a means of warming. This is provided here by hot-water pipes with radiators on either side of the house on every level. Thus the air in the corridors will become warmed before passing into the auditorium. The furnaces for working this heating are placed in chambers in a building behind the stage.

The whole of the ceiling, with the box-fronts, proscenium, &c., are made in fibrous plaster by Messrs. Jackson and Sons, of London, the patentees. The scheme of colour is white and gold. The walls are papered with a rich, deep terracotta red. The hangings of the private boxes are of cherry-coloured plush, and the linings to the walls of the boxes are of orange-yellow. Over the proscenium, in the tympanum formed by the arch, is a painting by Ballard, of London, representing "Apollo and the Nine Muses." The seats in the stalls, dress, and family circles are of peacock blue, with dark red carpets.

The following are the names of the various firms who have been associated with the construction of the theatre:—Morrison and Mason, general contractors, have done the excavating, bricklaying, and mason's work, with the following sub-contractors, all of Glasgow: carpenter and joiner, James Morrison; plasterer, R. A. McGilvry; painters, John Orr and Sons; plumber and gasfitter, W. Anderson; glaziers, W. Meikle and Sons. Fibrous plaster-work, G. Jackson and Sons, London; painting, decorating, and gilding, Edward Bell, London; heating and warming, James Coombe and Son, Glasgow; armchairs in stalls, dress, and family circles, C. Wadman, Bath; sunlight, Strode and Co., London; electric lighting, C. Hamilton and Co., Glasgow; upholsterers' work and carpets, Patterson Bros., Glasgow; fire-resisting curtain, E. and E. Taylor, London. Mr. Andrew Cavers has been clerk of works.

BOOKS RECEIVED.

Modern Wood-Working Machinery, by J. STAFFORD RANSOME, Assoc.Mem.Inst.C.E. (London: William Rider and Son, Ltd., Bartholomew Close).—The author of this volume of the useful Technical Series published by this firm is a specialist in wood-working machinery. The present book has been remodelled upon the author's former work, and brought up to date, and the illustrations of machinery are increased. The author has adopted a popular style, and his effort has been to give intending purchasers of wood-working machines general information to guide them in selecting desirable types. The possessor of the most perfect machine is in a position to make the highest profit. Inferior machinery entails repairs, unnecessary labour, and other drawbacks. These are points which Mr. Ransome forcibly dwells upon, as well as the need of a properly organised system. As to the prices of machines, these vary greatly, owing to ma[illegible] same names for machines used for widely different purposes. It is shown that mortising machines vary from £7 to £250, but one is used for light joinery, the other for heavy waggon railway work. Again, the heavier made machines do not always wear the longest, as every pound of metal in excess is a fault, especially in a working part. Some very useful suggestions are made as to these and other points. Easy means of access to the saws, cutters, tools, &c., are essential, as every minute that a machine is standing still means a loss of money. The author very justly remarks: "In making choice between two machines, it is very important to ascertain, not only how many feet of work each will do per minute, but how long, and how many times a day, each will have to stand idle while saws or cutters are being changed, sharpened, and adjusted." The author brings his practical experience to bear on various questions, such as prices and estimates, foreign machinery, second-hand machines, motive power, tree felling, handling logs in yard and mill, saw-frames, band-saws, cross-cut machines, moulding, boring, and mortising, tenoning, dovetailing, and other machines. Of motive powers water is said to be the cheapest. Gas-engines, like the "Otto" are serious competitors of steam-power, they do not require a constant attendant or boiler, require no carting of fuel, &c. All wood-workers, contractors, and manufacturers will find this handbook of great value in selecting and managing their machines. Many of the technical points in working are described, and the construction of the best types of machines are explained and illustrated by clearly-drawn engravings. The remarks on sharpening and setting saw-blades and other tools are worth attention.——*The London Building Act*, 1894, by R. CUNNINGHAM GLEN, M.A., LL.B., Barrister-at-Law, and ARTHUR A. BETHUNE, Barrister-at-Law (London: Knight and Co., Fleet-street), is another textbook of the new Building Act and the re-enacted provisions of the old Acts, of which books we have lately noticed several. Messrs. Glen and Bethune have produced a more complete work than we have yet seen. It contains the text of the London Building Act, 1894, with notes and decisions, besides the statute law relating to the formation and construction of streets and buildings within the Metropolis, and four appendices containing the enactments relating to the City; the standing orders of the L.C.C. by-laws, and regulations of the Council relating to streets and buildings; by-laws under the Public Health (London) Act, 1891; regulations and standing orders of the Commissioners of Sewers relating to the City; also forms in use by district surveyors under the Act of 1894 and under the by-laws of the Act, and the instructional letters issued by the Metropolitan Board of Works to district surveyors, and that of the L.C.C. These statutes, regulations, and instructional letters are of great value to the architect and surveyor in the Metropolis, as they throw much light on questions such as "new" buildings, &c., which are not clear in the Act itself. Not less useful are the series of diagrams in the last appendix, illustrating those sections of the new Act which relate to open spaces at the rear of buildings, courts within a building, minimum height of habitable rooms, height of building on a corner plot, recesses and openings in external and party walls, heights of parapet above gutter, chimneys, thickness of external and party walls in schedules, &c. These illustrative diagrams have been prepared by Mr. Alfred Conder, F.R.I.B.A., F.S.I., district surveyor of Woolwich. To the practical reader, the architect, and builder, these diagrams will be found of much value in explaining rather obscure sections. In one section, of court within a building, the word "height" should read *width*. The text of the Act is clearly printed, with marginal headings, and the notes, printed in a smaller type, are full and copious. The Act itself, although it consolidates and amends the enactments relating to streets and buildings, does not give the student all the statutory provisions which have reference to them; this work supplies the want by collecting them all, so that the real state of the law may be found on any given point without having to refer to numerous other acts and provisions. In the notes this connection is kept in view by the authors. A very comprehensive index is given. To the architect and surveyor, as well as the lawyer, this work will be found an invaluable textbook of Metropolitan Building Law.

APPLIANCES FOR GIRDER ERECTION.

THE writer on Girder Erection in *Indian Engineering* describes the advantages which an Imperial Government can afford in the provision of appliances in themselves costly, and wanted but once during the construction of a single work. The apparatus required in the erection of bridge girders is a particular case. Special machinery is necessary. The writer observes: "In building long girders two alternative methods are open to the engineer, whose duty it is to decide upon the course he proposes to follow when effecting their erection. A temporary staging may be constructed, and the ironwork built up in its final position on this platform, or the girders may be put together on the ground, and, when complete, lifted or swung, as the case may be, on to those piers which are to support the finished structure." The first method entails the disadvantage of having a cramped space to work in for the riveting and manipulation of the members, the second method is to be preferred, but powerful lifting machinery or heavy swinging shears have to be provided. As the writer points out, these appliances have to be specially designed and constructed for each large work, and although such apparatus may prove useful for other undertakings, as a matter of fact it is seldom adopted, owing to some peculiarity in the new work. Reference is made to Mr. Deane's paper describing the erection of the Anas Bridge girders on the Godhra-Rutlam Railway. If the appliances for lifting girders built below were designed with due consideration for portability and adjustment, they might be kept for other similar purposes of erection. In India these appliances are constructed only for the special wants of a particular erection, and are therefore roughly put together and not adapted to be used for other constructions. The author justly thinks that the maintenance of really suitable appliances would be a distinct advance on the present rough and ready methods in use in India. The construction of portable hydraulic lifting apparatus or movable shears and gantries might surely be undertaken by the manufacturing engineer adapted for countries and new colonies where bridge and other structures are required. Travelling platforms and scaffolds are made, and these, if constructed of iron and capable of being taken to pieces in sections, could be easily re-erected in positions where girder bridges are to be erected. A considerable saving in the cost of executing engineering works would be effected by such portable appliances.

CHIPS.

A new Primitive Methodist chapel and schoolroom were opened at Scalby, near Scarborough, on Friday. The architect is Mr. J. Caleb Petch, of Scarborough.

Alterations are being made to the Town-Hall, Bridport, embracing the ventilation, which will now be carried out on the Boyle system, the latest improved form of the patent self-acting air-pump ventilator being adopted for the extraction of the vitiated air, while fresh air is admitted through their improved air inlets.

The new schools, West Bromwich, are being warmed and ventilated by means of Shorland's patent Manchester grates, the same being supplied by Messrs. E. H. Shorland and Brother, of Manchester.

The extension buildings of the Record Office in Chancery-lane will be opened by the Prince of Wales in November. The buildings, which were illustrated by plans and a perspective in our issues of Jan. 6 and 13, 1893, have been erected from designs by Mr. John Taylor, C.B., of H.M. Office of Works, at a cost of about £80,000.

Wavertree Recreation Ground, presented to Liverpool by an anonymous donor, and representing in value nearly £70,000, was opened with great *éclat* on Saturday.

Lord Wodehouse, who was recently fined for committing an assault on Mr. John Gaymer, the well-known ecclesiastical builder of North Walsham, in the course of an election for East Norfolk, has been removed from the Commission of the Peace.

Like the neighbouring parish of Marylebone, the St. Pancras vestry are substituting wood for granite sets and macadam in remaking the roads under their control, and most of the leading thoroughfares in St. Pancras have now been paved with wood. The hard and non-absorbent woods are now being mainly used.

The University of St. Andrew's is building a hall of residence for [illegible] women students on the lines of the Girton and Newnham Colleges at Cambridge, and the Oxford Halls for Women. The architect and the warden have visited the principal colleges and halls for women students in England, with the view of seeing their most recent developments.

The amalgamation of the Irish Land Agents' Association with the Surveyors' Institution of England being now an accomplished fact, steps are being taken for a similar expansion of the great professional organisation in Scotland, to be accompanied by a scheme of examinations adjusted to the conditions in that country.

A home for ladies in reduced circumstances from Brixton and Stockwell has just been built by Mrs. Buckmaster at Broadstairs. It will accommodate twelve residents, and is Queen Anne in style, the walls being of red bricks with tile-hanging on the first floor and timber-work and plaster in the gables. The roofs are tiled, and in the centre is a low belvedere with circular lead roof. Mr. E. Dewar Matthews, 11, Waterloo-place, S.W., was the architect, Mr. H. F. Sheppard the clerk of works, and Messrs. Wise, of Deal, were the contractors. The furnishing has been carried out by Maple, of Tottenham Court-road, while the heating and ventilation has been undertaken by Jeffreys, of Old Queen-street, Westminster. The opening ceremony took place last week.

Mr. Edward Charles Bursell, a sculptor, who has been resident in Cardiff for some fifteen years, committed suicide by cutting his throat at his residence in Glenroy-street, Roath, Cardiff, on Saturday night. He was well known as a carver in local church work.

St. Stephen's Church, Exeter, has recently been repaired externally and reseated. Both works were carried out by Mr. E. Mudge of that city.

Lord Rosebery will visit Scarborough and open the new Liberal Club at the latter part of this month or the beginning of October. The club is in the principal thoroughfare, and has been erected at a cost of £11,000.

At a special meeting of the Council of the Sheffield Society of Architects and Surveyors, the president, Mr. Charles Hadfield, in the chair, it was unanimously resolved to convey to Mrs. Pye-Smith and her family an expression of their respectful sympathy in the loss which they have sustained by the death of the late town clerk of Sheffield, Mr. J. W. Pye-Smith.

The partnership hitherto subsisting between A. Nutter and C. Riley, architects, land and building surveyors, estate agents, valuers, and fire loss assessors, Burnley, under the style of Riley and Nutter, has been dissolved.

Engineering Notes.

QUEENSFERRY.—The bridge over the Dee at Queensferry, 6½ miles below Chester, now being constructed at the joint cost of the Cheshire and Flintshire county councils and the Dee Conservancy Board, is approaching completion, and will be opened early next year. Mr. T. W. Barber, of St. Leonard's-on-Sea, is the engineer-in-chief, and Mr. T. K. Irwin the resident engineer. The unique feature of the bridge is that the centre is made up of a telescopic draw span, which will be worked by hydraulic power. The abutments on both sides of the river are already completed. Resting on these abutments, and on clusters of piles, will be two fixed spans—one on each side of the river—and out of these fixed spans will run telescopically two girders which meet in the centre and so complete the bridge. The telescopic girders, when withdrawn for the passage of vessels, will leave a clear opening in the centre of the channel of 120ft., the total width of the river between the abutments being about 400ft. The carriage way on the Flintshire and Cheshire sides to the edge of the centre span—that is to say, for a distance of some 140ft. from each abutment—will permit of two vehicles passing one another, but over the centre or movable span, only one vehicle can pass, the width of the roadway being here only 9ft. Two 3ft. 6in. footpaths, however, will run over the whole length of the structure, centre span included. The cluster of ten piles on the Flintshire side of the river is already in position, and the workmen are now screwing the piles on the opposite side. Messrs. J. Schofield, Sons, and Co., of Leeds, are the contractors for the abutments and approaches, and the contractors for the ironwork are the Teeside Iron Company, of Middlesbrough. The total cost will exceed £13,000.

THE SNOWDON RAILWAY.—The railway from Llanberis to the summit of Snowdon, 3,050ft. in height, is making good progress. The engineer, Sir Douglas Fox, will read a paper on the undertaking before the British Association at Ipswich next week. The undertaking is the only example in Great Britain of the rack principle, the system adopted being the Abt or double rack-work. At Llanberis, the lower terminus will be in the grounds of the Victoria Hotel, a short distance from the local station of the London and North-Western Railway, and on the summit of the mountain itself a Grand Hotel will be erected. The length of the line is under five miles, and it has been laid out with a view to obviate interference with the Ceunart Mawr waterfall. There will be two intermediate stations, and the trains will consist of a steam locomotive and two cars of the tramway type, capable of seating 50 persons each. The gauge of the railroad is a narrow one of 2ft. 7in., and the metals, made by Cammells, of Sheffield, run 41lb. to the yard. They are laid on steel sleepers. The rack-rails between the ordinary rails are made with double cast-steel cogs, into which the locomotive engages by two double pinions, so that four teeth are always in gear at the same time. No curves are sharper than five chains, or 264ft., radius, and no gradient steeper than one in 5½. The engines, which are made by the Rinecker-Abt Company, are fitted with Chatelier brakes, actuated by passing air into the locomotive cylinders, the piston working against the residue of air under pressure. The steel sleepers have been supplied by the Ebbw-Vale Works. The passenger coaches will be constructed by the Lancaster Carriage and Waggon Company. The contractors for the railway and the hotel are Messrs. Holme and King, of Liverpool. The date for opening the line to the public has not up to the present been definitely fixed.

◆

The urban district council of Brigg have received 15 competitive schemes for the drainage of the town. The number has been reduced to four, the authors of which have each had an interview with the members of the council.

At the meeting of the Christchurch rural district council, last week, it transpired that no plans had been submitted for the new board school buildings either at Bransgore or Ripley, and the clerk explained that the plans had been approved by the Education Department in each case. The members considered that the council had a right to see the plans to know whether they were in accordance with their by-laws, even supposing the Education Department had passed them, and a formal resolution, requesting the plans of both schools to be deposited, was carried.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to THE STRAND NEWSPAPER COMPANY, LIMITED.

TERMS OF SUBSCRIPTION.

One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India, £1 6s. 0d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front-page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No Front-page or Paragraph Advertisement inserted for less than 5s.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page Advertisements and alterations in serial advertisements must reach the office by Tuesday morning to secure insertion.

SITUATIONS.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is ONE SHILLING FOR TWENTY-FOUR WORDS, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are [illegible] up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., LI., LIII., [illegible], LVIII., LIX., LX., LXI., LXII., LXIII., LXIV., and LXV. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

PARTY-WALL. (The length of 9in. wall marked A A in your plan comes within the definition of "party-wall"; but the 4½in. walls on ground plan appear to be clearly external walls. As to the second question, we do not understand for what purpose the 9in. party-wall is to be built, as the first-floor plan shows a dovetailed arrangement of the bedrooms. The sectional sketch is not clear if it applies to the plans sent. As to the construction, we do not think a party-wall carried on two 7in by 3in. joists would be passed by the local authorities. No by-law in the Model By-laws contemplates the erection of a party-wall on wooden joists, and from a constructional point of view, we should certainly say it is undesirable, if not bad.)

RECEIVED.—E. F. Sedgley.—B. R. S.—M. U. Co.—Jas. Turner.—T. R. (Leicester).—E. G. and Co.—F. R.

◆

Correspondence.

WAR DEPARTMENT SURVEYORS.

To the Editor of the BUILDING NEWS.

SIR,—The prospects of surveyors in this department are extremely problematical in the face of the forthcoming reforms which have of late been so much discussed. What these are to be various conjectures have been formed, but it is very certain that should the Inspector-General of Fortifications have direct communication with the Secretary of State for War, and in any way override the future Commander-in-Chief as to the proper organisation of his corps, the outlook for surveyors will be very gloomy, as he is one of the old school, with little war service and bred up under the existing system, which leads outsiders to look upon his officers as genuine architects and civil engineers, and not the nonentities which surveyors find them to be.

It is evident that any radical change cannot come from the chief author of the existing system, as any alteration entails a loss to those in power. It is, however, consoling to think that we are to have a strong man in the coming Commander-in-Chief, who will look to the efficiency of the army, untrammelled by prejudice, and desirous of having the corps capable of taking the field against Continental armies. It is to be hoped he will have sufficient power to lop off those nonentities we meet in this department, who have fossilised themselves with correspondence, and are confessedly incapable of commanding troops on *active* service. The existing system has nothing to recommend it, as it makes neither soldiers nor architects, and turns officers into loafers against their will. The younger men feel this, but, as they rise, become callous and absolutely indifferent to the shame of knowing much less than their military foremen of works.

"Traveller" and "Verb. Sap." have pointed out what the existing conditions are—as they were. Should reform touch the department and rid it of these "deadheads," and properly recognise surveyors, the prospects will be good; but if the Inspector-General of Fortifications gets the upper hand—and he is waiting for the cast of the die—then let professional gentlemen avoid the Department.—I am, &c., REFORM.

◆

CHIPS.

At Hornsey, on Monday, Mr. Stanley Edward Spencer, the well-known balloonist, of Holloway, was married to Miss Rose Isabel Hawkins, who is described in the daily papers as "auctioneer, surveyor, &c."

The city council of Manchester at their last meeting accepted the gift of a replica of the well-known tapestry, "The Adoration of the Magi," designed by Sir E. Burne-Jones, and worked by Mr. William Morris. The original cartoon is hung in the Municipal Art Gallery at Birmingham, and only three copies in tapestry are in existence—one at Exeter College, Oxford, a second in the possession of Mr. Wilfred Blunt, and the third that just presented to the City Art Gallery of Manchester.

With the close of the Parliamentary session, the Royal Assent was given to the Bill confirming the Provisional Order extending the boundaries of the borough of Keighley. The newly-included areas comprise the populous lower portion of the Hainworth Ward, annexed from the new parish of Bingley Outer, and an extensive area formerly under the government of the Oakworth district council, notably the ancient village of Utley. The population of the borough is thus increased from about 32,000 to 36,000.

The Christchurch rural district council discussed at their last meeting the necessity for providing a fever hospital. It appeared that Mr. Burton, a local architect, had prepared two or three alternative plans for the institution during the past ten years, and it was proposed that he should be appointed architect. To this an amendment was moved that plans be invited in competition; but the consideration of both amendment and resolution was postponed, the medical health officer to be asked in the mean time to give advice as to the number of beds that would be required in each section of the hospital.

The new line between Wrexham and Ellesmere will probably be opened for both passenger and goods traffic on October 1st. Colonel Yorke, R.E., the Board of Trade inspector, will make his official inspection on Wednesday and Thursday in next week, the 18th and 19th inst.

The tower of Bonvilston Church (on the road between Cardiff and Cowbridge), which is in such a dangerous condition, has at last been taken in hand, and the work of restoration has commenced. The fine peal of bells will also be rehung. The work of restoration, &c., has been intrusted to Mr. Charles B. Fowler, F.R.I.B.A., of Cardiff, the contractor being Mr. W. James, of Cowbridge.

Herr David Vanderkellen, Director of the State Museum at Amsterdam, and a distinguished painter and author, died on Monday, aged sixty-eight years.

The Lords of the Committee of Council on Education have selected Mr. Gilbert R. Redgrave, Chief Inspector of Schools and Classes under the Department of Science and Art, as a Delegate to the Third International Congress on Technical Instruction which is about to be held at Bordeaux, in connection with the International Exhibition now being held there.

At a meeting of the Streets Committee of the Corporation of Middlesbrough, held on the 30th ult., Mr. B. J. Wolfenden, A.M.I.C.E., of the borough surveyor's office, Southport, was appointed assistant engineer. The final selection lay between Mr. J. Rush Dixon, of Walsall, and Mr. Wolfenden.

The day schools adjoining the Convent of the Cross in Parkwood-road, Pokesdown, near Bournemouth, are being enlarged, the enlargement being so extensive as to almost double the size of the schools. The work is being carried out by Mr. W. Hoare, of Victoria Works, Bournemouth, who built the former schools, and who was also the contractor intrusted with the erection of the convent buildings.

Intercommunication.

QUESTIONS.

[11417.]—**Models.**—Would any of your readers kindly oblige with some information concerning the making of architectural models? Are there any handbooks on the subject, or has it ever been dealt with in our pages?—J. G. O.

[11418.]—**Cool Roof.**—What means can I adopt to keep a slate roof cool? Is there any non-conducting material which could be utilised for the purpose? If so, how shall I apply it?—W. J. J.

[11419.]—**Sketching in Derbyshire.**—Is permission required, and if so from whom obtainable, for sketching at the following places?—Longstone Hall, Tissington Hall, Elleston Manor House, Wooton Hall, halls at Somersall, Herbert, and Sudbury, Bowsall Manor House, Hardwick Hall, and Bolsover Castle.—Nomad.

[11420.]—**Mortgagee and Surveyor's Charges.**—No arrangement having been made, on what scale is a surveyor entitled to charge?—1. On house property considered sufficiently secured? 2. On similar property not recommended? I believe a license is not required in these cases; but if the charges come under the head of "Valuation of Property," as in the Institute Schedule, is a license then necessary?—An Inquirer.

[11421.]—**Girder Calculators.**—Are there any mechanical means by graphic processes for calculating the strength of girders, and thereby save calculation or working out formulæ?—Sigma.

[11422.]—**Sussex.**—I am about taking a walking tour in this county, and shall be glad if any correspondent can give me the names of places and buildings within a reasonable distance of Eastbourne, either possessing interest of a natural or archæological kind.—G.

[11423.]—**Ventilating Pipes.**—As many sanitary experts are divided in their opinion as to the advantages of the soil-pipe ventilator, and also the inlets which are now put on every modern system of house-drainage, I should like the opinions of any practical readers who have tested these inlets and outlets. I am in doubt, myself, whether they always act as they are intended to do. Some assert that they are more pernicious to health than otherwise.—Open Mind.

REPLIES.

[11403.]—**Estate Management.**—In reply to the inquiry of "Z. Y. X." in your Intercommunication column, there is a book published by Messrs. Crosby, Lockwood and Co., in their Weale's Series, entitled "Building Estates," which should give all the information he requires.—W. Denton.

[11412.]—**Varnished Wood Ceiling.**—"G. B. D." had better paint his ceiling of a light colour, this would be the least expensive process of bringing back the reflecting power of the ceiling.—G. H. G.

[11413.]—**Geometrical Projection Drawings.**—Any treatise on projection would teach the principles. Why not join a school of art, where drawings of this kind are taught?—A. Z.

[11416.]—**Civil Engineering.**—To attempt to give a list of even a few of the best works on such a subject as this would be of little use to "W. H. H." He cannot do wrong, however, to get such works as Rankine's "Manual of Civil Engineering"; Henry Law's "Rudiments" in Lockwood's series, as elementary works; and for the various special branches he may get Humber's treatises on "Water Supply of Cities and Towns," and the four volumes of Humber's "Progress of Engineering," published by Lockwood, and the works on Hydraulic Engineering, published, I think, by Longmans. There are so many branches that it is misleading to a beginner unless knowing what branch he intends to follow (which probably he does not himself) to attempt to recommend books.—G. H. G.

◆

By the opening, on Monday, of the Sault Ste. Marie Canal, Canada's independent route from Lake Superior to the Atlantic seaboard has been completed. The construction of the canal cost £700,000 sterling.

The Lostwithiel and Fowey railway, built over 30 years ago on the broad-gauge system for mineral traffic, has just been converted to the narrow gauge, and reconstructed for passenger traffic for the Great Western Railway Company. The contractor was Mr. R. M. Parkinson. The line is five miles in length, and follows the bank of the River Fowey.

It has been decided to repair the Market Cross at Chichester, and the council have adopted the scheme recommended by Mr. Detmar J. Blow, architect, and approved by the Society for the Protection of Ancient Buildings. There will be as little alteration as possible in the present appearance of the structure, but the cross will be put into substantial repair. We illustrated the cross from a pen-and-ink drawing by Mr. Albert G. Thompson in our issue of April 8, 1892, and on Jan. 4, 1889, we gave a reproduction of a water-colour by Mr. T. M. Baynes, showing a suggested restoration of the structure.

The town council of Plymouth having applied to the Local Government Board for sanction to borrow £17,610 for purposes of street improvement and sewerage, £2,833 for the improvement of the Hoe and for providing bathing accommodation, and £1,600 for the erection of a mortuary, Colonel J. O. Hasted, R.E., held an inquiry into the application at the Plymouth Guildhall on Wednesday last.

Legal.

COMPENSATION AWARDS.

As a general rule, either party can take up an arbitrator's award on paying his fees, and then, if successful, he would be able to recover those fees as part of the costs of arbitration and award if that were given in his favour. But it seems that this sound and general rule does not apply to arbitrations under the Lands Clauses Consolidation Act, 1845. In the recent case of "The Earl of Shrewsbury v. the Wirrall Railway Committee" (*Times*, July 31), the plaintiff had claimed £21,700 for some land, and the railway offered £9,500. After arbitration, the company did not take up the award, so the plaintiff did so himself, and paid the umpire 400 guineas before he got it. The award gave the land-owner £11,860, and so he became entitled to his costs of the arbitration under the statute. Naturally, the plaintiff put down this 400 guineas as part of those costs; but the taxing-master disallowed the whole of the item, on the ground that it was no portion of the costs of the arbitration, it being the duty of the company, and not of the land-owner, to take up the award, under section 35 of the statute—a duty enforcible by mandamus.

The unfortunate land-owner then brought this action to recover the 400 guineas as money paid by him for which the company were responsible, as they were legally bound to take up the award, and to pay him, as the successful party, the whole costs of the arbitration. But Mr. Justice Romer decided that the payment so made had been voluntary, and was, therefore, irrecoverable; while if it could be considered as costs of the arbitration, it had been disallowed by the taxing master, whose decision was final and conclusive. Now the Court of Appeal here felt bound, rather regretfully, to support this ruling. The land-owner, instead of paying the umpire his fee to get the award, should have obtained a writ of mandamus against the railway company to compel them to take it up as directed by the statute, and he would then have been paid his costs of so doing. But as matters stand, owing to his having acted in the simple and straightforward way he did, instead of pursuing this roundabout method, he loses his 400 guineas and all the costs incurred in trying to get it back again, which serves to show that the law is still somewhat technical and uncertain.

Fred. Wetherfield, Solicitor.

1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

CHIPS.

In the case of Norman de Maid, of Clacton-on-Sea, builder, the discharge from bankruptcy has been suspended until a dividend of not less than 10s. in the pound has been paid to the creditors.

At Monday's meeting of the Middlesbrough Town Council, the electric lighting committee reported that, in accordance with the instructions of the council, they had selected Mr. R. Hammond to advise them as to the lowest cost of an economic working electric lighting plant.

At Monday's meeting of the Harrogate Corporation, a letter was read from Messrs. Martin and Fenwick, stating that it was intended to lay out what was called Paley's Estate, about 165 acres in extent, and sell it in sites for villas and terraces; and asking what the corporation would do towards the sewering, &c., of the estate. The letter was referred to the highways and sanitary sub-committee.

A Conservative Club is about to be built in Habershon-street, Splotlands, Cardiff, from plans by Messrs. Habershon and Fawckner, of Pearl-street, Cardiff.

The south porch of Great Burstead parish church, Essex, is in course of restoration.

All Saints' Church, Shrewsbury, which was built in 1875, Messrs. Bowdler and Darlington, of St. Julian's-friars, in that town, having been the contractors, is about to be renovated, and all the roofs retiled. The work is to be done in sections; the first portion, to be commenced in a few days, is the organ-chamber. The contract has been let to Messrs. Treasure and Sons, builders, under the superintendence of Mr. Lloyd Oswell, architect, all of Shrewsbury. The other portions to be done are the chancel, two side chapels, transept, vestries, and nave. The work will entail an expense of about £500.

LEGAL INTELLIGENCE.

Arbitrator's Award on Insanitary Property in Liverpool.—At Monday's meeting of the Insanitary Property and Artisans' Dwellings Committee of the Liverpool Corporation, the receipt was reported from the Local Government Board of the awards of Mr. J. Lawson Walton, Q.C., M.P., in respect of the compensation to be paid by the corporation to owners of insanitary properties. The award comprises 17 properties, of which ten were settled in court, leaving seven for the arbitrator's decision. The statement giving the amount claimed for the properties, the final offer, and the amount awarded in each case shows that the amounts awarded are in most cases only slightly in excess of the final offers of the corporation, and much below the amount claimed by the owners of the properties. In comparing the amounts awarded with the final offers, it has been decided by the Court of Appeal that the valuation of the properties must not necessarily be based on the value of the land and old materials only (which was the principle adopted by the late arbitrator, Mr. Hunter Rodwell, Q.C.), but that the rent-producing power of the property must be taken into consideration by the arbitrator in assessing the compensation. Under these circumstances, therefore, the results of the arbitration were satisfactory to the Liverpool Corporation and to the officials who have had the conduct of the cases. Mr. H. Percy Boulnois (city engineer) also reported that of the 572 houses in the 12th presentment 14 were demolished by the owners without asking for compensation; and 52 houses were agreed to be demolished on the payment by the corporation of sums amounting altogether to £437, or an average of £8 8s. per house. In those cases the owners retain the sites of the houses. The remaining 506 houses have been purchased by the corporation for sums amounting to £17,460, or an average of £34 10s. per house. Included in these purchases were four shops fronting Limekiln-lane, and let at rents of 6s. per week each. For those a considerable higher price than the average had to be paid, and if they are excluded, the average price paid for the remaining houses is £33 10s. per house. The sites purchased measure approximately 13 649 square yards, which have cost £1 5s. 7d. per yard. Against this there will be the balance obtained by the sales of old materials (less the cost of making good adjoining property); but these amounts cannot yet be ascertained, as all the property has not yet been pulled down.

Serious Charge against a Builder.—A Llandaff police-court, on Monday, Frederick Millward, builder, of Whitchurch, was indicted on remand under four charges—(1) of stealing a large number of builders' tools, to the value of £5 7s. 8d., between April 3 and 24 last, the property of Edwin Williams, Whitchurch; (2) of breaking into the lock-up house of Edwin Williams, Whitchurch, and stealing therefrom 41 pots of paint, three bundles of axle pulleys, four bundles of sash-cording, ten bundles of cockspur sash fasteners, and twelve bundles of hinges, value £2 8s. 4d., between April 11 and 17; (3) also charged by Evan Davies, Whitchurch, with stealing thirteen cupboard fronts, value £2, on October 27, 1894; and (4) with attempting to commit suicide by cutting his throat with a razor on May 16 last. On May 16, Mr. Williams observed prisoner leaving his dwelling-house to visit the premises where he was engaged in building operations. Prosecutor followed him, and discovered on his premises a large number of tools which he had missed. He thereupon gave information to the police, but before the police could arrest the prisoner he attempted to cut his throat. Edwin Williams, one of the prosecutors, said that upon being taxed with the theft, prisoner had offered him £20, and asked if that would "do for him." The majority of the stolen tools were found on the premises which prisoner was erecting, but four planes were found in the bedroom of his private house. Mr. Evan Davies, builder, deposed to finding thirteen cupboard fronts of his, which he had missed, in the back bedroom of prisoner's house. The Bench committed prisoner to the quarter sessions, and allowed bail.

◆

The preparations for the revival of the Olympic Games at Athens are now being actively pursued. The reconstruction of the Stadion is being carried out. The ground has been levelled over the foundations of ancient buildings. The cost of this work will be about £12,000 sterling, and will be defrayed by M. Averof, of Alexandria. The buildings will be of marble. The work on the Stadion is to be completed within five months from the present time.

Grove-street Chapel, Coventry, which, since 1838, has served as the headquarters of Primitive Methodism in that city, was reopened on Sunday as an Undenominational Christian Church. The building has been renovated inside and out, additions being made to the vestry accommodation, new seating provided, and a baptistery formed for the immersion of adult believers. Mr. T. Gaskin, of Gosford-street, Coventry, was the contractor.

STAINED GLASS.

BACUP.—A large stained-glass window has just been placed in the south transept of Bacup Church by Mrs. Howorth, in memory of her husband, the late Mr. John Howorth, of Hempsteads, Bacup. The window, which consists of three long openings, has been filled with glass designed to illustrate the Te Deum. The prominent figure in the central opening is the Lord Jesus Christ crowned, enthroned upon a rainbow, His right hand raised in the act of benediction, in His left the orb and sceptre, and having the earth for His footstool. "The Lord sitteth above the water-flood, and the Lord remaineth a King for ever." "The Heaven is my throne, and the earth is my footstool." A golden glory surrounds the entire figure, and beyond this are groups of adoring angels, some bearing ribbons with the words, "To thee all angels cry aloud," and "Thou art the King of Glory, O Christ." Below the enthroned Christ, and on either side, are shown the Apostles, the Martyrs, the Prophets, and the heads of the Church Universal, to illustrate the text, "The glorious company of the Apostles praise Thee," &c. The figures in these groups are in the act of adoration, and each figure is further distinguished by some appropriate emblem or attribute. The work is from the studio of Messrs. Powell Brothers, of Park-square, Leeds, whose design was selected in competition with other artists, and the whole has been under the supervision of Messrs. Mawson and Hudson, architects, Bradford.

CHIPS.

Three stained-glass windows, executed by Messrs. Swaine, Bourne, and Sons, Birmingham and London, have been placed in Northam Mission Church for the deaf and dumb, Southampton. The subjects are Our Lord healing the man deaf and dumb with the words "Ephphatha—be opened," the Virgin, and St. John.

Some years ago the Obelisk in the Central Park in New York was affected with a disintegrating process of scaling in a manner similar to that which creates anxiety for the preservation of Cleopatra's Needle on the Embankment. A preparation of paraffin was poured over it, with the result, as recently reported, of arresting decay.

The well-known drinking fountain, presented to the City of London by the United Kingdom Temperance and General Providence Institution for Mutual Assurance, opposite to whose offices at the north-eastern side of London-bridge it stood, has been removed to Clapham-common.

Rastrick Church, Yorkshire, has been reopened after some extensive internal decoration on walls and roof, upon the latter of which has been painted the days of Creation. The work has been done by Messrs. Powell Brothers, of Park-square, Leeds.

The Holborn Board of Guardians have adopted plans by Mr. Evans Vaughan for a new model laundry and epileptic wards to be erected at the Mitcham Workhouse.

The Duke of Devonshire will open the Midland Dairy Institute, at Kingston Fields, near Loughborough, on Tuesday, the 17th inst. The Institute has been formed for the counties of Notts, Leicester, Derby, and the Lindsay Division of Lincolnshire.

The Technical Institute in Waterloo-road, Runcorn, recently opened by Sir John T. Brunner, Bart., M.P., is a brick-built structure. The architect was Mr. John Bowden, C E., of Manchester, and the builders were Messrs. Hulse, of Winsford. The total cost has been about £4,300.

Alderman William Collinge has accepted an invitation to occupy the mayoral chair at Burnley from November next. Mr. Collinge is a partner in the firm of Messrs. W. and J. S. Collinge, Limited, upholsterers and cabinet-makers, Burnley.

The blessing and opening of the Roman Catholic Church of Our Lady of Refuge at Cromer took place on Sunday, August 25th, by the Very Rev. Canon Duckett, D.D. The new church is of red brick faced with stone, as also are the mullions of the windows. The architect is Mr. George Sherrin, and the builder, Mr. Chapman, of Hanworth. It is situated on the Overstrand-road, within easy distance of Cromer Station, on the slope of the hill upon which Cromer Lighthouse stands, close by the Golf Links and the new Links Hotel.

The urban district council of Leyton is erecting what promises to be the finest technical institution in Essex, costing between £7,000 and £8,000, of which the county council of Essex has promised £1,500. This building, with the town-hall connected with it, will cost £23,000 at least.

The members of the York Architectural Society have made a visit of inspection to the new sewerage works of the York Corporation at Fulford and Naburn, proceeding from the Guildhall by steamer. The city engineer, Mr. A. Creer, explained the scheme. At the hall at Naburn the party partook of tea.

WATER SUPPLY AND SANITARY MATTERS.

CHESTER-LE-STREET.—At a meeting of this council, held on Thursday, it was unanimously agreed to adopt the recommendation of the sewerage committees for two comprehensive and complete schemes of main sewerage and sewage disposal to be constructed forthwith in order to meet the requirements of the Local Government Board and Durham County Council, per plans and estimates prepared by Mr. D. Balfour, M.Inst.C.E, F.G S., of Newcastle-on-Tyne. The first scheme embraces the whole of the villages within the townships of Pelton, Ouston, and Urpeth; also the village of Chester Moor, remaining part of the town of Chester-le-Street, with an aggregate population of 19,500, and comprises 20½ miles of main sewers of 24in., 21in., 18in., 15in., 12in., and 9in. fireclay pipes and appurtenances at a cost of £15,030, and for sewage disposal works by chemical precipitation and filtration, in conjunction with intermittent land filtration on a small acreage as officially required, at a cost of £5,500, to be altogether repaid by a 30 years' loan, and involving an average assessment of 3d. per £ on a rateable value of £19,398. The second scheme embraces the whole of the villages within the townships of Washington and Usworth; also village of Pattinsontown in Barmston township, and Eighton Banks in Lamesley township, as well as houses in a small portion of the town of Gateshead, having the watershed to the river Wear, with an aggregate population of 12,500, and comprises 18¾ miles of fireclay-pipe main sewers varying from 21in. to 9in. diameter, and appurtenances, at a cost of £13,000. This amount includes ample outfall, subsiding tanks for simply clarifying the sewage before it reaches the tidal portion of the river Wear below Washington Staiths, having there considerable ebb and flow, and which the Rivers Pollution Act exempts from the expense otherwise indispensable of complete sewage disposal works. The entire cost will be repaid by a 30 years' loan, involving an average assessment of about 5½d. per £ for constructional works on a total rateable value of £32,058.

WINTON, HANTS.—The Christchurch Rural District Council are considering a proposal to give a water supply to Winton, a populous parish near Bournemouth, part of which is already supplied with water from the water company's mains. At last week's council meeting the inspector reported that he had made inquiries as to the number of houses in Winton parish which needed a better water supply. In North Winton and Moordown there were 142 houses supplied from wells, 175 from tanks, and 13 from public wells, whilst 16 had no water supply at all. The greater part of the wells were not, he added, protected from surface drainage and contamination, and in many cases the water in them was quite unfit for drinking purposes. The clerk said the cost of laying mains would be about £1,000, and the water company were not prepared to lay out that sum without a guarantee. After some further discussion, the matter was deferred to a future meeting.

* * *

At a meeting of the Coventry town council in committee, it has been resolved, by a majority of 18 to 6, to deal with the sewage question according to the Baginton or Sherbourne Valley scheme. The council have thus reversed their decision of a few weeks since to persevere with the Avon Valley scheme, for which they had previously failed to obtain sanction from the Local Government Board, and which is strenuously opposed by Lord Leigh. Mr. James Mansergh, C.E., of Westminster, has been instructed to prepare detailed plans for carrying out the adopted scheme.

The old plain east window in the parish church of Hythe, near Southampton, has been replaced by a stained-glass one. The centre light contains the Annunciation, the Madonna, and, above, the Crucified Saviour. The right and left lights show figures of the Magi and the Virgin, and the Shepherds and St. John the Divine respectively. In the two outer lights are the Salutation of Mary by Elizabeth, and the Baptism of Jesus on opposite sides, and above these figures of St. Elizabeth and St. John Baptist on either side. The artists were Messrs. Burlison and Grylls, of London.

The Watching and Lighting Committee of Aberdeen have resolved to introduce a system of overhead electric lights, suspended in the middle of the streets.

The management sub-committee of the Birmingham Municipal School of Art held a special meeting on Friday to award the "blue ribbon" of the school—namely, the scholarship founded in memory of the late John Skirrow Wright, and awarded once in six years for exceptional merit. The scholarship is of the monetary value of £180, and also includes free admission to all the classes at the Central School. The award is made on three classes of examinations. The examiners reported that the competition was keen and satisfactory, and on their recommendation the scholarship was awarded to Miss Mary J. Newill.

Our Office Table.

LADY WESTON, of Clifton, Bristol, has presented to the National Gallery a picture by William J. Müller, representing a "Street in Cairo," from the collection of her late husband, Sir Joseph D. Weston, M.P. The painting is an excellent specimen of the Oriental work of Müller, 1812—45, of whose landscapes the National Gallery now possesses three examples. It has been numbered 1463, and was hung on Monday at the north-west corner of Room XX. In the foreground are several gaily-dressed Arabs, Turks, and negroes, one man in a white burnous, who brandishes a long spear, being conspicuous. Behind are dilapidated two-storied houses, showing the mixture of pseudo-Classic pilasters and mesribeyehs characteristic of Cairo, and to the left, at the corner of the square, an old man squats on the board of his bazaar, waiting, pipe in mouth, for customers for his brazen jars. Behind, to the right, a square tower and a white dome of church and mosque cut into the cloud-flecked blue sky. The painting, which is signed, measures 23in. high by 35in. wide, and is hung on the line.

THE collapse of the landing-stage attached to the pleasure pier at Morecambe, on Monday, by which three lives were sacrificed and many persons received serious injury and severe shock, will call attention to the necessity for insisting that even the smallest subsidiary adjunct of an iron structure upon which great and sudden strains may come should be constructed with a liberal margin of safety above the theoretical limits of tension. Furthermore, such structures should be inspected at regular intervals—certainly at the beginning of every summer season. It has been stated by the secretary to the Morecambe Pier Company that the structure, which was erected so long ago as 1868-9, has been periodically examined by experienced men. In the present case the failure seems to have arisen through the snapping of a cast-iron girder which supported the iron grating 15ft. square forming the landing-stage proper, upon which the temporary gangway from the steamboat rested.

AT the concluding meeting, on Wednesday, of the Roman Catholic conference that has been held at Bristol, Dr. Gasquet read a paper on the "Metropolitan Cathedral," now in course of erection from Mr. J. F. Bentley's plans. Cardinal Vaughan afterwards stated that the new building at Westminster would have a larger nave than any other cathedral in the country, York not excepted. The structure would be 380ft. long and 156ft. wide, and would only be exceeded in dimensions by seven or eight of the old English cathedrals. They would thus obtain that which they most desired—namely, accommodation for a large number of persons in front of the high altar. They could not attempt to rival in costliness the buildings of old. They had to be satisfied with doing a little at a time. At present they were erecting the shell of the main building, and the great advantage the architect had seen in the Early Byzantine Christian style of architecture was that they could put up the entire shell at very little cost in the way of ornament. If they put up a Gothic building, the ornament must be put up at the same time. They hoped within two or three years, if Providence favoured them and the country took up the subject, to erect the entire shell of the structure.

IN his report to Sir Isaac Holden on the heating and ventilation of the Houses of Parliament, prepared by Mr. James Keith in March last year, the engineer summarises his indictment of the present system of ventilation as follows:—(1) That there is insufficient change of air in summer; (2) that the air admitted in winter is devitalised by being passed over scorching steam-pipes; (3) that the extraction of the vitiated air in the House of Commons is so arranged that only members on the front benches get any material benefit; (4) that sewer-gas finds its way into the committee rooms and into both chambers; (5) that in warm weather the ventilation is not only most ineffective, but there is a tendency to have down draughts of vitiated air impregnated with sewer-gas; (6) that the fresh air being admitted into both Houses and to the division lobbies through gratings on the floor, it is impregnated with dust, &c.; (7) that the atmosphere of the corridors and committee rooms, &c., is subject to contamination, owing to the weak and variable system of extraction; and (8) that the atmospheric conditions are much worse in the House of Commons than in the House of Lords.

During the course of excavations for the foundations of the Passmore Edwards Convalescent Home at Limpsfield Chart, in connection with Charing Cross Hospital, the architect, Mr. J. J. Thompson, of Chelsea, believed that good workable stone existed near by. The digging was continued near the site, and at a depth of about 40ft. from the surface the excavators struck stone. It proved to be a good, rich, endurable material of a greyish-green colour, and the hospital is being entirely built of it. The remains of an ancient stone quarry have also been brought to light, and experts who have seen it have no hesitation in adding it to the list of recently-discovered Roman remains. Many examples of pottery have been found—all of Roman origin—in the same place, and the discovery of these, and of the stone quarry has caused great interest. Not a little of the credit of the finds is due to the clerk of the works, Mr. Vinnell. The last discovery in the same place is a spring, the water of which has been analysed by the analyst to the Charing Cross Hospital, who reports that it is simply perfect. The water is obtained automatically by means of a ram.

The syllabus has just been issued of the Architectural curriculum at King's College, London. Under the efficient management of Professor Banister Fletcher, F.R.I.B.A., M.S.A., assisted by his son, Mr. B. Flight Fletcher, A.R.I.B.A., and by Messrs. James Bartlett and W. H. Webb, day and evening classes are held at the college, the course including: Architecture considered as a fine art, as construction, and in modern practice; constructional and geometrical drawing, quantities, engineering surveying and levelling, the geology and chemistry of building materials, and other subjects. There is an excellent museum of architectural photographs and building and sanitary materials, and a useful and well-stocked architectural reference and lending library at the college.

A movement is on foot, inaugurated by the Yorkshire Archæological Society, to raise funds with which to excavate the ruins of the Carthusian Monastery at Mount Grace, near Nothallerton. It is proposed to clear out and drain two of the best preserved of the old houses at the Priory around the great cloisters, to level the turf down to the surrounding gardens, to remove the accumulation of soil in front of the church, and show its connection with other buildings, and to open up the chapter house and the passage used by the frater priors, the relative positions of which are unknown. The owner, Mr. William Brown, of Arncliffe Hall, who is a member of the council of the Yorkshire Archæological Society, and local secretary to the Society of Antiquaries, has afforded every facility for the proposed new works, and has also promised pecuniary aid, while Mr. W. H. St. John Hope has expressed his willingness to assist the society in superintending the excavation.

The first meeting of the executive of the recently-formed Scottish Building Trades Federation was held on Friday afternoon in the rooms of the Building Trades' Exchange, Glasgow, Mr. David Heron, builder, Edinburgh, president, in the chair. Members were present from all parts of the country. Mr. James L. Selkirk, C.A., was elected secretary and treasurer. Arrangements were made for securing the affiliation of all trade associations throughout the country connected with the various branches of the building trade, and also for forming local associations where these did not at present exist. The annual meeting of the Federation was fixed to take place in Glasgow on Wednesday, October 23.

A coroner's inquest has been held at New York into the causes of the fall of the Ireland Building in that city, by which 16 men lost their lives. As in another recent case, the jury was composed mostly of architects and builders. The structure, a warehouse, was originally intended to be seven stories high, but was made a story higher after the lower portion was built; the foundations and walls, which had been approved by the City Building Department, were not increased in strength when the decision was made to put on an additional story; and the concrete foundations, which, if laid according to the specification would have been of sufficient thickness, were, without the consent or knowledge of the architect, made much thinner than the specification required. Furthermore, the contractor for the plastering had carelessly allowed a great weight of material to accumulate in the upper stories, and the flat roof was overloaded with gravel. The inevitable failure revealed itself in the foundations, and a dwarf column in the basement, which rested partly on a filled-in well, snapped, bringing down the entire warehouse. The testimony of the architect showed that he was paid only 600dol., say £120, for his work on the building, including general supervision; that two superintendents were employed, after the foundation-work was begun, by the owner, and paid by him; that, although he visited the work about twice a week, he did not particularly inspect the trenches before the concrete was put into them; and that the change in thickness of the footings was made without his knowledge or consent. The jury found the architect, the contractor, and three other persons guilty of manslaughter, a verdict which, if the evidence is correctly reported, is unduly rough on the architect.

At the last meeting of the Manchester City Council, Sir John Harwood called attention to the hardship sometimes imposed upon owners of property which had been condemned by a corporation as insanitary. Where the property was held on a short lease, the owner, in the event of his deciding to improve rather than to demolish, could have no time in which to recoup himself for the expense of the alteration. He suggested, therefore, that the Municipal Corporations Association should be asked to co-operate with the Manchester City Council in securing a Bill to compel landlords in such cases either to buy out the existing owner's interest, or to extend the lease to such a period as would give the owner a reasonable opportunity of recoupment. The chairman of the sanitary committee undertook to bring the matter forward on a future occasion.

◆

On Saturday a large and representative gathering of Borderers and others assembled at the site of Henlawshiel, on the Cavers estate, a few miles from Hawick, to unveil a granite obelisk, marking the spot whereon [illegible] stood the cottage inhabited by the parents of Dr. John Leyden (1775-1811), poet and Oriental scholar, and in which he spent his boyhood days. The committee also unveiled a tablet inserted in the birthplace of the poet in the village of Denholm. Both memorials have been executed by Mr. Robert Robinson, of Hawick.

Another of the Chapter-house windows at Lincoln Minster has been filled with stained glass, illustrating further the history of the cathedral, and is the eleventh of the series. The three compartments represent—(1) King Henry V. hearing in the Chapter-house the suit between the then Dean, John Mackworth, and the canons of the cathedral; (2) Bishop Fleming founding Lincoln College, Oxford; (3) Henry VI. holding his Court in the Episcopal Palace at Lincoln.

An inquest was held at Aston, on Friday, as to the death of Joseph Onions, labourer. A solicitor watched the proceedings on behalf of W. E. Aston, builder and contractor, of Lichfield-road, by whom deceased was employed at the time of his death. On Thursday in last week Onions was excavating a drain-sewer, and had got to a depth of 5ft. 6in., when the soil gave way, and he was buried. The ground was not shored up; but Mr. Aston had suggested to deceased that this should be done, and Onions said that he would not be able to work if the boarding was put in. Thereupon Mr. Aston ordered that the hole should be widened, so as to permit the shoring being done. The jury returned a verdict of "Accidental death," and added a rider to the effect that there had been negligence on the part of Mr. Aston in not having had the soil shored up.

The parish church of St. Mary, at Bagillt, was reopened on Tuesday, after having undergone extensive renovations and alterations. The principal improvement is the total renewal of the old and inconvenient pews, and the substitution of pitch-pine sittings of a modern and comfortable character. The principal entrance has also been removed to a more convenient part of the building. The work has been carried out by Mr. Richard Jones, builder, Bagillt, from plans prepared by Mr. Bibby, architect, Flint.

A project for bridging the Wye at Brockweir, near Tintern, is making progress. On Monday the chairman of the Highways and Bridges Committees of the Gloucester County Council, accompanied by Mr. Robert Phillips, county council surveyor, visited Brockweir, where they met the local committee in conference; the outcome of which was that it is proposed that local subscriptions to the extent of £1,000 be raised, and that the county councils of Monmouth and Gloucester contribute about £2,000 each, the estimated cost of an iron structure being about £5,000.

Trade News.

WAGES MOVEMENTS.

Inverness.—The Inverness plasterers went out on strike on Monday. They demand an increase on the standard wage from 7d. per hour to 8d., owing to the great amount of work that is going on in the district.

CHIPS.

The district council of Dawley have appointed Mr. J. J. Bailey as their surveyor.

The partnership heretofore subsisting between J. T. McLachlan and W. H McLachlan, builders, decorators, and house and estate agents, Duke-street, Adelphi, W.C., and The Pavement, Clapham, S.W., has been dissolved.

A stained-glass window of plain grissaile colours has been erected in Salisbury Cathedral by Lady Hulse, mother of Mr. E. H. Hulse, M.P., to the memory of her mother, the widow of Dean Hamilton. The window, which was executed by Mr. A. O. Hemming, of London, occupies the northern end of the north transept.

The Sunday-school premises at the rear of Trinity Baptist chapel, Haslingden, are about to be enlarged and reconstructed, and a lecture-hall and ten additional classrooms will be provided. Mr. H. Fielding, of Haslingden, is the architect.

The new station of the London and South-Western Railway at Bodmin is nearly completed, and the line will be opened for traffic on Tuesday, Oct. 1. Carriages will then run right through to London without change.

The works committee of the Edinburgh and District Water Trust met on Monday and opened the tenders for contract No. 1 of the Talla water scheme. There were in all eighteen tenders, varying from about £50,000 to £70,000, and five of the lowest were remitted to the water engineer to examine and report upon.

A scheme for lighting the central part of Swansea by electricity, and using in combination with the apparatus a dust-destructor, was formally sanctioned on Monday by the electric lighting committee of the Swansea corporation. The [illegible] scheme, which will be on the high-tension system, will cost about £56,000.

The members of the Yorkshire Archæological Society, about sixty in number, met on Friday at Nunnington, and having inspected the parish church, proceeded to Stonegrave Church, containing a Laudian screen, and in the churchyard a 10th-century cross. Oswald Kirk and Gilling Castle were afterwards visited.

Memorial-stones of new Wesleyan day and Sunday-schools at Horbury Junction were laid on Saturday. The building will accommodate 250 scholars, and the cost is to be about £1,000. Messrs. Thornton and Son, of Dewsbury and Wakefield, are the architects.

The Lord Provost's Committee of the Edinburgh Town Council have decided to take the advice of Mr. W. Wybrow Robertson, A.R.I.B.A., of H.M. Board of Works, Edinburgh, upon the plans prepared by Mr. T. Morham, the superintendent of works, for the enlargement of the City Chambers.

After a long discussion, the town council of Cardiff adopted on Monday a resolution appointing a special committee to consider and report as to the desirability or otherwise of carrying into execution the provisions of Part 3 of the Housing of the Working Classes Act, 1890, with respect to lodging-houses for the working classes.

The monthly report of the Amalgamated Society of Carpenters' and Joiners' states that strikes are still in progress at Swansea, Croydon, and Dundalk; but that in Darwen, Middleton, and Perth substantial advantages have been secured without any stoppage of work.

At the last meeting of the city council of Leeds, it was resolved to apply to the Local Government Board for sanction to borrow £100,000 for waterworks purposes. This money will be required, not to discharge liabilities, for there are none, but to meet the requirements of the city in relation to the water supply. The extensions needed comprise a new 30in. main from Swinsty to Eccup, the new pumping engines at Headingley for the high-level supply, and new service reservoirs at Harehills and Beeston for low-level supplies.

It has been decided by Mr. Farquharson, of Invercauld, to restore and render habitable Old Mar Castle, Braemar, the building in which the Jacobite rising of 1715 was hatched. "The Standard on the Braes of Mar" was raised at a point about half a mile further up the river, a spot now included in the site of the Invercauld Hotel. The work of restoration has been intrusted to Mr. A. Marshall Mackenzie, A.R.S.A., Aberdeen.

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXIX.—No. 2124.

FRIDAY, SEPTEMBER 20, 1895.

PUTTING SCIENCE FOR ART.

EVERY man of ordinary education thinks himself in no danger of confusing these two things. Yet it is common enough, even in writings of some literary pretensions, to find the one mistaken for the other. It is a blunder that seldom fails to show itself in the daily papers when the British Association week comes round; and this year it has appeared in some unusually fine specimens. We have had a high-class journal congratulating Sir Douglas Galton, not on the account which he actually gave of the discoveries of science since 1831, but on an account which that journal supposes him to have given of what it calls the "works" of science in bridges, railways, and the like. A British Association address must naturally be uncongenial reading to a political leader-writer; but if he shrinks from perusing it, he should decline to write about it. Yet, after all, he does not flounder more helplessly than the reporter and the telegraphist, who sent, as the latest news from Ipswich, a statement that "*helium* has been discovered in Bach gas." The person who was responsible for this singular announcement possibly supposed the possession of this rare element to be the secret of Bach's musical genius. It is well for other composers that he was mistaken, or chemists would have been contriving means by this time to subject some of them to destructive distillation.

These little drolleries, however, may be pardoned as a welcome relief, amidst the daily round of murders, suicides, and yacht-races. The mental obtuseness which takes science for art, and art for science, is a more serious thing. It arises, perhaps, in part, from the vulgar notion that art means making pictures, and nothing else. Art, on the contrary, as distinguished from science, means making anything, provided it is made in a human way, with thought and invention. Immense mischief has been done by drawing a sharp line between the so-called "Fine Arts," and the so-called "Useful Arts." There ought to be no such sharp line. Some arts, it is true do more for men's bodies, and others do more for their minds; and so far, the former are lower than the latter. But in ages when men cultivated all their faculties, instead of allowing half of them, as they now do, to perish by disuse, even the lowest art had something of grace and beauty in it. The very plumbing of olden times is better worth looking at than the jewelry of to-day. A bit of 15th-century carpentry, roughly shaped, and not even planed, has a charm which whole shopsful of cabinet-making and French-polish cannot rival. The village blacksmith, when he hammered out a key-plate or a casement-stay, showed momentary flashes of the same sort of power which created churches and cathedrals. It was not only in the Middle Ages that this happened. In Greece and Rome, too, at their best, all arts were fine arts. But a century or two ago a race of critics and connoisseurs arose, who misunderstood Classic work as much as they despised Gothic. They knew a little of Roman architecture and sculpture, and they had read something about Roman painting. Beyond this their minds were a blank. In their dense ignorance, therefore, they proclaimed architecture, sculpture, and painting to be the only material arts deserving the name of "fine." They practically told the mason and the carpenter, the plumber and the smith, that their thoughts and inventions were not wanted. It was for them, and the like of them, to occupy themselves with nothing but mechanical drudgery. Their business was with the "useful" arts, and for the useful arts ugliness was the proper thing. If it should happen by chance that some rich man was so given over to luxury that he wanted even these men's productions beautified, an architect or a draughtsman would "beautify" them by sticking them over with ornaments! The critics and the connoisseurs preached to a believing audience, and what they taught is the popular creed to this day.

Somehow or other this creed has got itself mixed up with the name of science, and when thoughtless people see a piece of construction that is very large and very ugly, it comes into their heads that science has made it. But science makes nothing. The business of science is not to make, but to find out how things are already made. In our time it has found out, amongst other interesting and important matters, a great deal about the nature of iron and its compounds. It has told us what is the strength per square inch of section of practically pure iron; of iron with this proportion and that proportion of carbon in it; it has ascertained what are the properties of iron combined with silicon, or with phosphorus, or with nickel, and an affinity of things of the same class. To everybody who finds in iron the material he requires for his special purposes this information is invaluable. He can calculate by means of it what sizes of iron are the very least which each part of his work must have, though science certainly does not forbid him to put larger ones, as from the way in which "scientific construction" is sometimes spoken of one might be led to suppose. But science, on the contrary, having taught him all it knows about the nature and properties of the stuff he is using, leaves him perfectly free to use it in whatever way may commend itself to his judgment. Now we see what the nature of the man is. If he is a man with all his faculties—a man like an ancient Greek, for instance, or a Mediæval builder, he will make a shapely work out of his iron, and a work more, and not less, strong and durable for being shapely. But if, as unhappily occurs much oftener, he is a man with his perceptions blunted and half his mental powers perished for want of exercise, he will make a work which is hideous to the core, and will then, perhaps, try to beautify it by plastering on vulgar finery. If he does this, let him take the blame to himself, and not lay it on science. Science gave him no advice on the subject either one way or the other.

Iron construction, especially, has become confused, in the popular notion, with science, because iron construction presents such easy and simple cases for science to inquire into. The engineer knows that his iron or his steel will bear so much per inch in the way of tension, and so much in the way of compression, and that each rivet has a certain average strength. He calculates his strains, and proportions his materials accordingly, after making some moderate allowance for chance defects. But this cannot be done with anything like the same accuracy in masonry or brickwork construction. In these, it is true, science can tell what and whereabouts would be the thrust of an arch of a certain shape and thickness, supposing there were no friction between the voussoirs. But frictionless voussoirs are not in the market, and nobody would buy them if they were. The strength of most arches depends greatly—sometimes wholly—on the friction between the arch-stones or arch-bricks, and on the cohesion of the mortar or cement they are set in. This varies with time, growing greater for years as the mortar or cement hardens, and then lessening again as time at last decays it. Moreover, at the same moment it varies in different parts of the structure. Here, the labourer made his mortar up well; there, not so well. At this point the cement was finely ground; there, in spite of all precautions, it was a little coarser; and there, again, the fixer "knocked it up" after it had begun to set. In this place the sand was sharp and good; in that one, a spadeful of dirt had got amongst it; and so on, from beginning to end of the structure. Who can calculate the exact influence of these things? Who ever will be able to calculate them? Yet it is such things as these which make it impossible for the architect, who is mainly a builder in brick and stone, to get as much good out of science as the engineer can, who is mainly a builder in iron and steel. The architect's figures are only an approximation: he has to make a liberal allowance, in addition, for sources of weakness, which cannot be precisely foreseen. The typical engineer, on the contrary, while he sticks to iron and steel, can very closely foresee the real strength of his structures. The result is that he revels in calculations. His conscience chides him for walking across a room without knowing the scantling of the joists; and if his engineering studies had begun in time, he would have declined to run alone till he was satisfied that the transverse section of his legs was large enough to support the weight of his body.

We can none of us have too much science. But we can easily make a wrong use of what we have, even if it is but a little. The worst use is to try and make it serve instead of art. Science itself never pretends to take up such a position. It simply answers our questions as to strength of materials, direction of strains, and the like. The artist makes a design for a structure, and science, on being applied to, will tell him—pretty accurately if it is in metal, and more vaguely if it is in brick or stone—what its ultimate strength will be. It shows him what are its weak points, and how far it is safe or unsafe. But, in addition to safety, there are a multitude of important things to be regarded in every design, and about most of these science says nothing at all. It does not follow from this that the designer should think nothing at all of them. Yet this is the tendency of the man who tries to put science in the place of art. Where science stops, he stops. By a delusion of his own mind, he takes it for granted that he ought everywhere to use the smallest quantity of material which, while the structure is fairly new, will be safe. By another delusion, he thinks it his duty so to proportion strains and resistances, that every part of his structure, if over-loaded sufficiently, would collapse, at least in theory, at the same moment. He is pleased to call the working out of these two delusions "scientific construction." The effect of them, in filling our cities, and even our country places, with hideous monstrosities, is seldom out of our sight. The delusions will have their day. But, in the mean time, it is not science which is to blame for them. Science invents nothing and designs nothing, either ugly or beautiful. Science merely ascertains facts, and leaves the inventor and the designer to turn them to account. When the inventor has very little power of invention, and the designer is ignorant of the first principles of design, they turn the facts of science to bad account instead of good, and then, if people tell them so, pretend it was science which forced them to do it.

MISUSE OF DETAIL.

CERTAIN amenities in building are just as much expected by every sane man or woman as those observances which touch dress or manners. And yet we very seldom find them studied by those whose business it is to erect buildings along our public town thoroughfares. Look, for example, at the many obstructions which impede our passage along the footway, the obtrusive porch and steps, the shop window, the cellar opening, not to speak of the exasperating shop lamp or awning. Some of these details are thought, perhaps, beneath the attention of the architect; but it is just because they are so that they become themselves obnoxious, and remind us somewhat ironically that we cannot justifiably disregard them. In a true sense, indeed, an architect ought to be omniscient or ubiquitous, and should not consider anything, however small it may appear, to be too trivial to be attended to. It is one distinguishing mark of the architect's work, that every minute detail receives attention, just as it is of the cheap jerry builder that all are invariably scamped. Who, for example, has not observed in the cheap buildings of the day the want of finish in matters like grates, door furniture, festoonings, and the *et-ceteras* of the trades generally? Even the way the base of a stone pillar is designed, or a window-sill or doorstep is finished, is clumsy and awkward. And just in the same spirit of unheeding detail do we find many things that are thoughtlessly designed, which are a continual source of vexation and nuisance. Such things as an awkward and inconvenient entrance, a crooked passage or staircase, an obstructing shop-front, are aggravating to everyone who has to use them, and they always reflect very painfully on the architect. We can cite numerous instances. Mr. A., who goes to the new municipal offices, invariably sustains a ricked ankle in stumbling down a few steps in a dark corridor, or he stumbles up two or three unsuspected steps in a vestibule or lobby. Or, owing to an awkward and badly set out angle winders on the staircase, Mr. B. sustains an injury. Both A. and B. blame the architect for the bad arrangement, and as they are both accidents of painful remembrance, they leave a far more lasting impression on the mind than any of the good or artistic points in the design of the building. What A. and B. have experienced, hundreds of other people must experience every year. Again, how many people who frequent public halls and churches libel the architect if they catch a cold in the head or suffer from neuralgia, owing to the position of the windows or the means provided for opening the casements? These details have more concern for congregations than all the architectural skill evinced in the design. Bad ventilation or poor acoustical properties are equally reprobated at the architect's expense. A hundred other things may be mentioned which concern the reputation of the architect more intimately than any of his cherished convictions as to proportion or artistic design. After all, these details appeal more directly and powerfully to the mind, which looks for some correspondence between what is reasonable and right and what is artistic. If we deny any relationship between them, we have no right to say that architecture is the art of embodying fitness in the most agreeable or beautiful manner.

One sort of mistakes refers to projections. How much a projecting porch or bay window should obtrude, and in what place, are points which do not often occur to the architect's mind. He introduces them on his plan without in the least thinking of the thousands of people who will pass them or come in collision with them during every day in a busy street, and he only studies the elevation of his building. And it is the same with details like cornices and columns. But, surely, the public ought to be considered in such matters. Of course, the local authorities of most towns frame by-laws which regulate these matters. "Rules as to projections" are provided in the London Building Act, but in spite of them we observe very awkward arrangements. If we cast our eye over the provisions of the new Act now in force, we find certain rules. Thus, it is enacted that in a street of a width of not more than 30ft., a shop-front may project beyond the external wall to an extent not exceeding 5in.—why not 6in. we have never been able to discover. In a street of greater width than 30ft., a shop-front may project 10in., but not more. These regulations are useful and necessary in street buildings, if they can be observed; but they seem almost ridiculous when in one shop-front we find a very clumsy and awkward window-sill which projects several inches beyond the limits so assigned. Another thing we cannot understand is why the cornice of a shop-front is limited in projection to 13in. and 8in. respectively, while other lower projections can be made without stint. Again, in one sub-clause to section 73, rules are given as to the height of woodwork of shops, which is not to be fixed higher than 25ft. above the pavement, and as to the fixing of woodwork nearer than 4in. to the centre of party-wall, &c.; but we do not find a word about projecting sills, or pilasters of wood in other positions. The rules given have been made chiefly as a safeguard to prevent the spreading of fire—a very desirable precaution; but as to other inconveniences of projecting woodwork, nothing is said. There are also a number of rules given relating to bay-windows—that they must not project more than 3ft. from the main wall, or be nearer to the party-wall than their projection, &c., and as to oriels and turrets, it is laid down that they may project only so much (12in.) over the public way, and no part be less than 10ft. above level of footway, &c. Here we have definite rules as to projection; but there is not a word said about other projections, like steps, or buttresses, or piers, which may be so clumsily placed as to become positively dangerous to foot passengers. It is not merely that all projections are more or less awkward and dangerous to the public, but their position may make them more so. The last clause of this section seems to exempt many kinds of projection, for it refers to copings, stringcourses, cornices, fascias, window dressings, and other architectural decorations, which are plainly excepted from the operation of the Act. We certainly should be the last to lay down any Procrustean rule as to projections to buildings, especially those of architectural character, except those which are awkward and dangerous. Because they are obtrusive and uncouth we should say they have lost their character of being architectural. In one place or position a projecting pier or cornice or stringcourse may be architectural, in another position—where it becomes awkward—it cannot be. The position and circumstances ought in every case to determine the fitness and beauty of an architectural feature. As a practical example we should unhesitatingly condemn a cornice which projected over the footway at the height of one's head or shoulder, and which threatened everybody with a knock on the head or shoulders every time he passed it unwittingly. And yet such instances occur, even in central London. On the east side of Arundel-street the brick piers of a house have stone cornices or cappings which are extremely awkward to the pedestrian, and there are many similar examplifications of the architectural misuse of detail, where they may be positively wrong because misplaced and awkward. All projections in the wrong position are absurd or positively dangerous, and if statute does not touch them it is the duty of the architect to see that his own code of ethical principles rigidly excludes them.

TRICKY DRAWINGS.

EXAGGERATION is a vice not confined to writers of fiction and dramatic authors. Artists and draughtsmen are adepts in the art of misrepresenting or magnifying qualities which appeal to the senses or human passions, and the tricky draughtsman knows what an effect a few touches, a dash or a dot, or even a shadow, may produce in the mind of the undiscerning public or committee. One noticeable instance of trickiness has been mentioned by Mr. T. G. Jackson, A.R.A., one of the examiners of architectural design of the National Competition Drawings which we lately noticed. In his report on the designs, he refers to the treatment of elevations or geometrical drawings by many of the students, who are fond of tricking up geometrical elevations into pictures, and he points out very truly that the habit is not only "useless, but mischievous, encouraging students to think in elevation rather than in perspective, and the public to believe that an elevation gives a true idea of a design." We have before now advocated the value of an architectural designer thinking in perspective, or in the solid, more than he is in the habit of doing. Under no circumstances can a geometrical elevation give a fair view of a building, as it is needless to inform anyone acquainted with the subject; yet it is the one and only representation of a building which the popular mind can understand. A plan which is also a geometrical projection is a reasonable mode of representing the horizontal section of a building, but it does not lend itself so easily to misrepresenting the facts; and the same is to be said of a vertical section. Each represents precisely and exactly the real proportions of each room, its length, width, and height, and every line in a plan or a section defines the solid parts or walls which are cut through. Not so the elevation. The lines in many cases represent only the front faces of solids, the vertical projection or traces of features, which have a depth or meaning which cannot be expressed. But the elevation appeals to the public eye, while the plan and section do not, and for this reason architects and draughtsmen have devoted a great deal of time and artistic labour in making them as pictorial as possible. One way of doing this is to introduce shadows; to put in shadows of every projection, every pier or column and cornice, to shade up the reveals of the windows, often regardless of any rule of true shading. The effect is, of course, as every draughtsman knows, quite magical. The dull, lifeless look of the geometrical drawing is enlivened, and the flat tints or washes brightened up by the process. The details and projecting features, so to say, leap into light, just as the modern "Dot and Dash" style of illustration has a tricky look and sparkle about it, which seem to captivate our Transatlantic brethren.

We remember when the pernicious habit of "back-lining" drawings was very common. It was done for a similar reason—to brighten the drawing; and, after all, we doubt whether the practice is not less open to objection than shading, which gives a fictitious appearance to the elevation. Mr. Jackson observes, on this subject, "The art of elaborately shading geometrical drawings has no practical value. No architect ever makes such drawings in his practice, and there is no demand for assistants who can do them." Observe, this remark was made more particularly in reference to those shaded drawings of buildings which the art schools encourage their students to execute in competition. Happily there are not many architects who indulge now in shaded elevations, though the practice was very common at one time, as may be seen in many of the tinted or shaded elevations left by the late John Soane, the Smirkes, and other architects of a past generation. The French and German schools have long followed the same plan, and many of their elevations of buildings are remarkable examples of scientific shading and execution. As a useful exercise in projecting the shadows of features on sciographic principles there is nothing to say against the practice: the objection is in making the art a mode of pictorial representation, and of devoting so much of the young student's time to it. Our chief objection is to substituting it for a more rational way of indicating relief or solidity, as that of perspective projection, shading, or colouring geometrical drawings. A cast shadow of a tower, or a porch, upon an elevation cannot be of much value artistically, as it does not correctly represent to the eye the real effect, to do which the shadow must be represented in perspective. We do not find fault with this kind of drawing as an exercise in projection, but only when it is used to trick up or misrepresent the object.

The introduction of trees and figures in the foreground of elevation drawings is inexcusable. The practice of shading or "flashing" in the windows in elevations is also carried too far by some draughtsmen. Flat dark washes or broken tints as a conventional mode of showing window openings are reasonable: but we have seen the reflection of glass represented in a manner repugnant to all sense of propriety. We must remember an elevation is simply a geometrical drawing, representing the real proportions to scale of the features on one plane; it is merely a conventional mode of defining the dimensions of a building—a technical drawing, and any attempt to impart to it qualities of a pictorial kind is altogether out of place.

An exaggeration of another kind—a deception which is sometimes practised in competition drawings—is to tack on to an elevation a return side in rapid perspective, with an object of making an easy perspective view. No doubt there is a temptation to do this to save time, if the return elevation has any important feature in it. It is so easily done, and a pictorial completeness (save the mark!) is at once given to the drawing. Imagine a corner tower "cooked" to show the return, or an octagonal cupola—we have seen such a distortion; and a worse one, the geometrical elevation made to appear in perspective by showing the returns, or one side of the window reveals and arches! To such improprieties does the cunning craftsman commit himself!

But the art of illusion by means of lines and colour does not stop at elevations. Perspectives are often most cunningly manipulated by architectural draughtsmen in a manner that is quite a reproach to the profession. What, for instance, is more deceptive than dragging into view a part of a building which could not by any possibility be seen from the point of view selected? We have often remarked the upper part of a tower or a cupola put in where it could not by any chance be seen, or a portion of a front "forced," which, correctly, would be lost to view by a projecting wing or part of the building. These exaggerations are thought to be legitimate by many artists, because it is the only means open to the architect to represent his building as it really would appear if we could take it in all round, or as it would appear if he sent a good model of it. They say, with some reason, that a correctly drawn perspective, like a photograph, may give, after all, a very false impression, or misrepresent or exaggerate portions or features which, in actual fact, would not appear. Very true; but this is the fault of the draughtsman in selecting his point of sight or the "horizontal line." Within certain limits every perspective draughtsman who is an artist can take little licenses without being chargeable with trickery; he can, for instance, extend or diminish his "points of distance," place his "picture plane" a little nearer or further from the station point by what is practically the same thing—viz., making certain adjustments or alterations in the drawing itself, after the main perspective lines have been run. He can heighten this or that feature, lessen this or that projection, and adjust and balance a number of little points which only the artist can do without seriously misrepresenting the general effect. Like an honest craftsman, the architect knows how to give and take without exaggeration of a kind which encourages spurious draughtsmanship. Competitions are chargeable with encouraging architectural jugglery, for the simple reason that the competitor is tempted to flatter the public eye and the vanity and self-conceit of the Englishman. The "man in the street" says: "I know nothing about art, but I know what I like"—a phrase which has prompted the draughtsman to cater for a class of people who are not very critical. In short, it is the old dodge of catering down to the people's taste. The designer, too, falls into the trap, whether he is designing art furniture or buildings. Vulgar and superfluous ornament and colour are to be found in the piano or the coal-vase seen in the furniture dealer's window; so also the design with plenty of domes and turrets is more captivating than the plain, honest-looking building. One of the usual tricks amongst draughtsmen is to exaggerate the scale of the building by an artful extension of the real visual rays, by manipulating the "picture plane," by introducing a landscape or a number of figures, which very seldom obey the laws of perspective. These magnified, and often distorted, views "take" the popular eye. If there is a tower at one corner, it is made prodigious: the vanishing lines are rapid and drawn at an acute angle; every window recess or cornice is drawn with an exaggerated fulness, the lines and shadows are coarse or strongly put in. Exaggerated importance is given to a portico: every column and coffer of its beamed roof is drawn with telling effect. When we refer to the plan and elevations, we are disillusioned at once: they are comparatively small and meagre. But the draughtsman is not the only sinner in the art of misrepresentation, the colourist is equally guilty. In addition to obvious tricks of the brush, he is addicted to various kinds of exaggeration. One of the commonest is that of casting intense shadows. These are not always real, but imaginary cloud shadows over the front of the building, obscuring a part of the design which is poor or unsightly, as sweeping right across a façade with the object of producing an illusive effectiveness, of strengthening the profile of a dome or a piece of skyline. But when intended as real cast shadows, how often are they true? And in this indictment we by no means leave out the artist in "black and white" or line perspectives. From the absolutely feeble and purposeless way some of these drawings are shaded, it is only generous to assume that they are quite ignorant of the simplest rules of shading. Imagine the cast shadow of a tower standing in front of a building going right off at an angle across the façade, parallel to the object which casts the shadow; or the by no means uncommon mistake of assuming the solar luminary to be in different and opposite points of the heavens. These blunders are common enough in competition and other drawings. When shadows are introduced for artistic reasons, they can at least be put in not to offend against common laws of nature, as some painters have done when they introduce a rainbow with the colours in inverse order. A dark, thick shadow is not in keeping with an architectural drawing: it is put in rather with the object of unduly accentuating a feature or projection, and for this reason it is misleading. Heavy and opaque tints are also to be avoided in drawings of this kind, and it ought to be one of the rules of architectural colouring that the tints or washes should be thin. Another mischievous practice is the use of bright colours, and of methods of execution which are more suitable for pictures. In a few of the recent competitions, the perspective drawings were tinted more in the manner of so-called "artistic advertisements" in bright reds, greys, browns, and yellows, than sober views of buildings—quite subversive of those principles of architectural colouring which have been recognised as true. No wonder these extreme modes of tinting have caused committees and their advisers to look with suspicion and distrust on the colouring of any kind of competition drawings.

◆

THE BRITISH ASSOCIATION AT IPSWICH.

In continuation from last week's report of the Congress of the British Association which has been held at Ipswich, we give, as in former years, abstracts of a few of the papers of special interest to our readers. Full reports of the proceedings are given in the last and current issues of the *English Mechanic and World of Science.*

POSSIBILITIES OF COAL IN SUFFOLK.

In opening the Geological Section, the President, Mr. W. Whitaker, delivered an address upon "Underground in Suffolk and its Borders." He pointed out how much the knowledge of the geology of the county had been advanced by engineers and others by means of the 476 wells, of which an account with some geologic information had been published. He summarised the information thus obtained in reference to the drift, crag, Eocene, tertiaries, and cretaceous beds; and coming then to the most interesting problem in the geology of the Eastern Counties, "What rocks underlie the cretaceous beds at great depths?" said beyond the out-crop of the lower beds of the cretaceous series in Cambridgeshire and Norfolk we found a powerful development of the great Jurassic series; but the only two recorded deep borings in and near Suffolk that had pierced through the cretaceous base, at Culford on the north-west and Harwich on the south-east, showed not a trace of anything Jurassic, passing suddenly from the Cretaceous into far older rocks. The recent trial boring at Stutton showed precisely the same thing, the gault resting directly on a much older rock. The proof of the occurrence of Silurian, Devonian, and carboniferous rocks next beneath cretaceous or Jurassic beds having been, to some extent, established by trial borings in the London basin, the first place suggesting itself to geologists for trial borings was the neighbourhood of Dover, and the trial had been made successfully, several hundred feet of coal measures having been found with several workable beds of coal. Reasoning from this discovery, and from the results of many other borings, Mr. Whitaker could not see why they should expect anything but a like occurrence of coal measures in detached basins in our vast underground tract of old rocks. What was the evident conclusion from what we knew and what we might reasonably infer? Surely that trials should be made to see if such hidden coal basins could be found. There were objectors in this as in other matters. He remembered the time when certain geologists disbelieved in the possibility of the occurrence of coal measures anywhere in South-Eastern England, it being argued that the formation thinned out before it could get so far eastward. The first boring made specially to test the question (at Dover) disproved both the above negative theories by finding coal measures with workable coal. Let them hope that a like result might happen in East Anglia, and the pessimists again be in the wrong. They must not, however, expect an immediate success like that at Dover. They were here much further from any known coal-field.

BORING FOR COAL AT STUTTON.

Mr. J. Vivian, C.E., managing director of the Vivian Boring and Exploration Company, described, in a paper read before the Engineering Section, the details of the machinery employed in the Stutton boring. His machine consisted of a drill armed at the point with black diamonds equal in hardness, though not in toughness, to the white brilliant. They had now bored 1,350ft., starting with a bore 11in. in diameter, and now having one 5¼in., tubes being inserted from time to time as they went down through bad ground. They pierced through the chalk at 825ft., thence it was gault till a depth of 895ft. was reached, and after that sandstone and shale. Mr. Vivian said there was no definite depth specified that they were to go, but his company had guaranteed to go 700 yards, there being thus close upon 800ft. more to go. His firm had, of course, nothing to do with the strata, except to produce samples.

Mr. Whitaker also described the trial boring at Stutton. This, the first attempt of the Eastern Counties Coal Boring Association, was in the low ground southward of Crepping Hall, and had been successful in reaching the base of the cretaceous beds at the depth of 994ft., and in proving that these were underlain by a much older rock. The tertiary and cretaceous beds passed through were as follows:—Drift (river gravel), 16ft., London clay and Reading beds, 54ft.; upper and middle chalk, 720ft.; lower chalk, with very glauconitic marl at the base (almost a greensand), 154ft.; gault, $49\frac{1}{2}$ft.; and palæozoic rock, with a high dip. The thickness of both chalk and gault was slightly less than at Harwich, and there was also a little less of the tertiary beds.

COAST EROSION.

The committee appointed at the jubilee meeting at York, in 1881, presented its fourth and final report on the erosion of the sea coasts of England and Wales, and the influence of the artificial abstraction of shingle or other material on that action. The seagirt counties were 29 in number, and all of them, except Cornwall, Devon, Northumberland, and Cumberland, were being eaten into by the sea. In some cases the inroads were very serious, owing to the soft nature of the rocks. The committee reported:—"The preservation of the coast and the conservation of our seagirt counties is a matter of urgent necessity. It affects many varied interests—governmental, county councils, Crown rights, and private ownership. Under these circumstances, the committee do not offer any suggestions as to the department which should take charge of the work, or as to the incidence of taxation to provide for the same, but are of opinion that a working result could be most quickly obtained by a departmental committee of the House of Commons."

Two papers dealing with the inroads which are being made by the sea near Southwold were read, that by Mr. Horace B. Woodman dealing chiefly with the sections of strata freshly exposed, while Mr. John Spiller dealt with the losses of cliff at Southwold, Covehithe, and Easton Bavents during the past twelve months.

LIGHT RAILWAYS.

Major-General Webber, C.B., gave an address on "Light Railways as an Assistance to Agriculture," in which he submitted a scheme showing eleven or twelve light road lines radiating from Ipswich, averaging about seven miles each in length, designed to be constructed at the side of the public roads in the country, and in the roadways where they pass through the streets. The capital expenditure he put at £124,000, and he estimated that these lines would pay 3 per cent. on the capital outlay. There would be no difficulty in working these 77 miles by means of electricity if overhead conductors were permitted, and the refusal to allow them was ludicrous in view of what is carried out in towns like Lubeck, Gera, Breslau, Christiania, and many other towns abroad. All could be worked from one central electrical generating station, but they could not be made to pay with the sparse traffic and low rates prevalent in the district. As to gauge, he noted that at Tiptree, in Essex, a light railway is projected, and that a gauge of 4ft. $8\frac{3}{4}$in. is proposed, but he advanced strong arguments in favour of a much narrower gauge.

THE GROWTH OF HARWICH AND ROTTERDAM.

A paper on "The Growth of Harwich" was read by Mr. William Birt, general manager of the Great Eastern Railway, who showed that the town possessed no railway communication till 1854, and that the growth of the port dated from 1863, when the G.E.R. commenced to run boats to Rotterdam. It was now the fifth in importance of English ports. The Dutch authorities are now constructing a short railway round Rotterdam, which will shorten the distance *viâ* Harwich to Berlin, Northern Germany generally, and Russia by 25 miles.

The President of the Section (Mr. L. F. Vernon Harcourt) read a paper on the new outlet of the River Maas at the Hook of Holland, and the improvement of the Scheur branch up to Rotterdam. He said:—The gradual shoaling of the mouths of the Maas, coupled with the increasing draught given to sea-going vessels, rendered the access to Rotterdam inadequate in the first half of this century. In 1858 Mr. Caland proposed cutting a new direct outlet for the Scheur branch of the Maas across the Hook of Holland, continued across the foreshore into deep water by fascine-work jetties, and this scheme was approved and commenced in 1863. The north jetty was carried out in 1863-74 to a length of 2,187 yards, and the south jetty in 1864-76 for 2,515 yards; the channel across the Hook was excavated, 164ft. wide and 10ft. deep, in 1868-71; and the old outlet to the south of the Hook was closed by a dam in 1872. The new channel was first used by fishing vessels in 1871 and by steamers in 1872. The river was also regulated by training works, in a gradually widening channel, from Rotterdam to the Hook. The scour, which had been relied upon for widening the cut and deepening the channel across the foreshore between the jetties, proved inadequate to accomplish this. Accordingly in 1882 the widening of the narrow cut by excavation and the deepening of the jetty channel by dredging, and its narrowing 656ft. by a low training bend to the south, were commenced. The river above has also been further regulated and deepened by training and dredging. By these works the river has been made to widen out uniformly from 330 yards at Rotterdam to 765 yards at the ends of the jetties. The minimum depth at low tide between the jetties and in front has gradually been increased from 10ft. in 1882 up to $26\frac{1}{4}$ft. in 1893, and the rise of tide adds about $5\frac{1}{2}$ft. The maximum draught of the vessels navigating the new channel has increased from $19\frac{1}{3}$ft. in 1882 up to 25ft. in 1893. Vessels can now reach Rotterdam from the sea in two hours. The improvement of the river has transformed Rotterdam into a large port; large basins surrounded by quays have been formed opening into the river, in addition to quays along the river; and considerable extension works are in progress for providing further accommodation for vessels and the rapidly growing trade of the port.

REMOVABLE WEIRS FOR PREVENTING FLOODS.

A paper was contributed by Mr. R. C. Rapier and Mr. F. G. Stoney on the practicability of controlling the discharge of flood waters by means of removable weirs more efficiently than by fixed weirs. From the drainage aspect, the fixed weir was only a blundering, stupid obstruction; and the first use of a river was the drainage of the country. The rainfall reaches the rivers more rapidly now than formerly, and, therefore, the rivers ought to be widened, deepened, or straightened; but for navigation there must be capacity without velocity. The fixed weir must be low enough to allow the flood waters to get off somehow, and during ordinary river flow has to put up with less head of water and less power than nature supplies. Thus the fixed weir provides only an inefficient compromise; and it was obvious that the maximum range of requirements may be fulfilled by means of a removable barrier. Removable weirs—a sluice-gate on free rollers—could be applied to any river for navigation, irrigation, or power. They could be operated under all conditions of head and flowing water. The great sluice erected 12 years ago at Beleek to control the waters of the Loch Erne lakes are a fair example of maintaining a full summer water-level for navigation and mill power, while giving absolute command of great periodical floods. The Manchester Ship Canal affords a useful example of the application of these sluices to canalised rivers. There are others across the Rhone near Geneva, at Richmond on the Thames, and for the river Clyde at Glasgow. In the discussion that followed, Mr. Chatterton, C.E., held that the tidal channel below Teddington was altogether insufficient to take off the tremendous volume of water coming down in time of flood, while the removal of fixed weirs would take away the head of water too. The utility of removable weirs was attested by Major-General Webber, Mr. Deacon, Professor Unwin, Alderman Sir B. T. Leech, of Manchester, and Sir F. Bramwell; and Dr. Anderson, Mr. Head, and others spoke. The president recognised the value of removable weirs; but said, while they might mitigate floods, they could not prevent them. Mr. Stoney, in his reply, admitted that the sluices would not prevent floods; broadly speaking, a river must be capable of discharging its maximum flood. He concurred in recognising the necessity for water-shed authorities to prevent the isolated action of local authorities.

It was arranged to hold the next meeting of the Association at Liverpool, to be opened on September 16, and that for 1897 at Toronto.

AUSTRALIAN RENAISSANCE ARCHITECTURE.—II.

(By Our Special Sydney Correspondent.)

[WITH PHOTO-TINT ILLUSTRATIONS.]

SINCE I despatched, under the title of "The American Romanesque in Australia," an account of the new office building of the Equitable Life Assurance Society of the United States, another gigantic edifice, also erected in Sydney by another great American Insurance Company, has grown towards completion. In this instance, however, America has had little to do with the structure, beyond the very important matter of providing the "sinews of war." The style of architecture adopted is that which has hitherto been employed for nearly all the great secular buildings in Australasia—namely, the Renaissance. With the exception of the iron and steel castings, and certain patented and other articles, which had necessarily to be imported (and which came almost entirely from England), the fine materials and splendid workmanship are Australian; and the architect, Mr. John Kirkpatrick; the contractors, Messrs. Phippard Brothers; and the clerk of works, Mr. James S. Hawkes, are all natives of these colonies and established in Sydney.

The new Sydney office building of the Mutual Life Insurance Company of New York stands at the north-western intersection of Martin-place and Pitt-street, directly opposite the great General Post-Office, and on one of the finest sites in the whole city, having a frontage of 100ft. in the former thoroughfare and 73ft. in the latter, while the height from the pavement to the top of the parapet is 114ft., and the depth to the sub-basement floor 14ft. 9in. There are in all nine stories, and the building is solidly constructed of stone as regards the principal façades, with back, side, and internal walls of brick. The stone employed for the basement (which is only half-sunk below the street level) and the ground floor is the adamantine grey-drab Bowral trachyte, whilst that for the six upper stories is the fine Waverley sandstone quarried within a few miles of the spot—a stone possessing a creamy straw-colour when freshly hewn, which soon assumes a warm, deep ochreous hue, and finally passes into a light, reddish-brown. Contrary to the practice not unfrequently adopted here, even in important buildings, of simply facing with ashlar the so-called solid stone walls, both the trachyte and the freestone are in this instance used absolutely solid throughout, so that the walls possess a massiveness rarely equalled even in the best Australian structures. The foundations are carried down to the solid rock, 29ft. below the street level, and stand upon a bed of concrete 8ft. 6in. wide; while the enormous iron columns (to be presently described), which play so important a part in the constructional treatment, are supported upon huge trachyte base-stones, 3ft. deep, and weighing nearly eight tons apiece. At the level of the sub-basement floor, the usual horizontal damp-course is of Val de Travers asphalte, 1in. thick; but from this point upwards there is likewise a vertical damp-course of the same material inserted in the thickness of the main walls, and extending to the height of the retaining walls. The sub-basement contains three large chambers, with lavatory accommodation, meter-rooms, &c., while the available space is further enlarged by a considerable amount of cellarage below the footway of the street. The basement, which is floored throughout with Nepeonic of extra thickness made specially for the job, contains two spacious halls divided from each other by heavy iron doors, and lighted by windows giving partially above the street level, and partly into an area within the retaining walls, and fitted with prismatic lights. Here also are placed the cylinders for working the hydraulic gates. Access is gained from the front by means of wide descending iron staircases closed a little way down, with the space-economising Bestwick patent iron gates, and further protected at the entrance with dwarf swing railing-gates. There are likewise similar entrances from Pitt-street, and an excellent approach from a back lane, with cart docks and a hydraulically-worked goods lift capable of raising a ton weight.

The exterior of the edifice presents a style which may be best described as modern German Renaissance of a severe and slightly eclectic type. Throughout the whole design there is a commendable absence of the florid "fat" which disfigures so many otherwise fine buildings here as elsewhere, and perhaps more particularly here than there. The principal façade, which directly faces the great General Post-Office in Martin-place, consists of a long centre with two wings, the trachyte elevation of the ground floor and half-basement extending to a height of 35ft., or 57ft. to the top of the superstructure. The central portion contains three lofty semicircular-headed ascending main entrances, and two subsidiary descending ones below the ground-floor windows, while in each wing is also a window, all the windows being of corresponding form with the main entrances. The masonry is boldly rusticated with rough-hewn blocks, relieved by the tooling of other features, and further by a small amount of carving, panelling, and polishing, and the general appearance of the trachyte portion of the façade is severely grandiose and massive. Above this is a large and elaborate architectural composition, less happy in design perhaps than the remainder of the elevation, but which serves, however, to accentuate the importance of the building to the general eye, while it also softens what would otherwise have been an over-violent contrast between the colours of the two materials, and so carries the transition from the drab of the trachyte well into the ochre of the freestone. Over the centre of this superstructure is perched, upon a massive wreath which forms the framing of a lunetted window, the American Eagle, with its outstretched wings measuring some 10ft. in width, magnificently modelled by Herr Kretzchmar, and splendidly executed, in Sydney, in hammered, riveted, and brazed bronze by the Wunderlich Patent Ceiling and Roofing Company. The arch heads of the entrance and the balconettes to the windows are filled with fine wrought-iron work of extremely artistic design. Above the confining trachyte stringcourse, with its polished fascia, the central portion of the five next stories is divided into the same number of bays.

Plainly rusticated piers, a moulded stringing, and window balustradings constitute all the decoration that is employed upon the first floor and the entresol, though the windows in the wings have columns and entablatures. But in the second, third, and fourth stories the wings become more ornate, each being embellished with a Corinthian Order with pairs of columns supported upon pedestals. The general entablature extends right along the building, but broken round the wings, while beneath it the central portion is arcaded with a sub-order of Ionic character, sufficiently enriched with wreaths, *cartouches*, and other ornamental features. Above the main cornice, the fifth floor is treated as an attic, divided out by piers, and surmounted by a partially balustraded parapet. The treatment of the Pitt-street façade is similar, only that the ground-floor entrances are replaced by windows, and the central upper portion has but three bays instead of five.

On entering the building by the central doorway, an ingenious peculiarity of plan becomes speedily apparent to the technical or professional observer. A few steps lead into the vestibule with its deeply coffered semicircular-headed ceiling, its Sicilian marble wall-directory framed in golden bronze, and its black and white marble pavement; and thence are reached the main hall and staircase by glazed swing-doors, opening in an extremely handsome, architecturally-treated screen partition of solid cedar, abundantly enriched with moulded, fluted, and carved work. But on passing these doors it is seen that the hall and staircase are not planned centrally with the vestibule. The vestibule is placed on the centre line of the building, but the hall and staircase are not, though to the superficial observer they would seem to be so. A few words will explain this peculiarity of the plan, and its reason. The entire length (or width) of the building is 100ft., and the internal width of the hall containing the staircase and elevators is 25ft. Had the hall, then, been placed centrally, there would have remained on either side, after allowing for the thicknesses of the walls, about 30ft. only, as the width of the largest chamber it was possible to give, and that was not sufficient for the requirements of the "Mutual of New York." But by shifting the stairway-well some 6ft. to the left, sufficient space is gained on the right to meet the company's needs; while the placing of one of the elevators and the lowest flight of stairs directly opposite the vestibule doors not only satisfies the eye upon the score of symmetry, but immediately appeals to the sense of practical convenience. Another interesting example of ingenious planning is the carrying of the first half-landing of the staircase across the upper portion of the hall as a sort of galleried bridge. The merits of this expedient are twofold. Where, as in this case (and in many others in Sydney), a stairway has to be taken from a lofty ground floor up a well of comparatively limited area, the arrangement affords an agreeable relief from the numerous winders, or (as here) the several short, straight flights of steps, while it presents an interesting and effective architectural feature when seen from below.

Leaving for the present the general interior arrangement of the building, the special points in the constructional treatment may now be glanced at. I have already mentioned that the inside walls are of brickwork. Although the system of construction can scarcely be said to be the American system, still any of these divisional walls can at need be removed without injury to the structure itself. Such a need, however, is not very likely to arise, since the object of the architect has been to produce, not a building capable of being most easily cut about from year to year at the existing tenant's will and pleasure, but one so planned as to afford the best possible accommodation of the kind desired that the space at disposal could furnish. Still, the internal walls are removable, if necessary, without the introduction of bressummers, without underpinning, or anything of the kind, as they are carried independently of the main construction. The actual chief structural support inside of the main walls consists of cast-iron columns, steel girders, and rolled steel joists. The columns, the largest of which are 20in. in diameter, were cast vertically in single lengths, the longest ones being 27ft. The upper portions are so designed with square boxings open on the two opposite sides, that the girders, instead of simply resting on them, run right through them; while both the tops of these boxings and the bottom of the columns being flanged, they are immovably bolted together within the thicknesses of the floors. This will readily be understood by the accompanying sketch (B). The tests imposed in the specification for the iron and steel work were exceptionally severe, and those carried out in England, before the articles were shipped, were conducted under the superintendence of an ex-president of the Institution of Civil Engineers. The spaces between the joists are completely filled with concrete laid *traegerwellblech*, so as to afford a solid core for the floors and ceilings at once fireproof, damp-proof, vermin-proof, and sound-proof. In the upper surface of the concrete are laid small bevelled wood joists, to which are fixed the floorboards of $1\frac{1}{4}$in. genuine New Zealand kauri pine, secret nailed, while underneath is fitted the necessary light wooden battening, bracketing, or lining to which is attached the embossed zincwork composing the ceilings and cornices, and also the soffits of the staircase and galleries, throughout the building. The staircase, which runs from the sub-basement to the top story, is formed of rolled steel joists and stringboards incased in zincwork; the treads and risers, and likewise the balusters, are all of ornamental cast iron, with a moulded cedar handrail, and a handsome trachyte newel at the foot of the stairs; while the landings, half-landings, and quarter-landings are floored with black and white marble arranged in geometrical designs, corresponding with the vestibule and main hall floors.

The embossed zinc ceilings and cornices, capitals and bases of iron columns, and soffits and stringboards of the steel stairway are a peculiarly interesting feature of this building. Their employment, so familiar in the Palace of Justice at Vienna, and in many other important Continental edifices, is not exactly a novelty here; but this is by far the most extensive application that has yet been made of them. Their manufacture in Sydney is but a very few years old, and was introduced by two English gentlemen, brothers, and of German family, resident here, Messrs. A. and E. Wunderlich, who visited Germany to bring over the necessary plant, together with such skilled artisans as were required to give the industry a start, and to train Australian workmen in the various processes involved. After the initial difficulties incidental to most of such undertakings had been overcome, the concern was developed into the limited company already mentioned; and the works, situated in a convenient suburb of the city, now supply most of the ceilings and many portions of the roofing in the more important buildings, not only of Sydney, but of the sister capitals and many other cities and towns in Australasia. The manufacture is, in the main, simplicity itself. The zinc, in sheets, is heated to a temperature of 254° Fahr. (at which it attains its extreme of malleability), and is then passed through powerful embossing presses, or rollers, according to the nature of the article to be produced. The various portions are next trimmed, and riveted or brazed together into such pieces and sizes as are most convenient for fixing; and the more complex or important parts are finally screwed, while the lighter portions are lipped and bradded to a proper cradling fitted to receive them. In the case of some small articles—such, for instance, as *pateræ* at the intersection of mouldings—casting is found to be a more economical process than stamping, and is then employed. The zinc is usually painted directly it is fixed; and the decoration, either in oil or distemper—in the former case, two oils and flat are the extreme that is necessary, owing the non-absorbent nature of the metal, together with any gilding that may be required—can be at once proceeded with, and finished off without a day's delay before the scaffolding is struck. Moreover, so little body being required in the painting, the purer-coloured and incorrodable zinc white can be used instead of white-lead, and indeed is preferable. The extreme lightness of the material, and the cleanliness and expedition attending its use, together with other merits, have made it very popular among Australian architects, particularly as it is free from several disadvantages peculiar to either plaster or wood ceilings in this hot, variable, and sometimes exceedingly wet climate. Without describing in detail the various zinc ceilings, cornices, &c., employed in the "Mutual of New York" Building, one particular instance of the successful application of this material may be cited. The elaborate entablature in the company's public office can scarcely measure less than 8ft. in girth, and was originally designed for execution in plaster or Keen's cement. It is carried out, however, entirely in zinc, and, notwithstanding the numerous mitrings at the intersections of the beams, the result leaves nothing to be desired. I am credibly informed that this entablature is the largest piece of work of its particular kind that has ever been executed anywhere by this method of construction.

The arrangements for the installation of the electric light have been studied with exceptional care, and are exceedingly complete; indeed, a leading Sydney electrical expert considers them the most perfect of any in the colony. The building is lighted by 1,000 handsome 16c.p. Edison-Swan incandescent lamps. The installation has been effected by a Sydney electrician, Mr. G. K. Kirkland.

The twin hydraulic elevators are placed on either side of the staircase, and are contained within walls constructed chiefly of terracotta lumber, for the sake of lightness. Both run to the top floor of the building, one travelling the whole distance (108ft.), and the other starting from the main hall. The cars, which are of unusually large dimensions, are of walnut, with carved panels, angle mirrors, and top lights of cathedral glass. They run on $1\frac{3}{4}$in. Bessemer-steel rods, attached to 5in. by 4in. Oregon guides by steel brackets, the timbers being bolted to wrought-iron brackets in the corners of the well-holes.

With reference to the construction, a very few more points may be briefly noted. The walls are finished internally, from top to bottom of the building, in Keene's cement; and the same material is employed for such decorative features as are not constructed of stamped zinc. The whole of the joinery and other woodwork (except the fittings in the company's own public office) are of solid cedar, and exceptionally good workmanship; and the beauty of the grain displayed in the carefully picked stuff for the panels is almost a revelation in cedar-work, especially in the large chambers, which are all dadoed. The polished bronze-gold door-furniture has been locally and admirably made to the architect's special designs.

The interior arrangement of the building may be described in very few words. On mounting the staircase, which is pleasantly lighted by four spacious and handsome stained-glass windows of artistic Renaissance design and colouring (executed in Sydney), and further by an embossed glass lantern, the first-floor landing gives access to the company's own public office, occupying the whole right side of the structure, 66ft. deep, 36ft. wide, and 27ft. high (the height being that of the first floor and the entresol above). A row of four large columns down the centre of the chamber supports the main beams, while the rich entablature rests upon a series of corresponding pilasters, the whole being richly panelled, sub-panelled, and otherwise ornamented, and finished in particoloured decoration, the delicate hues of which are employed with excellent taste. The portion of the floor devoted to the public use is laid with black and white marble; and the Tumana wood fittings, especially the counter, with its projecting centre, its finely-panelled front and artistic divisional superstructure, all admirably designed in the richly ornate Cinquecento style, are extremely striking. The Tumana wood comes from the New Hebrides, and I believe the present is its first employment here. Its colour when polished is a sort of tawny orange, and the handsome grain is not unlike that of the Australian red bean. Leading out of this great chamber, besides the special lavatories for office use, are rooms for the general manager, the secretary, and the chief medical officer; but the most notable feature is the "inspection gallery" (an American device), which is carried round three sides of the apartment, at the level of the entresol, and from which are visible at any moment the acts and operations of every person in the public office. The gallery is partly supported upon cantilevers, and partly hung from the ceiling, and is approached both from the entresol landing of the general stairway and by a very pretty little cedar staircase worked into a corner recess of the apartment. The gallery front is artistically balustraded in cedar, and side by side with the heavy steel rods by which it is hung run the gaspipes and electric-light wires, all of which are encased in bronze to form columnar standards with projecting brackets for ornamental lights. The treatment and arrangement are not only novel, but exceedingly effective. Across the staircase landing is another large and ornamentally-treated chamber, 49ft. by 28ft., and 15ft. high (the height of the first story without the entresol), the entresol being there divided out into some half-dozen rooms intended for private offices. The second, third, and fourth floors, each with its own complete lavatory accommodation, are devoted to a number of private houses of various sizes, one of them being no less than 25ft. long, and all exceptionally well lighted. On the fifth (and top) story are placed, in addition to more offices, the caretaker's quarters, consisting of seven rooms, and a spacious general lavatory, &c., comprising baths; while hot water is laid on from a saddle-heater in the caretaker's kitchen. Above this, again, is a large tank-room containing twelve 400-gallon tanks, together with the necessary provision for inspecting the roofs by means of dormers. From the street, the two large ground-floor banking chambers on either side of the building, each with its own manager's rooms, lavatories, &c., complete, are approached by sharp flights of a dozen steps, through main entrances, closable, like the central one, by the hydraulically-worked wrought-iron gates. These gates deserve a word of special mention, not only on account of the admirable character of the design, but for their fine and particularly deft workmanship at the hands of a local craftsman—workmanship that would certainly be no discredit to Coventry or London. The bank chambers measure respectively 52ft. by 36ft. and 37ft. by 25ft., with a uniform height of 20ft. Their general treatment is much the same as that of the company's public office, excepting as to the Pitt-street windows, which are semicircular-headed and double-sashed, and, measuring, as they do, 12ft. in height by 8ft. in width, and glazed with the best British plate, are the largest in box frames ever constructed in New South Wales. The building is provided throughout with marble chimneypieces, those in the large business chambers being of porphyry, St. Anne's, and *rouge royal;* while each of these apartments contains a pair of mammoth steel safes 5ft. 6in. wide and 4ft. 6in. deep.

It only remains to be said that this exceptional edifice, which is one of the most important erected in Sydney for many years past, was commenced as recently as May, 1893, and is expected to be open by the early part of August, probably before these lines appear in print; that the cost of the building itself (including architect's commission) will probably not exceed £80,000—certainly a low figure when Australian prices are borne in mind; and that the sum paid for the land on which the structure stands was £126,000. Though certain points in the design may be open perhaps to criticism, the edifice, as a whole, is unquestionably an ornament to the commercial heart of the "City of the Beautiful Harbour"; while the manner in which the work has been carried out reflects high credit upon the building capacity and skill of Australasia, and of New South Wales and Sydney in particular.

De Libra.

CAST IRON IN BUILDER'S AND CONTRACTOR'S WORK.—IV.

By Joseph Horner.

FIG 2 illustrates a test-bar on supports *a*, *a*, in which the amount of deflection is much exaggerated. The bar forms the arc of a circle of very large radius. Bars do not as a rule take a regular curve under test, but they approximate thereto. When a bar is curved into an arc of a circle, the inner curve must be shortened by compression, and the outer curve must be lengthened by tension. Somewhere in the bar there must be a line of demarcation, along which neither form of stress is acting—a neutral line, or neutral axis.

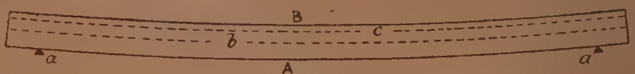


Fig. 2.

The reason why there is a section somewhere along which there is no stress, is due to the method of loading. In a bar subject to purely tensile forces, the stresses are distributed equally throughout the mass. But when a beam is subjected to transverse stress the cross-bending action must involve two opposite conditions—the stretching of the lower side A, Fig. 2, and the compression of the upper side B. These conditions are most intense along A and B; but away inwards from the lower and upper faces the intensity of these actions gradually diminishes, until the line of demarcation is reached in which neither force is in operation—the line called the neutral axis. Fracture does not occur along the neutral axis at all, but at that axis there is a point of divergence of the fractures of compression, and of tension, clearly seen in Fig. 1, in the last article. Theoretically, no strength, therefore, is required along that axis, as there is no stress; but, of course, in practice such is necessary. Along this axis there must be a connecting web, and this must be sufficiently stiff to resist side stresses or buckling. The position of the neutral axis will vary in structures made of different materials. In wrought iron and mild steel, in which the compressions and tensions are of equal value, it will lie about midway between A and B, or at *b* in Fig. 2, supposing the bar to be of equal section. But in cast iron it will lie very much nearer to the upper than to the lower flange—at *c* in Fig. 2. In the neighbourhood of this axis, holes may be, and often are, cut out without weakening girders made in cast iron.

The neutral axis of a solid bar of cast iron of rectangular section should be situated at about one-seventh of the depth from the upper edge, compare with Fig. 3, which shows a test-bar in section, and in which *c* is the neutral axis, and the full shaded portion the section in tension, and the part with broken shading that in compression. Since, too, the position of the neutral axis varies—moving upwards or downwards according to the ratio between the tensile and compressive strength of a given material—we should expect to find some variation in its position in different qualities of cast iron in which the proportions between tensile and compressive strength differ. And such, in fact, is the case, even to a considerable extent, so that instead of a relation of one-seventh, as in Fig. 3, it may range from one-fifth to one-ninth in extreme samples of grey and white iron. Test bars of soft iron always deflect more before fracture than those of hard metal. But in average cast iron it would seldom be lower down than in Fig. 3, while in a good deal of iron it would be higher up. This has been demonstrated by Mr. Barker, who cast many bars, and drilled holes through them at different depths, raising or lowering the position of the holes until he located them in such positions that the strength of the bars as compared with solid bars remained quite unaffected by the drilling of the holes. He demonstrated that a bar which had its centre cut out to leave rather less than one-seventh of the metal from the top for compression *a*, Fig. 4, and fully one-third from the bottom for tension, *b*, Fig. 4, was as strong as a solid bar. So that in a bar 2in. deep a slot 1$\frac{1}{16}$in. deep can be cut without affecting its strength. It follows, therefore, that the same proportion could be cut out of any girder or stanchion without diminishing the strength.

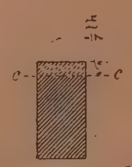


Fig. 3.

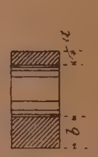


Fig. 4.

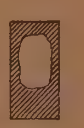


Fig. 5.

This, also, has an important bearing upon the question of soundness of castings. Castings under inspection should be condemned for blow-holes and general sponginess in some portions, while more extensive defects in other parts may be allowed to pass.

Thus, returning to the test-bar as an object lesson, it is obvious that if the hole drilled out in Fig. 4 still leaves the bar as strong as the solid bar in Fig. 3, then, obviously, if there were a hole running right through the bar, as in Fig. 5, the bar would be just as strong as though solid. Hence blow-holes in and around the neutral axis of an iron casting need not, unless very extensive, condemn a casting to the scrap-heap. Again, since iron is about six times stronger to withstand compressive than tensile stress, a few blow-holes, sponginess, or faults on the compressive side of a casting may be allowed to pass. But if they occur on the tension side, they are fatal to the trustworthiness of the casting. If Figs. 4 and 5 were turned upside-down, and loaded, they would fracture at a mere nominal load. Such matters as these are of immensely greater importance than a difference of two or three hundredweight at the testing machine, or than the presence or absence of a clean skin on castings.

It is seldom that castings of the girder type are used of the plain rectangular form like that of the test bar. That would be most uneconomical, for the same reason that it would be wasteful of material to use solid joists or solid columns. Since there are sections of these which are subject to hardly any stress at all, it would be wasteful to mass metal there which can be better distributed over the parts subject to actual stress. So that with a given quantity of metal contained in a rectangular section, a beam can be built up by judicious rearrangement of the metal, capable of withstanding a much greater load; or a beam can be made to stand the same load, with a much smaller expenditure of metal. We will consider the design of such beams in the next article; but now, before leaving the subject of test-bars, I will give an illustration of a method of testing bars which, I think, has not been described in English journals, but which has certain advantages over the common method.

In testing common bars, the load is always a dead load, gradually applied—that is, successive weights are added, or, what amounts to the same thing, a jockey-weight is moved outwards along a lever arm, until the test-bar is loaded to its breaking strength. Impact does not come in at all. A few years ago I was engaged on a lot of cast-iron crane work, which was being done for French engineers for the ill-fated Panama Canal, and in which stringent specifications for test-bars were made. Our method of testing bars by means of a dead load gradually applied was not used; but an impact test was specified. I formed the opinion then, which I see no reason to change, that the impact test is more valuable as indicative of the general suitability of cast iron for some classes of work than the dead load test. Probably very few failures of cast iron occur by reason of the excessive application of a dead load. Such failures more frequently occur in consequence of a sudden impact—a live or impulsive load—than from other causes. For a material like wrought iron or mild steel, which takes on a considerable permanent set, and a high percentage elongation and reduction of area before fracture, there can be no better test than that of a load or a pull gradually applied. But cast iron has no sensible limit of elasticity; it does not elongate or become reduced in area, but breaks off, as people say, "as short as a carrot." For such a material, therefore, the best test seems to be that of impact, which reveals the toughness and elasticity under suddenly applied stress as much as it does the absolute strength.

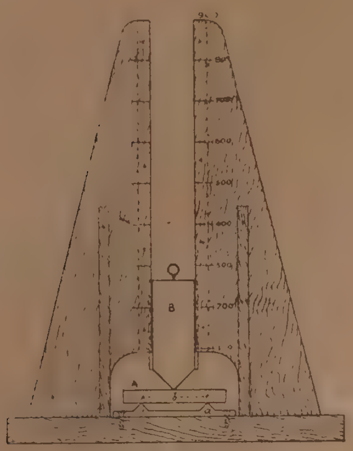


FIG. 6.

Figs. 6—8 illustrate the apparatus rigged up for testing. Fig. 6 is the apparatus in elevation, Fig. 7 a perspective view of the falling weight used, Fig. 8 a cross section through weight and guides.

The particulars of this method were as follows:—The test-bars A, Fig. 6, were 40mm. square (1·57in.), 250mm. long (9 84in.), and supported on cast-iron knife-edges, *a a*, 160mm. apart, *b* (6·29in.) A weight B, compare with Figs. 7 and 8, is allowed to descend in guides, between which it has a small amount of clearance, as shown, and to fall upon the bar, and the height from which the weight has fallen at the time of descent when fracture occurs, is noted as a measure of the strength of the bar. The weight is 12 kilos (26·44lb), and its lower edges are bevelled, but the point is rounded and blunt. Fracture occurring with a fall from a height of 700 millimètres or 70 centimètres (27·5in.), measured from the top of the bar to the top of the weight indicates a good bar. Fracture will occur between about 65cm. and 90cm., the latter indicating, however, iron of exceptional good quality. Railway-rails, which are subject to severe impulsive loads, are tested by similar means—by a falling weight. When, therefore, cast-iron work is subjected to the same kind of stress, it seems in keeping therewith to use the impact test instead of the dead load.

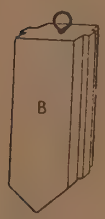


FIG. 7.

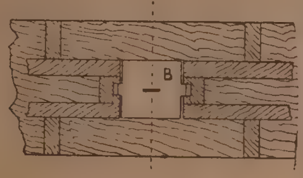


FIG. 8.

THE CITY AND THE ENGINEER.

(*Concluded from p.* 367.)

SO much for the official engineer in relation to one part of city extension. How is it with the engineer employed by the owner to lay out his property? Shall he work for one master, his employer; or two, employer and public; or the two and a possible third, himself, as judged by his work in after years? Looked at from this side it would seem that he has a hard task, but if he will carefully consider he will find that these seemingly conflicting interests will be reconciled if he can hit upon the right thing to do, have the faculty to see clearly for himself and as clearly to set the matter before others, patience to hear and weigh objections, and tact to lead those he is in contact with to choose the better thing. Often times he will need to make concessions, to do the thing he would not, but let him be careful lest he allow himself to do what he should not. There is often a broad distinction between these. A street plan must provide first of all for thoroughfares leading from centre to centre by the most direct available route. Such thoroughfares should be of ample width, 80ft. to 100ft., according to circumstances. They naturally come in time to be streets of retail shops, which require a goodly width of sidewalk, and the centre will be used for street railways; hence a less width than 80ft. should not be proposed. More than 100ft. is unnecessary and adds too much to cost. For business streets a good division is sidewalk one-fifth and between kerbs three-fifths. Grades and pavements of thoroughfares must be suited to traffic. For sidewalk paving artificial stone flagging has demonstrated its fitness and durability, if honestly laid of good material. It can be put down in most localities for less cost than natural stone flagging. For roadway paving subject to very heavy traffic trap and granite blocks will be most economical to maintain. Under moderate traffic—that is to say, of weights on wheels—sheet asphalte and vitrified brick are about the only materials now known to be fit. The day of wood street surface has come and gone thrice during my active time, and I think the material has now passed beyond consideration. Sheet asphalte is likely to acquire new popularity and to be laid at a considerable reduction of price, one of the steps to such a consummation being the development of numerous deposits of asphalte in our own country, whence refined asphalte may be distributed to any point and in the form of natural rock to many cities at reasonable cost. A promising field for a limited number of young men is to become expert in the handling of this material under the varying conditions met in its practical use. There is also need for a laboratory investigation of the properties of asphalte, so that specifications can be drawn by engineers instead of contractors. Vitrified brick as a street-paving material is rapidly coming to a prominent place. The advance in the modes of manufacture and towards uniform quality of product has been very rapid, and there is now no reason to hesitate about its adoption for fear of failure. Further progress will doubtless be made in manufacturing processes, and engineers will also come to adopt rational specifications for, and correct modes of using, this material. Good material deserves good treatment, and good treatment means good foundation. This remark is applicable to all kinds of pavement. Rapidly growing cities not having a gravelly soil to begin with are compelled to use for a season the cheapest material that can be had for street surface, the ruling consideration being that it must keep vehicles from miring. These makeshifts hardly come within the province of the engineer, for skill is not required to use them, nor science to discover their weak points. We will charitably pass over these as belonging to a temporary stage. It will assist the passage from use of temporary expedients to more lasting work, if it be understood that streets not used as thoroughfares, and especially side or back streets on which the only vehicles are the delivery waggons, do not require a wide driveway, which may be reduced to 18ft. or 20ft. For residence streets in general, the narrower the driveway the more attractive the street, if the unpaved surface be planted and well kept. The practical difficulty in the way of realising our ideals is commonly financial; but a large part of the glory and honour of our lives depends upon overcoming difficulties, and must come from obtaining desirable results with limited means. The engineer never walks in dreamland, where he might think of what he would do if unrestricted, but in the everyday world of what can be done with conditions as he finds them. Some may think that I have been leading you through a dreamland, because cities grow—we know not how or why—rather than are planned and built. Just so far as this is true those who have to do with municipal affairs are justly subject to reproach because they are not doing their full duties. The kings of olden time used to found and build cities. In modern times a Baron Haussmann had the courage to undertake the transformation of an old city according to a plan. Measures for similar transformations on a smaller scale are not uncommon in old-world cities. Cannot as much or more be done under American institutions, where we mostly have not to tear down old structures, but only to enter open fields and transform them to become the fit abode of American citizens? Many changes would need to come into our governmental ideas before what I have sketched could be realised through the regular municipal agencies, possibly the partial adoption of municipal socialism; but there is another agency that can be brought into the work. Associated capital, wisely employed, not working from philanthropic motives, but for the more sordid one of profit. We have all seen railway companies come boldly into a city and acquire not rights of way merely, but ample terminal and yard facilities, removing or razing entire blocks of buildings. We are familiar with the remorseless action of a social or moral blight which seems to fall upon sections of cities when, for any reason, they have fallen out of step with progress, which is more destructive of values than a fire and open to no remedy but change of use and reconstruction. In a few cases we have seen a coterie of men join together as a so-called syndicate, purchasing all the property within the limits they have marked out, removing everything in the shape of improvements, wiping out existing streets, and by a new layout transform the ground from inferior to better use, with profit to themselves and benefit to the community at large. Many cases have occurred where large tracts of land have been transformed from agricultural to urban uses by capital used under the skilful direction of the engineer. These enterprises have usually contemplated eventual occupancy by the wealthy, well-to-do, and comfortably circumstanced classes. A wider and as profitable field is open to those who will provide homes and home places for those who daily toil for daily bread. All that is required to realise what I have sketched is a mind to grasp the possibilities of the situation, the ability to set these possibilities before men of means and enterprise, the tenacity of purpose and executive power to carry out a plan. The engineer so gifted will find in every growing city an opening for him, none the less promising if he have one or two competitors. Cities have characteristics no less marked than men. Some exist and grow because of natural advantages, such as harbour and water transportation, without effort or the assistance of wisely designed and executed public works—e.g., London, New York, Philadelphia, St. Louis. Others have some natural advantages, but are handicapped by lack of these natural facilities for commerce, but which respond to the necessity of providing what nature denied—e.g., Liverpool, Manchester, Chicago, and Buffalo. Others have few natural advantages, but have indomitable courage and enterprise, backed by faith that he who works shall win; they go about the creation of all they want—e.g., Glasgow. The engineer is peculiarly fortunate who pitches his tent in these latter cities, for the man with ideas is in demand in such places. I cannot close without suggesting that a very important problem must shortly be solved, that of providing means for the dense masses who crowd the business heart to pass to and fro within the restricted area. I have stood at a street intersection, where street cars at one half-minute intervals during rush hours were crossing at right angles, and calling to mind the increase of movement within 10 years, have wondered what new devices would be required before another 10 years. There is a future for engineers in and about cities broader and more inviting than was before young men of my time, when the chief employment was pioneer work in the wilderness.

CLASSIC DETAILS AND THEIR APPLICATION.*

By G. A. T. MIDDLETON.

XI. — ITALIAN RENAISSANCE: CONSTRUCTIONAL ORDERS, AND THE EMPLOYMENT OF ARCH AND VAULT.

AT first sight, it is somewhat remarkable how rarely the orders were used in a constructional sense during the Italian Renaissance, until one remembers that this style was founded upon the essentially arcuated style of ancient

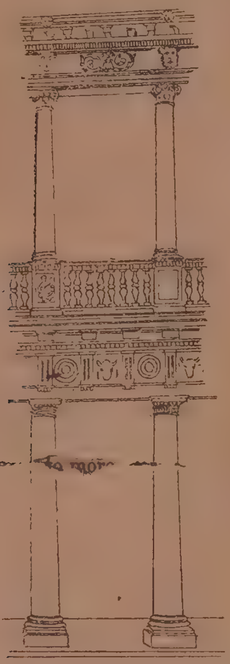
---

* A paper by ROBERT E. MCMATH, M.Am.Soc.C.E., President of the Board of Public Improvements, St. Louis, Mo. Reprinted from the *Transactions* of the Association of Civil Engineers of Cornell University.

* All rights reserved.

Rome, and that therefore the construction might be expected to be that of the arch rather than that of the lintel, in spite of the horizontal tendency of all ornament. It is true that there are great examples—as, for instance, the portico to the Redentore Church at Venice; but they are not many, and as showing any divergence either of spirit or of detail from what might have been expected in older Rome, are of little importance here. At the same time, such porticoes (for an entirely trabeated building of any size is not to be found) are made to harmonise with the rest of the edifices which they adorn in a manner which is entirely absent from such an example as that of the Pantheon.

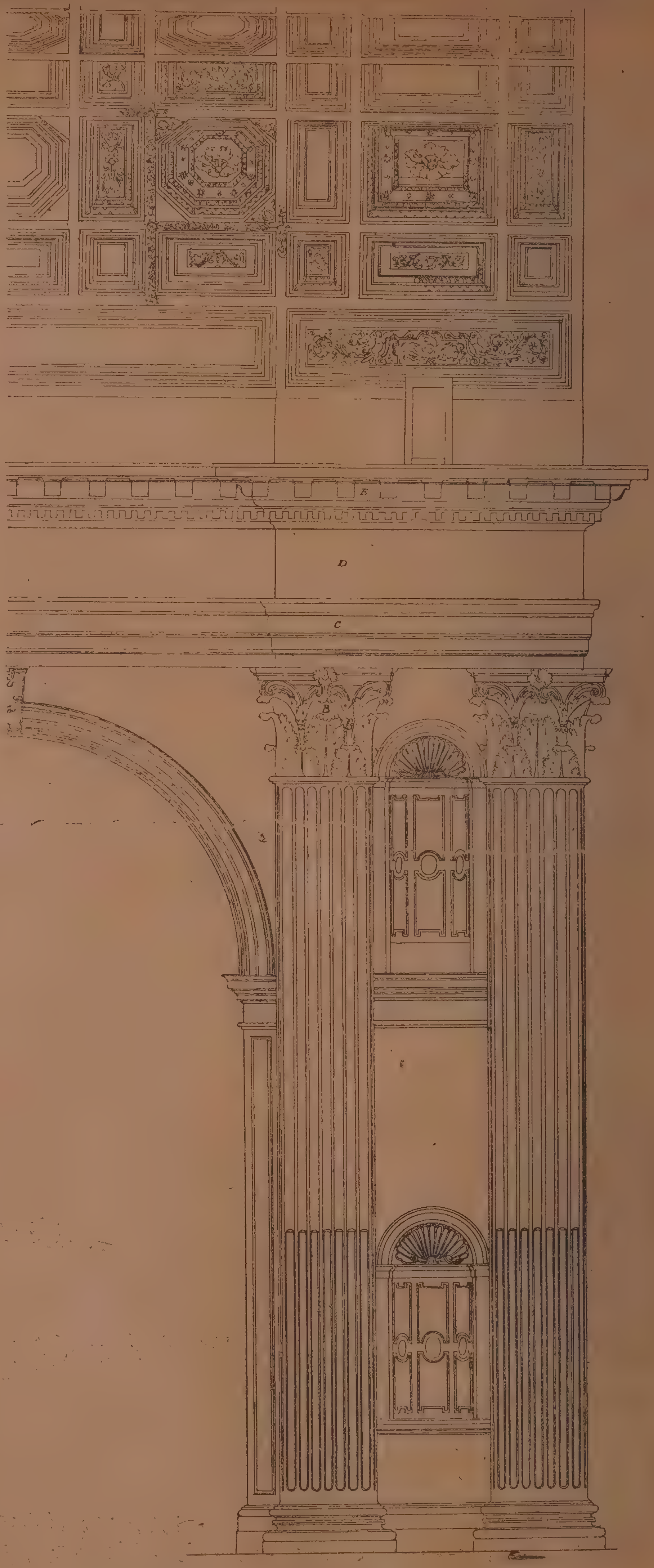
In small things, however, such as loggias and the cloisters round courtyards, trabeated construction is more commonly found, and there it is usually treated with considerable delicacy. The example illustrated, from the Courtyard of the University at Padua, by Sansovino, gives a very good idea of what is meant, and other examples would only differ according to date, locality, and genius of the designer in such way as might be expected. The orders are superimposed in the two stories, as a matter of course, in correct sequence; but the most noticeable point is the wide spacing of the columns, quite opposed to ancient precedent, and apparently rather the result of habit from designing for arched openings between columns independently supported, than of study of ancient works.


COURTYARD, UNIVERSITY, PADUA. By Jacopo Tatti Sansovino. (From Schütz.)

Even in such positions it is more common to find arches and vaults carried upon columns, or even whole orders—an entirely Gothic construction, with a Classic dress. It was done, too, without proper provision, as there would have been by the introduction of buttresses in Gothic work, for the cross thrusts of the vaulting, and in the sketch of the cloisters at San Spirito, Florence (added by Bartolommeo Ammanati to Brunelleschi's church), which accompanies this, there will be noticed the iron tie-rod which was consequently necessary. This sketch also shows how, in this instance, the small architrave and moulding over are used as a string to the trabeated construction and as upper abacus to the columns supporting arches.

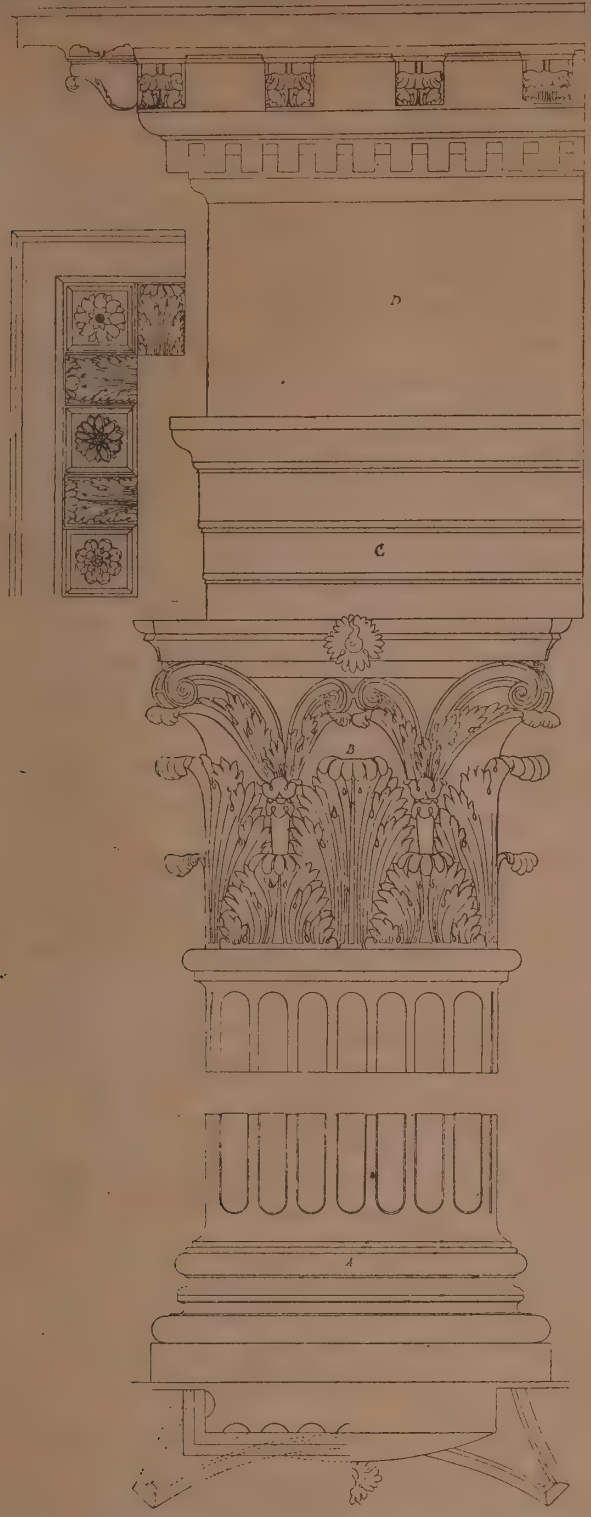
It is the same spirit which influences Bramante's courtyard of the Cancelleria Palace, and, in fact, all other examples. Here the great difficulty has occurred at the angles, and it is met by employing square piers there in place of columns, with detail slightly varied to suit the circumstances.

But it was not in small subjects only that the arch and vault were employed. The nave arcades of the churches were almost invariably arcuated, and almost as invariably the aisles at least, and generally the naves also, were vaulted; and the example illustrated, that of St. Peter's at Rome, as it is the greatest, may be considered as fairly typical of all, in spite of the natural differences of treatment in different towns, by different men, and at different times.

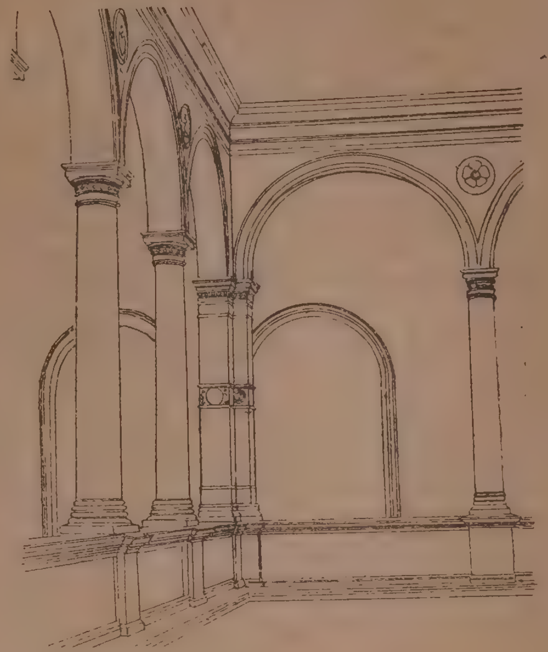


NAVE ARCADE OF ST. PETER'S, ROME. By Michael Angelo.

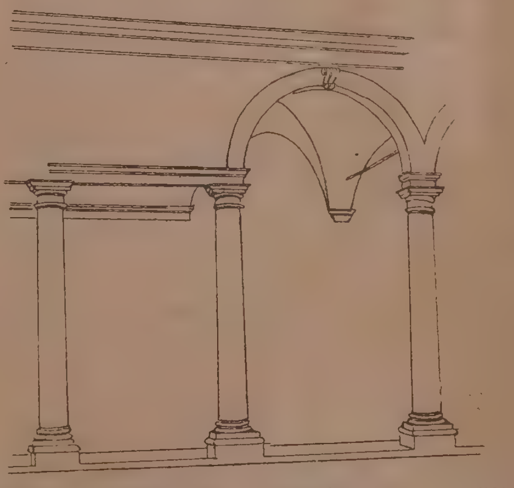
Here the arched construction is quite distinct from the applied pilasters, which cut clean through the impost moulding, and as the pilasters do not



INTERNAL ORDER OF ST. PETER'S, ROME.
BY MICHAEL ANGELO.



UPPER ARCADE OF THE COURTYARD, PALACE OF THE CANCELLERIA, ROME. BY BRAMANTE.



SAN SPIRITO, FLORENCE. CLOISTERS, SECOND COURT.
BY BARTOLOMMEO AMMANATI. (From Schütz.)

project beyond the general face so far as this moulding does, leaving the moulding projecting in profile beyond them, the effect would hardly be good were it prominently noticeable; only the huge scale of the whole almost hides the blot. The wall-surface between the pilasters is enriched by panelled, semicircular niches, having their domes coved in with the shell ornament, commonly, but quite erroneously, thought to have been employed in Venice only. It is also to be found in a wall fountain from Florence of quite early date, which is now in the South Kensington Museum.

The coupled pilasters at St. Peter's, with the entablature which they carry, form a grand Corinthian order, based, as Michael Angelo's Corinthian orders were apt to be, upon that of the Pantheon. The entablature is, however, composed of but few members, and the frieze unenriched, while every part, even the mouldings between the faces of the architrave, is well pronounced; the unity which it was to express, and the binding together of the whole internal composition which it was to effect, being thus fully established, with no excess of detail to distract attention. In fact, the entire entablature and cornice do not draw attention to themselves, but fulfil their object as being an integral part of a great whole. They form, too, the dividing line between the nave arcade and the great barrel vault which springs above the cornice, and this is profusely ornamented, with deeply recessed and moulded coffers filled with scroll work and huge pateræ.

An objection has frequently been raised to the apparent coarseness of the details near the eye level at St. Peter's—such as those of the pilaster bases. Large as they are, however, and consequently coarse if considered *per se* by little people with eyes for only that which is close at hand, yet in relation to the whole building, and to the orders to which they belong, they are but properly proportioned, and they should be judged as parts of the great whole. In fact, it is in relation to the whole thing which they decorate that all detail should be designed, and not for its own sake and for its individual self-assertion or demand for attention.

PRESERVATION OF TIMBER.

IT has been frequently stated, perhaps on the principle that "good wine needs no bush," that good timber needs no artificial preservation—in a word, no pickling. To a certain, but somewhat limited, extent this statement is true. So, also, to a much greater extent is the corollary which must inevitably be deduced from it, that inferior timber stands very much in need of some one or other of the numerous preserving or pickling processes which have been employed now for many years. The necessity for thus injecting some fluid preservative into the pores of timber depends upon a variety of conditions and circumstances, which combine in the majority of cases to so fiercely attack timber that its durability and life would be of a very temporary character unless they were fortified and prolonged by the extraneous assistance of art. It was not, in fact, until the introduction of railways that the necessity for timber sleepers arose, which were placed in a position of peculiar liability to decay and ultimate destruction, that one heard anything about creosoting, burnettising, vulcanising, and the numerous other present familiar pickling terms. Before that period, timber was selected for the particular kind of work it had to do, and for which it was the best suited. No doubt there are some good "all-round" timbers which will do fairly well under any conditions; but they are not always to be obtained, either in the scantlings demanded or at the price allowed. It became imperative, therefore—in fact, inevitable—to use what timber could be procured at a reasonable cost, irrespective of whether it was the description best suited to the purpose or not, and supply its natural deficiencies by artificial means.

Of all positions in which timber can be placed by the architect, the engineer, or the builder, and of all the duties which can be laid upon it, a railway sleeper has unquestionably the hardest time of it. All who have had to do with timber pile-driving are aware of the hammering which they undergo before they can be "got down." In earlier times, when lighter rams and much longer falls were used, the heads of at least one out of every three were frequently smashed to pieces, entailing the necessity of cutting them off, re-hooping them, and by more careful driving finally getting them home. But when once the pile was down, the superstructure erected upon it, and the whole building securely and happily brought to its bearings, the pile's trouble was over, and it might, as it has done, rest tranquilly and durably for ages. No so with the railway sleeper, which, if the name be intended as significative of the easy and indolent life it is supposed to lead, is terribly miscalled. From the moment it is laid down as part of the permanent way of a line, its miseries commence. It is exposed to all the ever-varying changes of torrid and frigid zones, and, in addition to all the fury and malevolence of the elements, it is daily and hourly exposed to the fearful pounding of the tremendously heavy modern locomotives, which carry twenty-four tons and sometimes more on a single pair of driving wheels. It is true that sleepers are in a measure protected by the ballast on the line; but on bridges and viaducts, unless these are built of stone or brick, which in modern times they generally are not, sleepers are usually laid naked, as in a large iron or steel bridge the weight of the ballast packing becomes a serious item in the calculation of its strength and cost. If we add to these elements of destruction the worms, the white ant, and other insects which devour wood as their daily food in tropical climates, it is not to be wondered at that even the pickling process fails to preserve the life of a sleeper, and that steel and cast and wrought iron are becoming more and more employed as substitutes for the older material.

In addition to the numerous preserving processes to which timber is subjected, there are other methods of treating it which are of a milder character, although their action is always directed to one and the same end. Steaming is one of these processes which greatly improves some descriptions of timber, especially beech, which, of all woods, depends most for its quality upon the nature of the soil upon which it is grown and the position of site. When these conditions are favourable, the wood is close-grained, fairly free from sap, and tough and compact, but fine in fibre. Floors laid of beech of this quality have outlasted others of oak. The operation of steaming frees the sap by breaking up the cells, and it should always be carried out as soon as possible after the tree has been felled. Mining engineers have found by experience that in dry places oak will rarely be serviceable after half-a-dozen years of wear and tear, as the dry-rot gets hold of it. When immersed in water it will hold its own, like elm, for almost an indefinite period. Another mild pickling process consists in dipping timber twice or oftener in boiling tar. Paving-blocks are usually prepared in this way, and subsequently stacked to let the surface tar run off. The difference between the action of an asphaltic or bituminous composition and that of ordinary cement in grouting in the joints upon timber paving blocks is deserving of notice. In taking up the surface of an old street, or in removing old blocks to join up new streets, the action of a cement mastic was found to be exceedingly detrimental to the strength and durability of the timber. On the other hand, the bituminous composition acted as a preservative.

It must be borne in mind that there is a wide difference between steaming, dipping in tar, and simply immersing timber in any preserving solution, and pickling it in the proper sense of the term. In the latter case, the solution must be forced by great pressure into the cells and the core of the wood, and obviously, the harder the material, the greater the difficulty and uncertainty in performing the operation. After all precautions have been taken, it has frequently, especially in sleepers, been discovered that the penetration of the preserving fluid was only skin-deep. Some woods are so hard as to render the process of pickling them neither possible nor desirable; others are far too expensive, and some, again, which would in other respects be very suitable for the process, cannot be obtained of the scantlings required. There can be no doubt that it is the softer, cheaper, and in some sense inferior descriptions of timber which benefit most by the application of a preservative. They lend themselves with greater facility to the impregnating solution, which the harder woods refuse, and which they are not by any means so much in need of. There are some conditions absolutely indispensable to insuring the success of any antiseptic solution used for preserving different kinds of timber. The preservative itself should be of a nature suitable for the purpose, and it may be mentioned here that some woods benefit more than others by the use of some particular fluid. They are not all alike valuable for all descriptions of timber; it is also of importance that the solution should, during the process, be maintained in a perfectly fluid condition. Among others, creosote, sulphate of copper, and a solution of zinc chloride may be depended upon. The first of these is still very much used at home and in some parts of the Continent. It has a comparatively low price, and its essential oil impregnates the fibres of the wood, and stays there in a condition of almost insolubility. A modified process is employed by some of the railway companies in France for injecting creosote into their sleepers and conseits. The steam is first caused to pass over the surface of a quantity of creosote, and when in a superheated state applied to the sleepers. After the action of considerable steam pressure, the creosote can be made available for subsequent occasions. Copper sulphate is seldom availed of now; but zinc chloride and a mixture of the last-named solution and of creosote are pressed into the service by railway engineers in France.

From what has been stated it is clear that under the same conditions, and the same amount of pressure, a hard wood will absorb less of a "pickle" than a soft one. If we allow an oak sleeper to absorb a weight of about 14lb. of creosote, a beech sleeper will take up 34lb., and one of pine 30lb. It is not often that the injection of the solution is pushed to the absolute saturation limit of the timber, as the heavy additional expense incurred would not be justifiable. A few words may be appropriately said respecting the vulcanising preservative process, since it not only very considerably prolongs the life of the timber, but augments the strength of it as well. The timber to be treated is inclosed in a closed iron cylinder for a period of ten hours, and exposed to a temperature of over four hundred degrees and to a pressure of 165lb. per square inch. The result is that the cells of the wood become as saturated as the process permits of by the antiseptic fluid. It appears that this process does not, similarly to some of the others, render the timber brittle, or what would be termed, if applied to ironwork, "cold short." Neither does it char it, another inconvenience to which pickled timber is sometimes exposed, or cause it to become shaky or split.

T. C.

THE SOCIETY OF ARCHITECTS.

THE "house list" of members nominated to serve as officers and Council of the Society of Architects for the session 1895-6 is as follows, the names of those proposed for re-election being indicated by an asterisk and those whose office it is proposed to vary by a dagger:—President, *Edwin J. Hamilton; Vice-Presidents (two), T. Walter L. Emden and †Silvanus Trevail, F.R.I.B.A.; Council (twelve to be elected), *C. Aubrey Bassett-Smith, Frank J. Brewer, F.R.I.B.A., †Ernest Day, F.R.I B.A., *Edgar Farman, Arthur R. Finch, *J. W. Frazer, A.R.I.B.A., *Robert Keith, *Henry Lovegrove, A.R.I.B.A., Alfred M. Ridge, Francis J. Smith, F.R.I.B.A., *George Thomas, and J. W. Walmisley, F.R I.B.A.; Hon. Secretary, *Ellis Marsland; Hon. Corresponding Secretary, *Major F. Seymour Leslie, R.E.; Hon. Treasurer, H. Goodall Quartermain; Hon. Auditor, †W. R. Mallett. The following officers, being *ex-officio* members, are not subject to election:—Past Presidents, C. G. Ellison, H. Roumieu Gough, F.R.I.B.A., George Highton, F.R.I.B.A., J. J. Lish, W. Howard Seth-Smith, F.R.I.B.A., and Robert Walker. Additional nominations for council and officers may be made by any three members, who shall send in their nomination, properly signed, to the Council before the first day of October, and the names of such nominees will be incorporated with the list proposed by the Council, which will be arranged alphabetically.

CHIPS.

The parish council of Harpenden, Herts, have agreed to purchase the local water undertaking from the private company owning it, for £7,600.

The Dowager Marchioness of Exeter has placed a memorial tablet to the late Marquis (1825-95) over the family seat in the chancel of Barnack Church. It was placed *in situ* on Friday, and is of pure statuary marble. The work was carried out by Messrs. Roberts, of Stamford.

Active operations will immediately commence for the construction of the railway from Madras to Bezwada. Mr. Edward J. Moore, engineer-in-chief, has already located his office in Cathedral House, opposite St. George's Cathedral, at Madras. Mr. Alfred Grant, examiner of accounts, has his office for the present in the same building. Three executive engineers have been appointed by the Government of India, Messrs. Boydell, Duncan, and Gerrard, and work will be begun from both termini simultaneously.

The funeral of Mr. Samuel Jones, who died at his residence in Bristol on Sunday week, aged 84 years. took place on Thursday in last week at Arno's Vale Cemetery in that city. Mr. Jones was formerly an engineer, and was associated with the famous Brunel in the construction of the Great Western main line between Bristol and Bath, and with the Box Tunnel. He was also one of the foremost of those concerned in the making of the Neath Valley Railway. He was married, but survived his wife, and left no children.

New schools for infants have just been built for the Eling School Board. Messrs. Mitchell, Son, and Gutteridge, of Southampton, are the architects, Mr. Jukes is the builder, and Mr. Loder the clerk of works.

On Thursday, the 12th inst., at the offices of the urban district council, Hendon, Colonel W. Langton Coke, C.E, held a public inquiry into the application of the local authority to borrow the sum of £879 for the tar-paving of Church-walk and Hermitage-lane. The council were represented by Mr. S. S. Grimley, their surveyor.

The Udaipur-Chitorgarh Railway (on the mètre-gauge) was opened to traffic on August 1. It is 60½ miles in length, and cost only about £2,100 sterling per mile. It extends from Chitorgarh on the Rajputana-Malwa system to a point 8½ miles below Udaipur.

A new bridge erected across the Dee at Maryculter, near Aberdeen, was formally opened on Friday. The structure consists of five spans, the one in the centre giving 94ft. of clear waterway. The piers are of solid masonry, and the girders are of steel. The roadway is carried on cambered trough flooring, the troughs being filled with concrete, on the top of which granite cubes are set and run in with asphalte. Mr. James Barron, C.E., Aberdeen, was the engineer, and the outlay has been £5,600.

The Philip-street Baptist Chapel, Bedminster, was reopened on Sunday, after having been repaired and redecorated throughout. Considerable damage having been done to the main wall of the building in Clark-street by the construction of the relief culvert, whereby the wall had been shaken, the chapel authorities had recovered £380 damages from the corporation, and while having this repaired it was decided that the schoolroom and chapel should be attended to throughout.

The Ven. Archdeacon of Kingston laid, on Saturday, the foundation-stone of the new church of St. Andrew at Limpsfield, near Oxted, East Surrey, which is to be erected at a cost of £2,000. The church is to be Gothic in style, the facings being of stone from the local quarries, and the dressings of Bath stone. The architect is Mr. Reginald T. Blomfield, M.A.

The memorial-stone has been laid of the new fever hospital for Glasgow at Ruchill Park, in a north-western suburb of that city.

CONTENTS.

Putting Science for Art ... 397
Misuse of Detail ... 397
Tricky Drawings ... 398
The British Association at Ipswich ... 399
Australian Renaissance Architecture.—II. ... 400
Cast Iron in Builder's and Contractor's Work.—IV. 402
The City and the Engineer... 403
Classic Details and their Application ... 403
Preservation of Timber ... 405
The Society of Architects ... 406
Our Illustrations ... 407
Competitions ... 407
The Building News Directory ... xi.
Building Intelligence ... 426
Architecture and the Applied Arts at Liverpool... 427
County Lunatic Asylums.—XXIX ... 427
Kirkstall Abbey ... 428
Why the Morecambe Landing-Stage Fell ... 428
The A.A. Brown Book... 428
Obituary ... 429
Engineering Notes... 429
Correspondence... 430
Intercommunication ... 430
Legal ... 431
Legal Intelligence ... 431
Statues, Memorials, &c. ... 431
Our Office Table ... 432
Water Supply and Sanitary Matters ... 433
Trade News ... 433
Tenders ... 434

ILLUSTRATIONS.

ROTHERHITHE TOWN HALL.—HYDRO. AND HOTEL, BLACKPOOL.—NEW OFFICE OF THE MUTUAL LIFE INSURANCE CO., SYDNEY, N.S.W.—WAXWELL FARM, PINNER.—TELEPHONE OFFICE, NEWCASTLE-ON-TYNE.—HOUSES ON THE TUFNELL PARK ESTATE.—A BRITTANY FIREPLACE.

Our Illustrations.

ROTHERHITHE TOWN HALL.

This building, now in course of erection at a cost of £15,000, will provide accommodation for carrying on the vestry's business, including an assembly hall for public meetings in the parish. The front will face Lower-road, the side Neptune-street, and the back Moodkee-street. The main entrance in Lower-road communicates with a central octagonal vestibule, from which the various offices are entered. The principal staircase leading from the vestibule will give access to the vestry hall, committee-room, &c., on first floor, and the side entrance in Neptune-street, with staircase therefrom, will lead to the public gallery, to vestry hall, and to the coroner's court on the first floor. The public hall, with gallery, will occupy the eastern portion of the building, with the main entrances thereto in Moodkee-street, and exits will be arranged on both sides. The exterior will be faced with Portland stone and red brick, with a Cornish granite plinth, and the roofs will be covered with green Westmoreland slates. The foundation-stone was laid on Tuesday last, the 17th inst., by Mrs. Carr-Gomm, lady of the manor of Rotherhithe. Messrs. Murray and Foster, John-street, Adelphi, are the architects, and Mr. Howell J. Williams, Bermondsey-street, S.E., is the builder.

HYDRO. AND HOTEL, BLACKPOOL.

This design was submitted, last year, in a limited competition, for a new hydropathic and hotel proposed to be erected at the extreme end of the South Shore, Blackpool. After the several designs had been submitted, owing to an absence of unanimity among the directors, the project has for the present been left in abeyance. Accommodation was provided for large dining and drawing rooms, smoke- and coffee-rooms, billiard-rooms, passenger and luggage lifts, suite of Turkish baths, complete culinary department, together with 90 bedrooms. The design, as illustrated, was prepared for execution in tawny terracotta (either Burmantofts or Doulton's), to be roof-tiled with Ruabon red tiles. The architects are Messrs. Woodhouse and Willoughby, of Manchester.

NEW INSURANCE OFFICES, SYDNEY, N.S.W.

(See article, "Australian Renaissance Architecture," on page 400.)

WAXWELL FARM, PINNER.

This work consists of additions to hall, drawing-room, dining-room, kitchen offices, bedrooms, stables, and lodge, to one of the most picturesque old half-timbered farmhouses with which the district abounds. Warmth, comfort, and sanitary completeness have been carefully studied without in any way departing from the character of the ancient work. English oak (old) has been used as far as was possible in the half-timbering. The panelling with which the dining-room and drawing-room are fitted, and the internal beams, are also in English oak left unstained, while the hall and staircase partitions and open roofs, &c., are in American whitewood and plaster. Messrs. Green and Abbott, of Oxford-street, have ably carried out the work. The architect is Mr. W. Howard Seth-Smith, F.R.I.B.A.

NEW PREMISES FOR THE NATIONAL TELEPHONE COMPANY, LTD., NEWCASTLE-ON-TYNE.

These buildings, which were completed at the end of last year, cover an area of 900 super. yards, and are entirely monopolised by the above company for their Newcastle and district business. The cellar basement is utilised as large stores, workshops, and chamber for boiler for heating purposes. The ground floor consists of entrance hall from Pilgrim-street, with main staircase, large general, cashier's, inquiry, and manager's offices, and waiting-room fitted with call-boxes, porter's room, at the rear of which are placed the cloakrooms, w.c.'s, lavatories, &c., for the lady operators, with through-communication into the main switch-room, 80ft. by 35ft.—a lofty single-story building, with open dressed pitchpine roof, lighted by a large lantern light—and through this again into the instrument room. The first floor contains the district manager's, draughtsmen, and engineer's offices, with large dining-room for operators, private lavatories, w.c., and cloakroom for managers, and similar provision for clerks, together with additional instrument-room at the rear. The second floor contains the caretaker's rooms, and kitchen communicating with operators' dining-room by a lift. The entire premises are heated by hot water, and are lighted with electric light. The main elevation and part of return elevation are built in red Corncockle stone, the remaining elevation to back streets being of local brick. The roofs are covered with Westmoreland slates. The cost of the entire works was £6,500. Mr. W. C. Tyne, of Gateshead, was the contractor, and Messrs. Armstrong and Knowles, of 38, Grainger-street West, Newcastle-on-Tyne, were the architects. The illustration is taken from that exhibited in the Royal Academy this year.

PAIR OF HOUSES, TUFNELL PARK ESTATE, N.

These houses are in course of erection in the Anson-road, Tufnell Park, N., from the designs of Messrs. Truefitt and Watson, architects, 5, Bloomsbury-square, W.C. The main elevations are to be faced with red bricks with stone dressings. The roof is to be covered with Broseley tiles, and the woodwork painted white.

A BRITTANY FIREPLACE.

This is a very quaint example of the carver's art, and at one time must have belonged to a house of some consequence, as evidenced by the shield of arms with its two supporting stags. The busts filling the circular sunk panels are boldly carved and full of character: they probably illustrate in a rude manner the members of the family. They not being sufficiently numerous, apparently, to fill the two returns as well as the front of frieze, one return is filled with a spirited design of carved foliage and fruit. The work is of the early part of the 16th century; it has recently been acquired for the nation, and is to be seen at the South Kensington Museum.

◆

A new hotel is about to be built at Felixstowe from designs by Mr. W. Oldham Chambers, of London, late of Lowestoft. The contract has been taken at £9,855 by Mr. John Youngs, of Norwich, and work will be commenced at once.

A daring burglary was committed on Saturday at the office of Mr. James Nuttall, the contractor for the sewerage work at present going on in Cambridge, and whose offices are situated in Alexandra-street in that town. The amount placed in the safe in Mr. Nuttall's office ready for paying the workmen amounted to £600, and the whole of this sum was taken by the burglars. The police were aware that money was kept in the safe, and a special watch has been kept upon the premises. The thieves removed the safe from its position opposite a window, where it could be seen by the constable on the beat, replacing it with one made of wood. The safe was then forced and rifled, the robbery not being discovered till next morning. The police find that the robbery was committed by an organised gang from London, and that they have been traced to King's-cross Railway Station. Mr. Nuttall was insured, and the workmen received their wages on Saturday two hours later than usual.

COMPETITIONS.

Accrington.—In a limited competition for a new cottage hospital to be built at Accrington, the plans of Messrs. Haywood and Harrison, of Accrington and Lytham, have been placed first by the assessor, Sir Douglas Galton, K.C.B., President of the British Association, and that firm have been instructed to carry out the work. The building, which is in the Renaissance style of architecture, will provide accommodation for 20 beds, with matron's and nurses' rooms, large operating theatre, board-room, &c., and will be built of local plastic bricks with stone dressings.

West Ham Technical Institute.—The Technical Instruction Committee of the West Ham Town Council will meet to-day to consider the report of the assessor, Mr. J. Macvicar Anderson, F.R.I.B.A., with regard to the 73 designs submitted in this competition. The designs will be on view at the Public Hall, Barking-road, Canning Town, E. (station, Canning Town, Great Eastern Railway), from Saturday, September 21st to Saturday, September 28th inclusive, admission being by ticket, which may be obtained on application to the town clerk, Town Hall, West Ham, E.

CHIPS.

Mr. Ezra Hounsfield Linley, now of St. Louis, Missouri, has just presented to his church in that city a pulpit which is a facsimile of the one in the parish church of Sheffield, given by Mrs. George Wilson in memory of her husband. Mr. Linley's pulpit is the work of Mr. Forsyth, of London.

The small Gold Medal for Painters has been conferred upon Mr. John S. Sargent, A.R.A., in connection with this year's Berlin Art Exhibition.

A Students' Union is about to be added to the buildings of Queen's College, Belfast, which celebrates its jubilee this year. The plans have been prepared by Mr. Robert Cochrane, F.S.A., F.R.I.B.A., of H.M. Office of Public Works, Dublin. Tenders have been accepted, and the total cost, with furnishing, will be about £7,000. The building will be commenced forthwith, and it is expected it will be ready for occupation by students at the beginning of the session after next.

The owner of the Bathwick Estate has intimated his intention to ask the town council of Bath to accept the fields known as Henrietta Park, containing seven acres, as a public park for the benefit of the city.

At the Established Church at Strathpeffer on Sunday week, a new organ, which has been in course of erection for some weeks by Messrs. Ingram, of Hereford, Edinburgh, and London, was formally inaugurated.

On Tuesday week a dedication service was held in All Saints' Church, Leek, on the occasion of the opening of the new organ, which has been built and placed in the church by Messrs. Jardine and Co., of Manchester. The cost of the organ, without the case, which it has been decided to defer providing, has been £560.

The vicar of Dawlish being desirous of restoring the tower, pinnacles, and buttresses of the parish church, a committee has been formed to consider the question. The estimated cost of the work is considered by Mr. Dobell, the architect consulted, to be about £1,500, and the first third of that amount has been promised.

The name of Thomas Daniell, Bennett's Mews, Stamford-street, S.E., builder, occurs in Friday's list of adjudications in bankruptcy published in the *London Gazette*.

After much discussion, the Blackpool Town Council decided on Friday to lengthen the promenade in a southerly direction, the extension to cost £16,000. Another important improvement decided upon was the widening of Hounds Hill corner on the promenade, the purchase of the necessary land costing £6,000, whilst a scheme for widening the whole extent of the promenade was mooted.

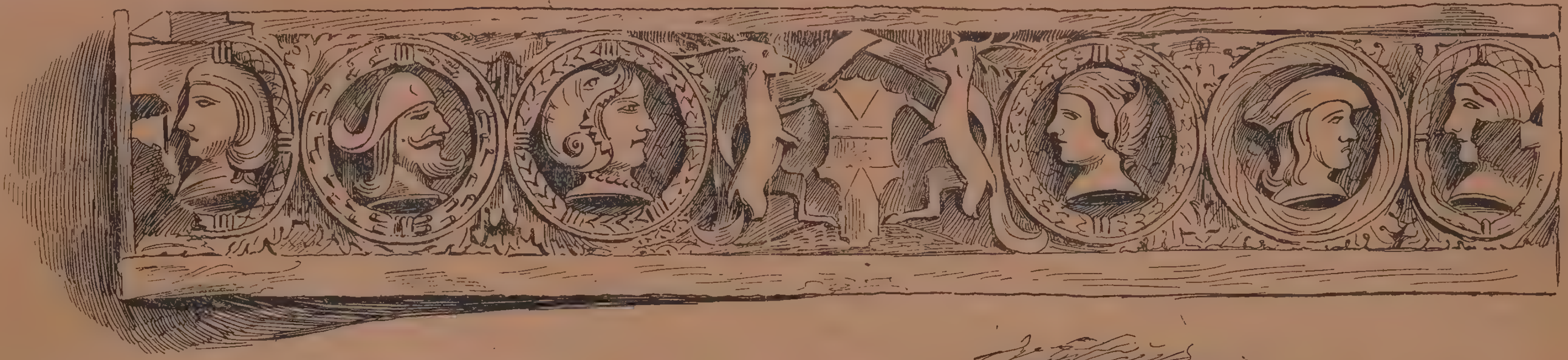
The water board of Swindon have adopted the plans of Mr. James R. Shopland, of Swindon, their engineer, for covering the service reservoir, which measures 154ft. 6in. by 158ft. by 16ft. in height, with arching supported on concrete piers.

A new set of pumping engines has just been inaugurated at the Hereford Corporation Waterworks. They cost £3,800, and were constructed by Messrs. Worth, Mackenzie, and Co.

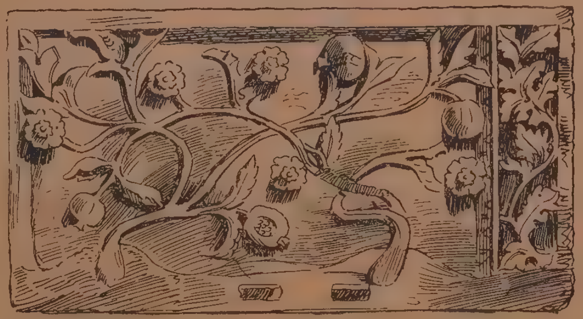
The members of the North Staffordshire Archæological Society visited Matlock, Cromford, and Wirksworth on Wednesday week.

A group of Sunday-school buildings are about to be built at New Mills, near Tring. Mr. W. Huckvale, of Tring, is the architect, and Messrs. Honour and Sons, of the same town, are the contractors.

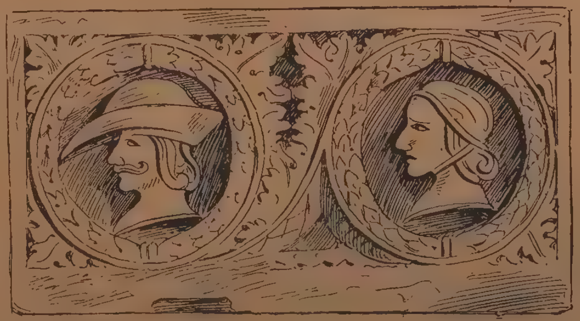
A BRITTANY FIRE PLACE OF THE SIXTEENTH CENTURY



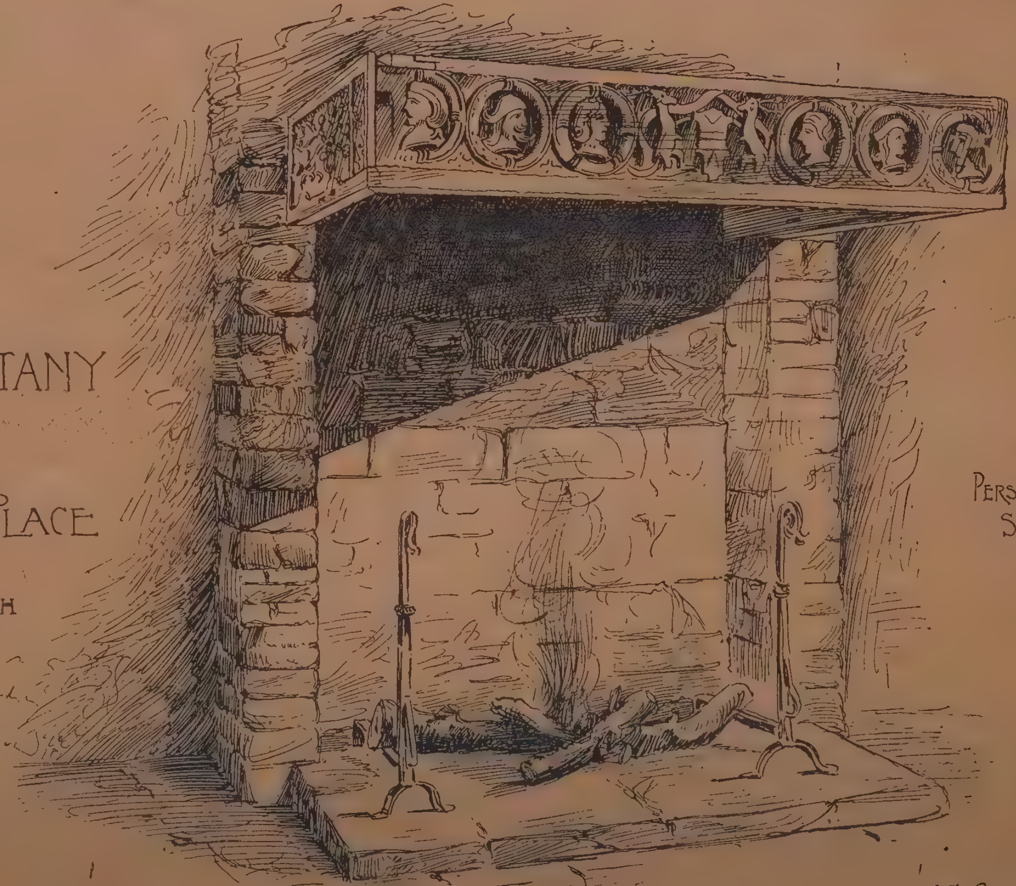
FRIEZE CARVED IN WALNUT WOOD



LEFT-HAND RETURN OF FRIEZE



RIGHT-HAND RETURN OF FRIEZE



PERSPECTIVE SKETCH

A.E. Chancellor del^{r}

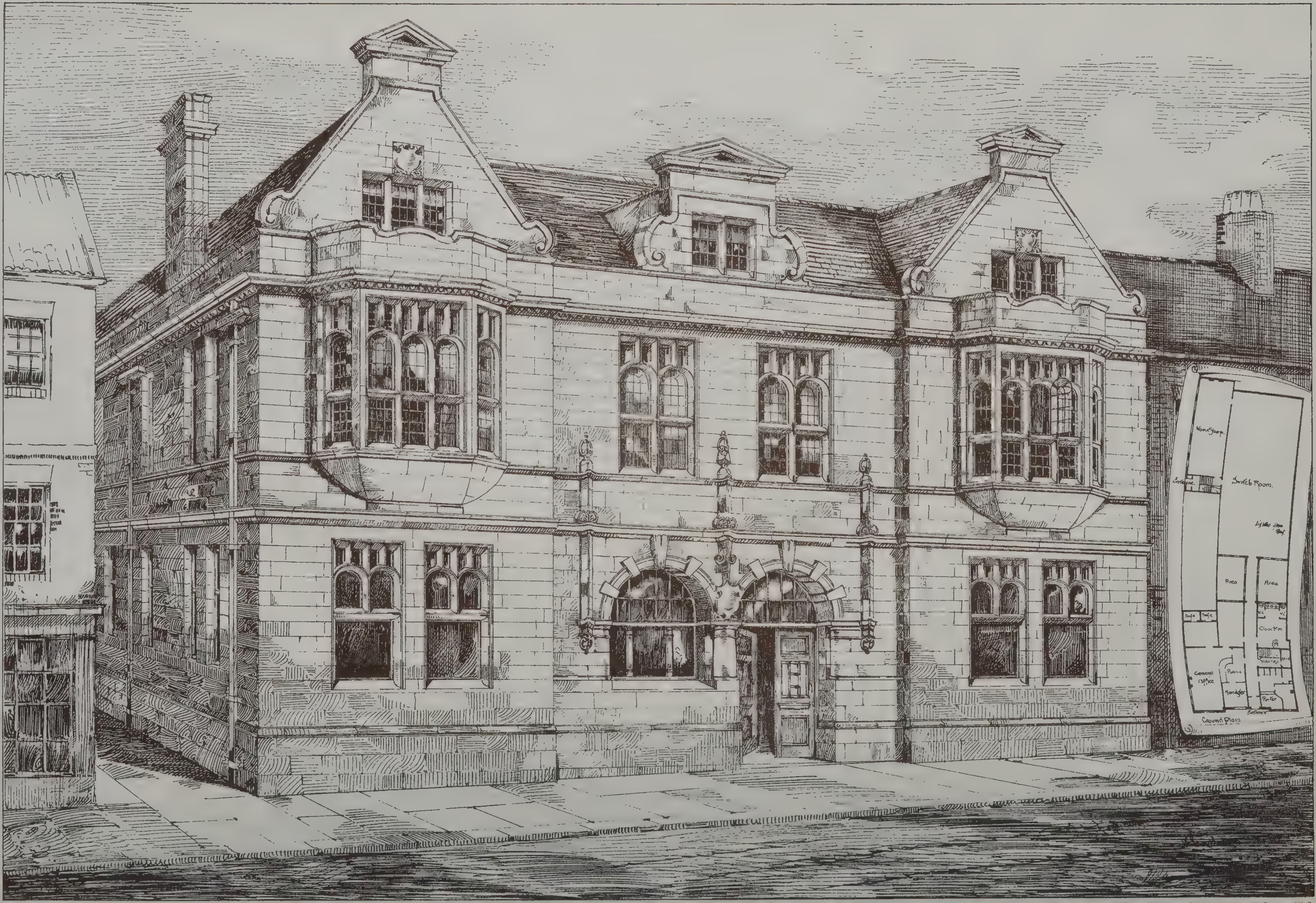
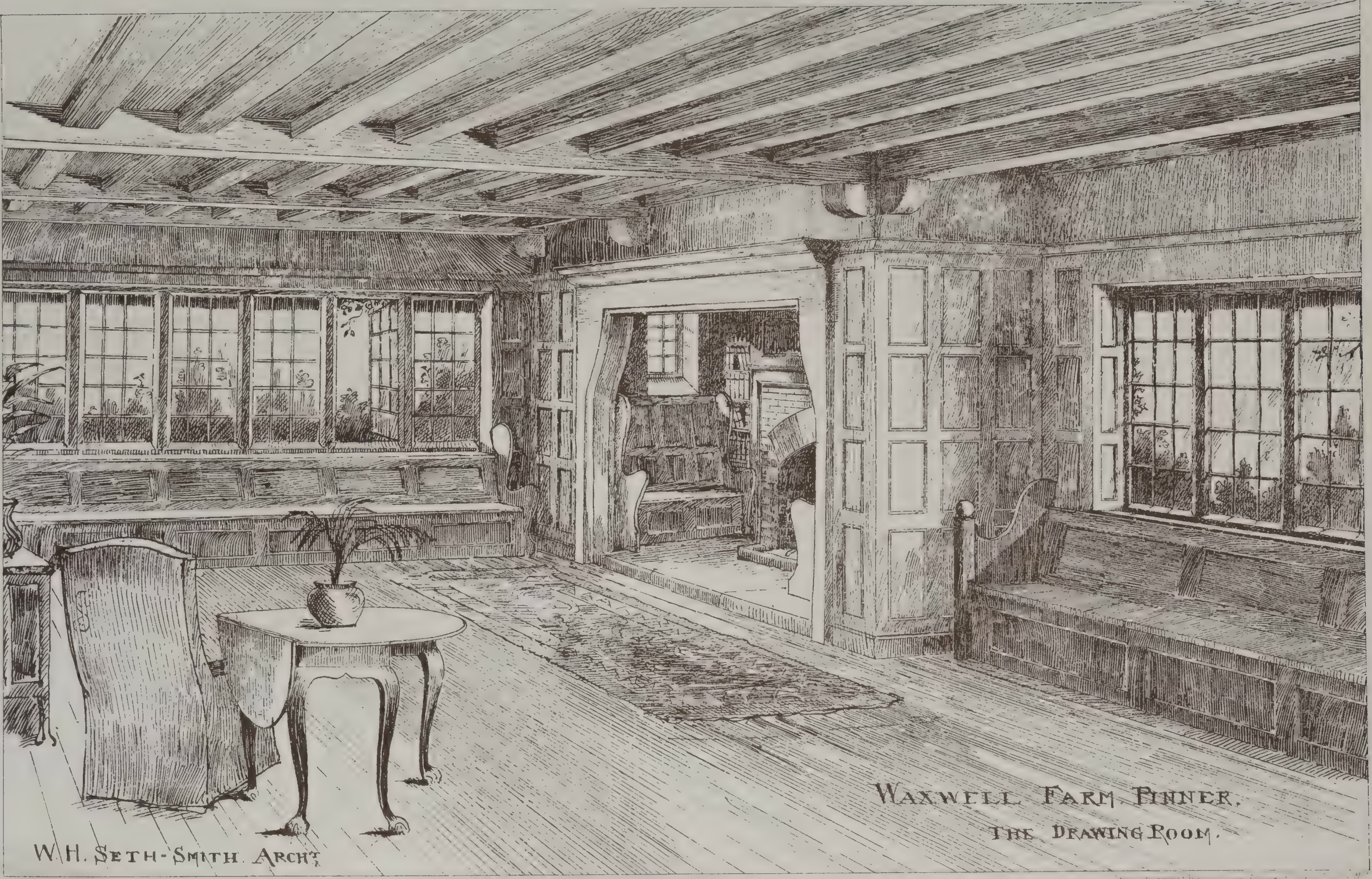


Photo Lithographed & Printed by James Akerman 6 Queen Square W.C.

NATIONAL·TELEPHONE·COY'S OFFICES· NEWCASTLE·ON·TYNE MESSRS ARMSTRONG & KNOWLES ARCHTS

THE BUILDING NEWS, SEPT 20, 1895.

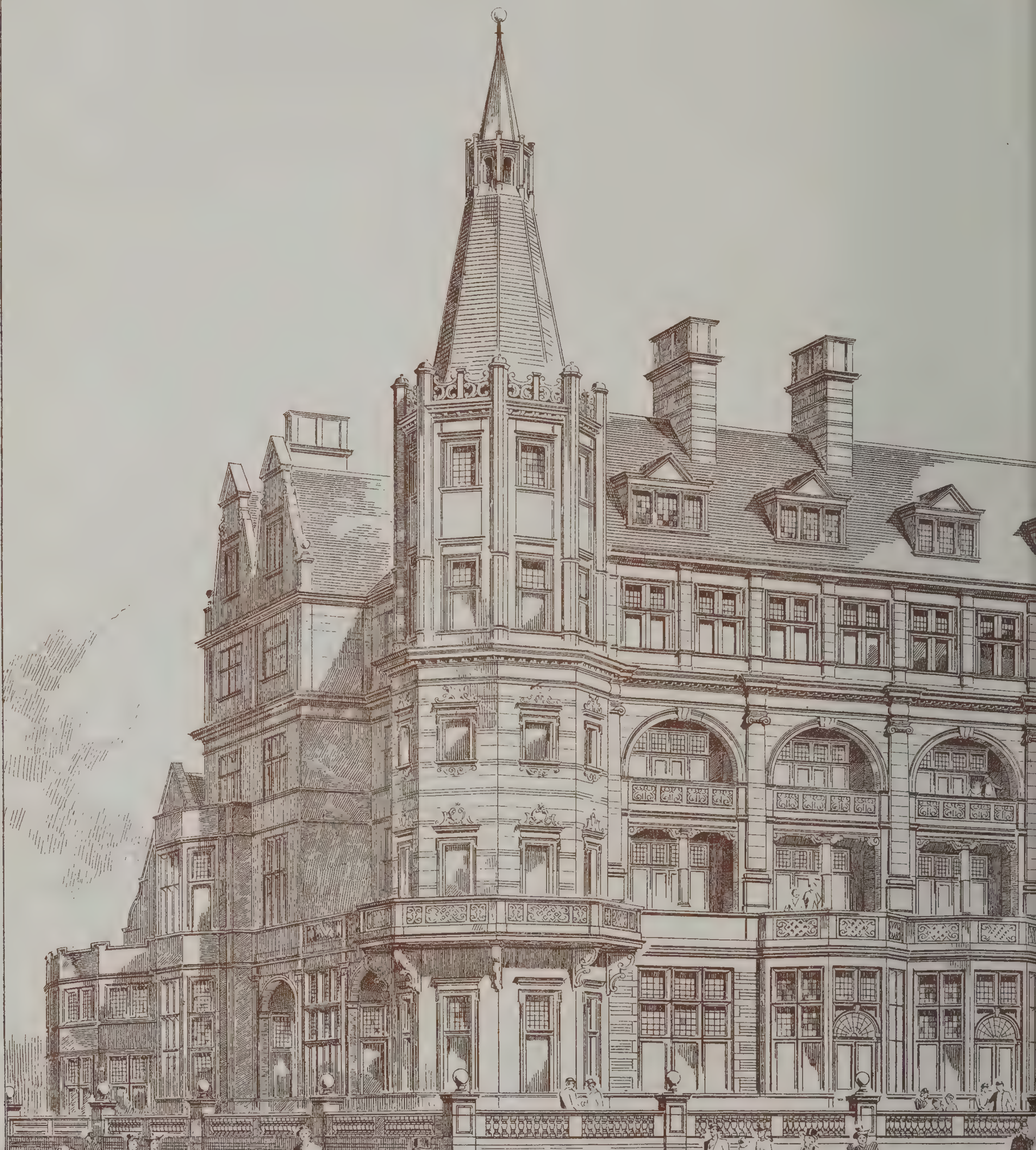


WAXWELL FARM PINNER.

THE DRAWING ROOM.

W. H. SETH-SMITH. ARCHT.

HYDRO : AND : HOTEL · BLACKPOOL · MESSRS WOODHOUSE · & WILLOUGHBY · ARCHTS



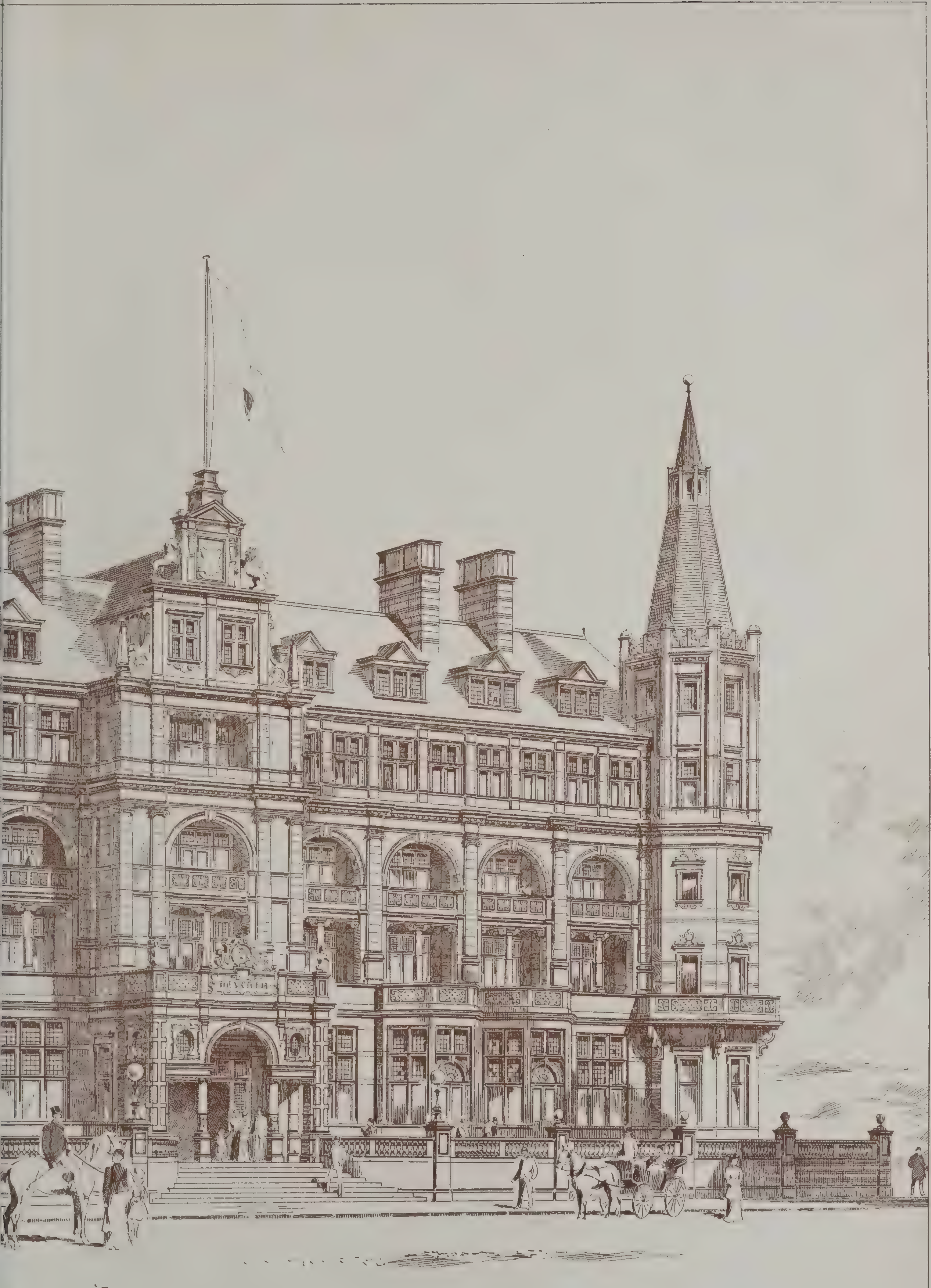
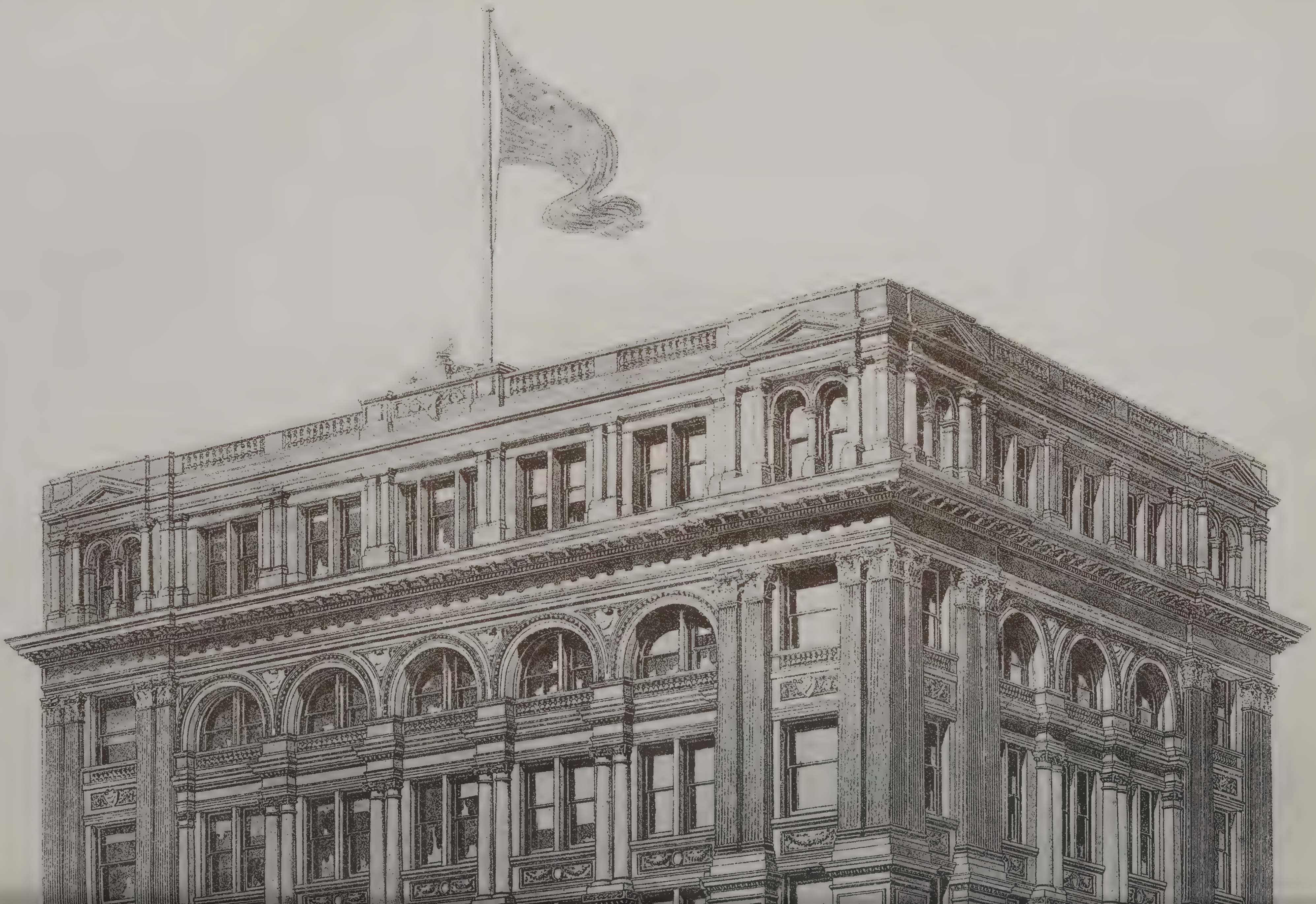
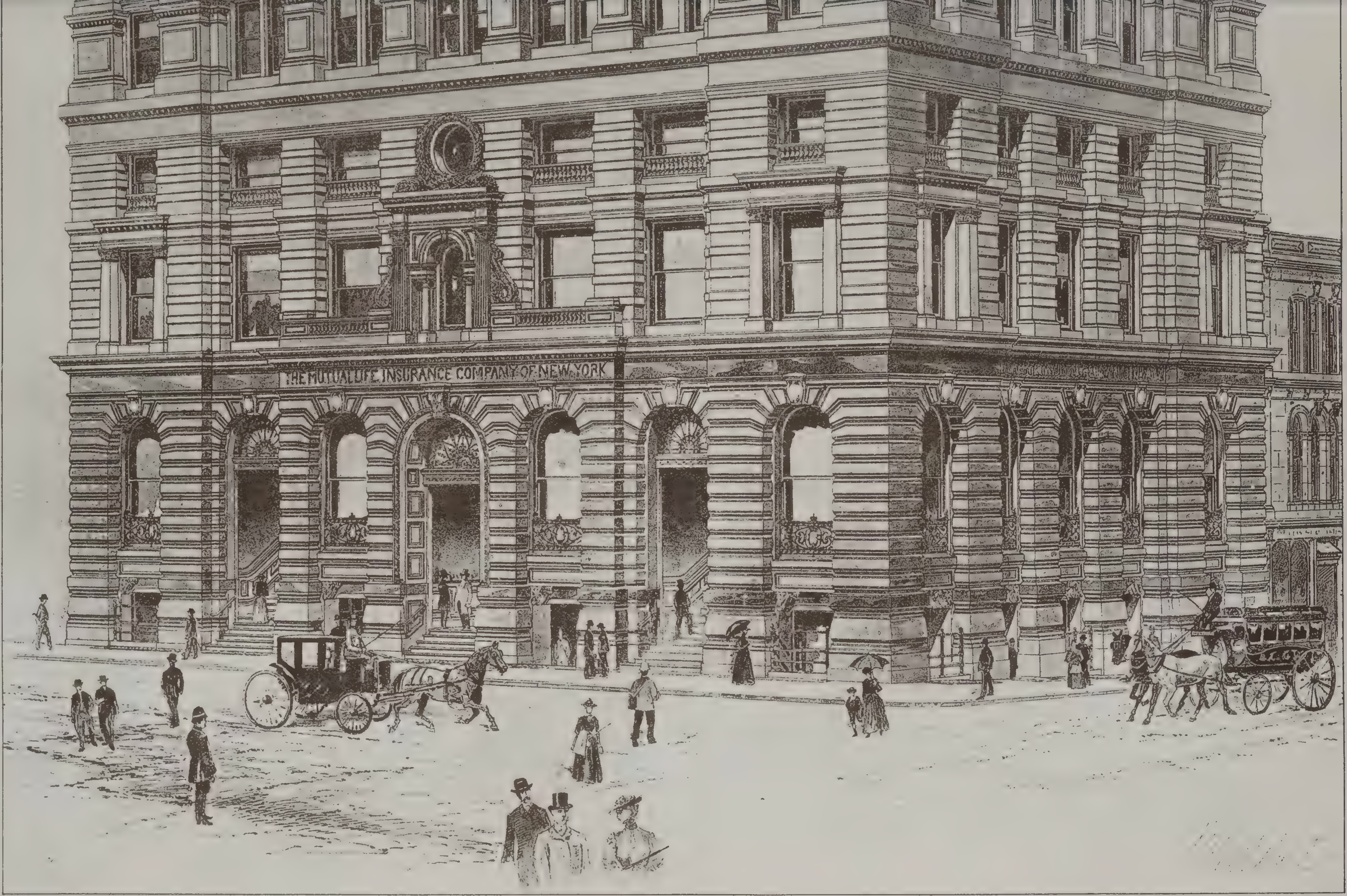


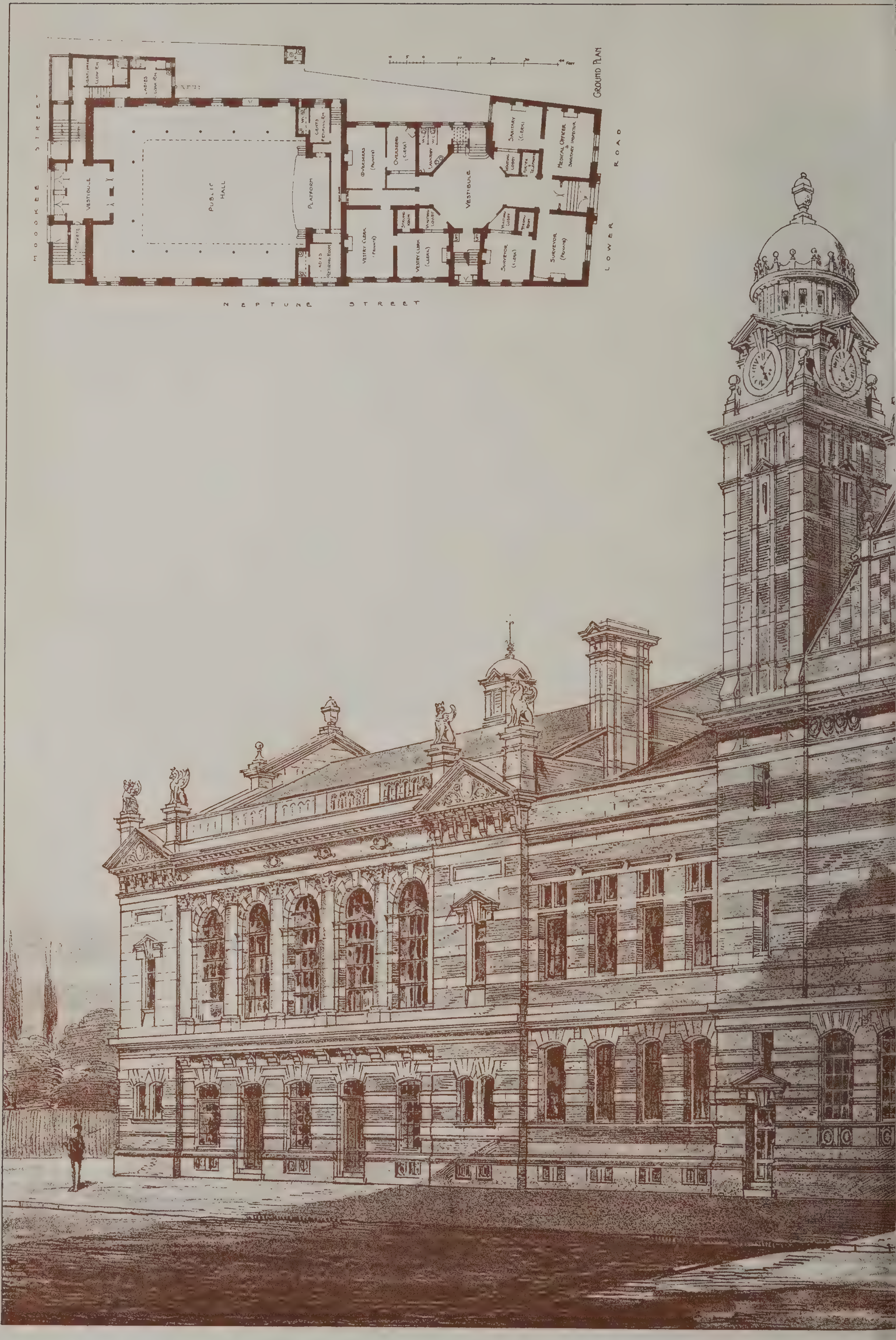
Photo-Lithographed & Printed by James Akerman, 6 Queen Square, W.



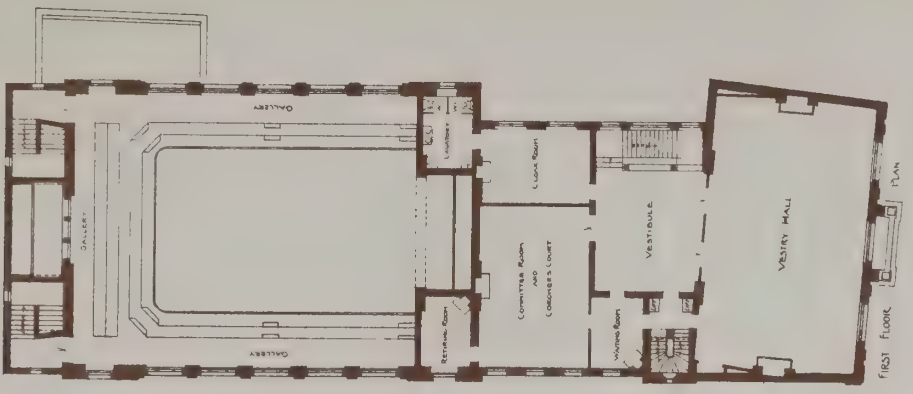

THE MUTUAL LIFE INSURANCE COMPANY OF NEW YORK

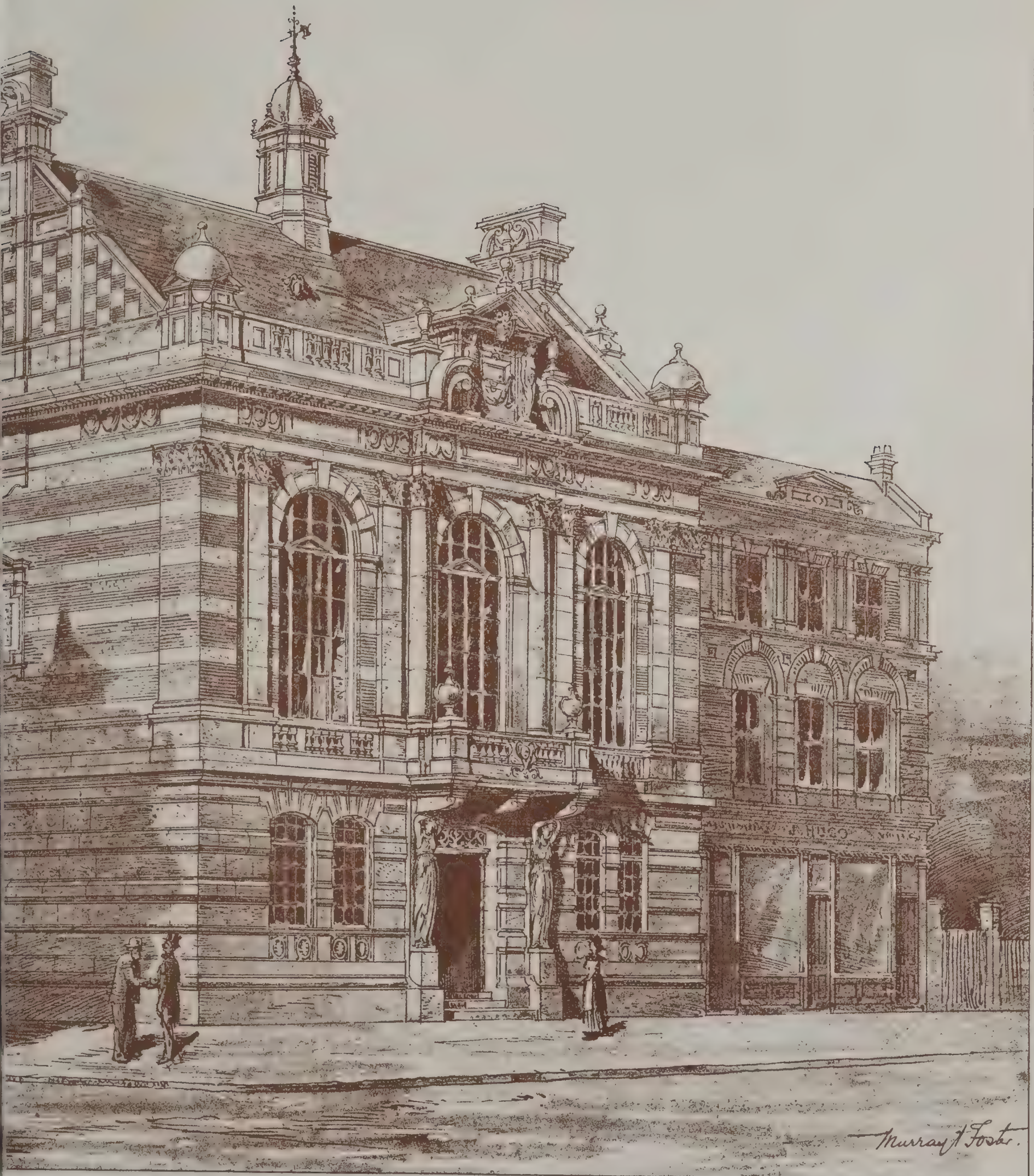
"PHOTO-TINT," by James Akerman 6 Queen Square London W C

NEW OFFICE BUILDING OF THE MUTUAL LIFE INSURANCE CO OF NEW YORK AT SYDNEY N.S.W. JOHN KIRKPATRICK ARCHT



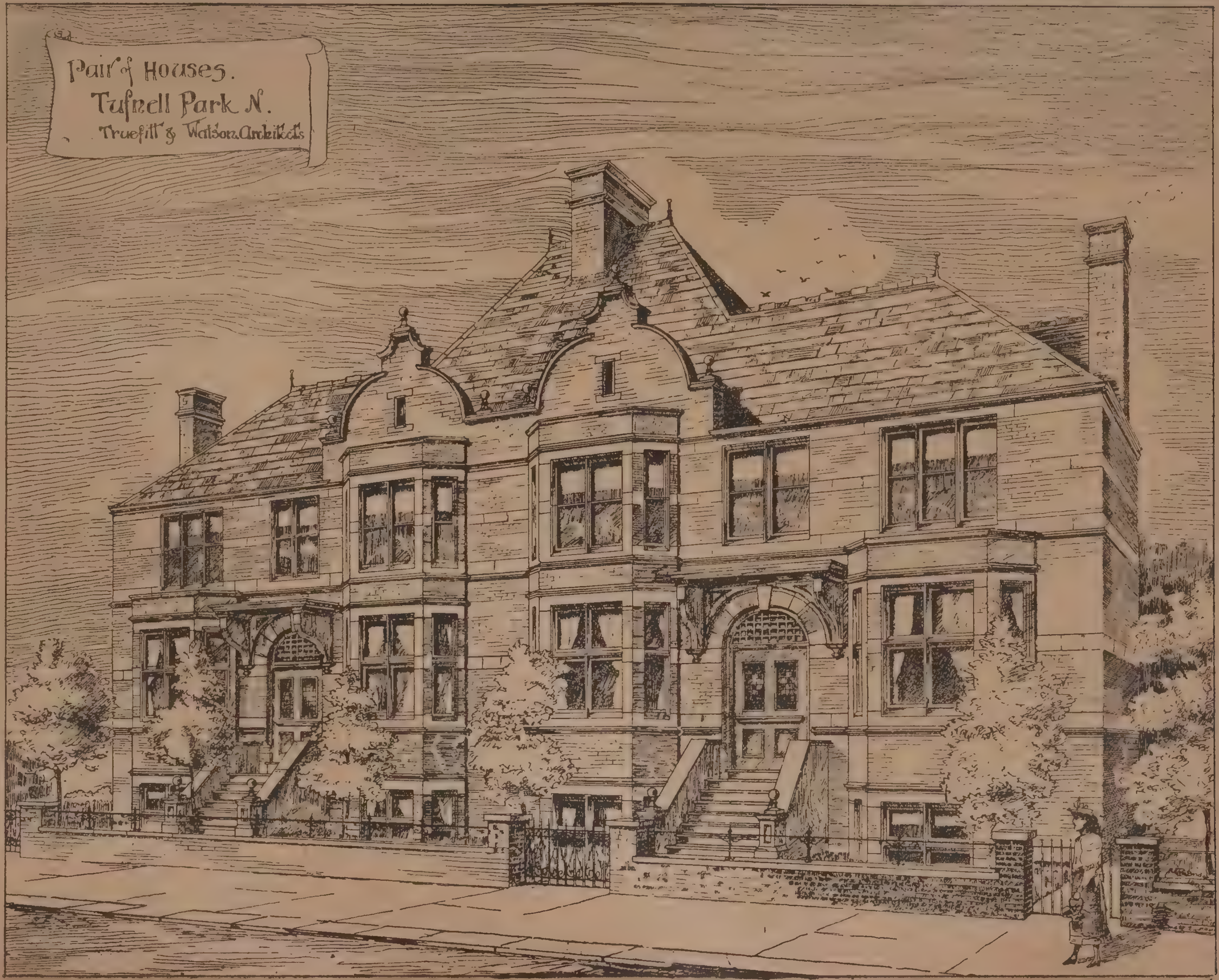
ROTHERHITHE · TOWN · HALL





"Photo-Tint" by James Akerman, 6, Queen Square, London, W.C.

Messrs Murray & Foster Archts


Pair of Houses.
Tufnell Park N.
Truefitt & Watson Architects

Building Intelligence.

Balsall Heath.—The Right Rev. Bishop Ilsley laid on Thursday, the 12th inst., the foundation-stone of a Roman Catholic Church, which is to be erected in George-street, Balsall Heath. The church, which will be dedicated to St. John the Evangelist, will consist of nave, aisles, with octagonal-ended sanctuary, two chapels, and sacristy at the east end, and porch, baptistery, and organ gallery at the west end. The north aisle, however, will not be built at present, though the piers and arches will be provided. The building, which has been designed by Mr. Vicars, of London, and is being erected by Messrs. Harley and Son, of Smethwick, will be in the Early English style, the material being brick with Bath stone dressings, and will have an open-timbered roof, panelled. The ultimate size of the church will be 107ft. by 44ft., giving accommodation for about 400 worshippers. The cost will be about £3,500.

Birmingham.—Messrs. Barrow, Limited, have in course of erection new premises, consisting of stabling, van-houses, covered yards, dwelling-house, &c., situated (on the Birmingham Improvement Scheme area) in Dalton-street. This building will have a frontage of 51ft., and depth of about 90ft., and will be three stories in height. The dwelling-house will face the street, and will be of modified Gothic character, with best red brick facing and terracotta enrichments. The stable building will consist of van-houses, loose boxes, and "inclines" on ground floor; stalls, loose boxes, and harness-room on first floor; and store-rooms, &c., on second floor. The building will be mainly of fireproof construction, concrete and steel girders being extensively used for flooring and other purposes. The total cost of erection will be about £2,600. The architect is Mr. J. Statham Davis, of Dolobran-road, Sparkbrook; and the contractor Mr. Thomas Rowbotham, of Coventry-road, both of Birmingham.

Grahamstown, S.A.—The new chancel of the Episcopalian Cathedral at Grahamstown will be consecrated on All Saints' Day. The cathedral was originally designed by the late Sir Gilbert Scott, R.A., and a perspective view of the completed edifice with plan appeared in the Building News for March 22, 1889. The fine tower and broached spire at the west end were built some years since; but the nave is, we believe, still a temporary structure. The chancel approaching completion is from revised designs by Mr. J. Oldrid Scott, F.S.A., of Spring-gardens, S.W. It is 60ft. deep by 40ft. wide, and is carried out in stone, the fittings being of mahogany. At the south-west angle are two vestries, with organ-chamber above.

Shirley.—New schools in Shirley-road, built for the School Board for Millbrook, near Southampton, were opened recently. They have been designed by, and erected under, the direction of Mr. A. F. Gutteridge (of the firm of W. H. Mitchell, Son, and Gutteridge, architects, of Southampton), with Mr. H. W. Randall, of Woolston, as clerk of the works. The work has been executed by Mr. H. Cawte, builder, of Shirley, whose contract price was £10,250. The main block of buildings consists of three schools, planned to accommodate 950 children—viz., 300 boys, 300 girls, and 350 infants. The leading principle in the arrangement of each school is a central hall, around which are placed five classrooms; these communicate with the halls by glazed screens and doors, the lower portion having cupboards. That and cloak lobbies and lavatories are provided at each entrance for the children; also rooms for the use of head and other teachers, with lavatories. The buildings are erected of red bricks, with Portland stone copings and sills, the finishings to exterior brickwork being of Bracknel bricks. The buildings are covered with slates, finished with ornamental bands of permanent green. A prominent external feature is the ventilating and smoke-shaft, which rises to a height of about 80ft. Internally the floors are formed of cement concrete, upon which wood blocks have been laid by the Westminster Wood-Block Flooring Company, excepting lobbies, lavatories, and offices, which were laid with Limmer asphalte by Mr. Bradshaw, of Portsmouth. The whole of the walls are plastered and distempered, the dado being finished with Keen's cement. The woodwork is of red deal, stained and varnished. On the first floor in the centre block is the board-room. The windows throughout are of large dimensions, with semicircular heads, the lower portions having sliding sashes. The upper portion of the windows is fitted with hanging lights, and glazed with tinted cathedral glass, while all are fitted with Leggott's patent opening gear. The premises are heated throughout on the hot-water low-pressure system, with ventilating radiators placed in the central halls, rooms, and corridors. The vitiated air is removed by foul-air extraction flues, with inlets at the ceiling and floor-levels, connected with an air duct, through which it is drawn to the shaft by means of a separate furnace in summer and the boiler furnace during the winter months. At the end of the infants' school is situated the cookery school, provided with close and open ranges and gas cookery stove and desk accommodation on solid platforms, with other conveniences for the teaching of cookery. The caretaker's cottage adjoins, and consists of six rooms, with offices. The offices, with play-sheds adjoining, are placed in the rear of the yards, the roofs of which are covered with rolled plate-glass and Braby's patent zinc roofing. They are fitted with Merrill's latrine troughs, with automatic flushing cisterns. The whole of the playgrounds are being covered with tar-paving by Messrs. Hobman, of London and Maidstone. The schools throughout have been furnished by Messrs. Illingsworth and Ingram, of London and Leeds, the desk adopted being their dual desk of American oak.

Tamerton Foliot.—This 15th-century parish church, near Plymouth, was reopened on Wednesday week. During the early part of the present century it was allowed to fall into a bad state, and the interior was very much disfigured by an ugly west-end gallery and large box pews. In 1850 it was found desirable to almost rebuild the south aisle, to restore the roof, and reseat the church. The north aisle remained in a very dilapidated condition until recently, and in 1891 two trees fell across the eastern portion of the north aisle, doing irreparable damage to the roof. The restoration of the aisle and the rearrangement of the church, so as to provide space for a properly-fitted chancel and a new organ and vestry, have now been carried out from plans by Mr. G. H. Fellowes Prynne, of London and Plymouth. The work included in the contract just executed provided for a new aisle and heating chamber. There is also a new chancel, and five steps now lead from the nave to the altar, giving greater dignity to the east end. The sanctuary steps are of white Sicilian marble, and those leading to the chancel of granite. The new organ, built by Messrs. Hele, adjoins the south side of the chancel.

Upton, Chester.—A special meeting of the Cheshire County Council was held on the 12th inst. to deal with a report of the finance committee submitting an additional estimate of £11,000, beyond the estimate of £80,000 previously submitted, for carrying out the enlargement of the Upton lunatic asylum. The committee of visitors reported that they had thought it advisable to obtain from the architects, Messrs. Grayson and Ould, of Liverpool, an explanation, in writing, of the excess of the builders' tender over their original estimate. It was found possible to make such modifications in the bills of quantities as would effect a reduction of £9,059 in Messrs. Jones and Sons' tender of £79,500, which had been agreed to. The committee therefore submitted the following estimate of the total cost of carrying out the plans approved by the council:—New buildings as per revised tender, £70,441; outfall drainage, lighting, and furniture, £8,744; architects' commission and cost of quantities, £4,387; clerk of works, £500; farm buildings as per contract and architects' commission, £2,865; total, £86,937. The sum, it was explained, did not include the isolation hospital for the twelve beds, which would require an extra £3,500. The chairman of the committee moved that a further sum of £11,000 be granted, in addition to the £80,000 already sanctioned, for the purpose of carrying out the enlargement, and that the visitors of the asylum be empowered to enter into contracts not exceeding £91,000. He remarked that the disparity between the lowest tender and Messrs. Grayson and Ould's original estimate was accounted for by the fact that the architects' estimate was made two years ago, since which time there had been an advance in wages, with a prospective further advance. There was a difference in the brickwork alone of £4,000. The architects' figures were based on the figures which applied to Rainhill asylum, and the difference between the price there and the bricks that would be required for Upton was roughly about £4,000. Another element in the excess was that, after a close inspection, it was found that the foundations would have to be carried to a greater depth than could possibly be anticipated. Alderman Thomas Beeley severely criticised the committee, observing that the total cost at first was to be £40,000, then £50,000, then £90,000, and again £100,000, and now it had fallen back to £91,000. Dr. Hewitt explained that the original figure of £40,000 or £50,000 given by the committee was merely a repetition by them of what Dr. Davidson, the asylum superintendent, had said he thought the work might be done for. Ultimately the resolution and the recommendations of the committee were carried unanimously.

◆

CHIPS.

The partnership heretofore subsisting between E. F. Titley and J. A. Jones, architects and surveyors, Birmingham, under the style of Titley and Jones, has been dissolved.

The Sites and Plans Committee of the Court at Aberdeen University have approved of plans submitted by Mr. Mackenzie, A.R.S.A., of the tower to be erected at the extremity of the north wing of Marischal College, fronting Broad-street. The plans show a lofty structure of dressed granite.

Mr. Oliver E. Winter, the deputy city engineer and surveyor of Norwich, has been appointed the surveyor of St. George the Martyr, Southwark, in succession to Mr. A. M. Hiscocks, C.E., who retires on a pension.

The Hardman Institute at Milton, near Burslem, was opened on Thursday, the 12th inst. On the ground floor there is an entrance-corridor, with a reading-room, 24ft. by 17ft., a coffee-room 21ft. by 20ft., and a billiard-room, besides a library and rooms for domestic use. The upper floor consists of a concert and lecture room, with seats for 250 persons, and other accommodation. The walls of the corridor and the room on the ground floor are lined with salt-glazed bricks and enamelled tiles, dado height, and the floors are laid with wood blocks. Externally the elevations are of red brick, relieved with moulded brick bands and terracotta. The tower, the height of which is 50ft., rises over the main entrance. The architects were Messrs. Dains and Son, and the builder is Mr. Moss.

At the London Auction Mart last week a fair number of sales were held, but all of an uninteresting character, and the days' totals were but small. The aggregate for the week was £16,507 only, but there is every prospect that the autumn season will be a busy one.

The new electric light works in Sandy-lane, Coventry, are approaching completion, and will be opened by the Mayor in about a month's time. The building contract, which was commenced in July, 1894, was intrusted to Mr. C. G. Hill, and the contract for the supply of the machinery and plant to Messrs. John Fowler and Co., of Leeds. The building, erected from designs by Messrs. G. and I. Steane, comprises engine and dynamo house, and switch room adjoining, boiler-house, coal stores, offices, electrician's room, and other accommodation, with space for extensions at one end.

It is expected that the new National Portrait Gallery will be ready for opening to the public some time in November next, if not sooner; the work of transferring the various collections from Bethnal Green is practically complete.

The British school at Gladstone-road, Boscombe, is being enlarged by the addition of an infants' department at the rear, from the designs of the architects of the present block, Messrs. Lawson and Donkin, of Bournemouth.

A new Established church in the lower reach of Glenfalloch, in the parish of Arrochar, and about a mile from the head of Loch Lomond, was opened on Friday. The church is seated for 100 persons, and has been built from plans by Messrs. John Burnet, Son, and Campbell, of St. Vincent-street, Glasgow.

A fire occurred on Tuesday week at a three-story building occupied by Mr. James Deacon, master joiner and builder, Shipley. The building extends from Wharfe-street to Wainman-street, and the damage done amounts to £2,000. This is the third time that these premises have been burnt down.

The proposal to raise £12,000 as a memorial to the late Sir Andrew Clark, to be devoted to adding a block of small wards to the London Hospital, has practically failed, less than a fourth of the suggested sum having been subscribed. Two small wards and extra rooms for porters will now be the outcome of the movement; but should funds permit, the suggested wards can be placed over these as additional stories at a future time.

ARCHITECTURE AND THE APPLIED ARTS AT LIVERPOOL.

THE City of Liverpool School of Architecture and Applied Arts commences its second session on the 1st of October next. Mr. Frederick M. Simpson, Roscoe Professor of Art, is the director, and Mr. Arthur Stratton the demonstrator. The other teachers are Mr. C. J. Allen for sculpture and wood-carving, Mr. R. Anning Bell for painting and drawing, and Mr. J. Platt for wrought iron. The school aims primarily at effecting a complete union between the different arts and crafts. To produce this unity, it is considered necessary that the students in the different crafts should work side by side in the same studios. It is not enough that the students of the three arts of architecture, sculpture, and painting should be together; with them will also be associated the stone and wood carver, the designer in stained glass and in textile fabrics, the furniture designer, gold, copper, and iron smiths, and workers in other crafts. The men will, it is hoped, by this means not only get into touch with one another, but will also gain that insight into each other's work which is absolutely necessary if their own is to be brought into harmony with it. Most modern work fails because each craftsman knows nothing at all about his neighbour's craft. The school also provides in its studios and classes a course of training for students in the different arts of painting, sculpture, and architecture, and special instruction of an advanced kind for skilled craftsmen and artisans, especiallly in those crafts allied to architecture.

The school consists of: (1) the architectural studio; (2) the sculpture and modelling studio; (3) the decorative painting studio; (4) the wrought-iron workshop; and (5) the wood-carving workshop.

The architectural classes are held in the Victoria Building, University College, the others (with the exception of the wood-carving) in the building specially erected for their accommodation on University College ground, with a separate entrance from Browalow-street. The wood-carving class is carried on, at present, in the wood-working department belonging to the engineering department, University College.

In the architectural studio, the course of studies is so arranged as to meet the wants of two classes of students: those already engaged in architects' offices as pupils and assistants; and those who intending to become architects, shall pass through a course of architectural training before entering an architect's office.

For the latter class of students the course of training extends over two years, and embraces freehand and architectural drawing, construction, and a knowledge of building materials; design, both elementary and advanced; the history of ancient and mediæval architecture, mechanics, modelling, &c.

Students entering for the complete course pay a composition fee of £25 for the session of three terms.

It is hoped that those who intend to be builders will take advantage of the course, as well as those who wish to become architects. Two free studentships are offered in each of the five divisions, as well as money prizes.

COUNTY LUNATIC ASYLUMS.—XXIX.

By GEORGE H. BIBBY, F.R.I.B.A.

THE ASYLUM FARM.

THE extent to which farm buildings should be provided in connection with asylums must depend necessarily upon circumstances connected with the locality; whether the district from which the patients are drawn be an agricultural or manufacturing one, and, if the latter, whether it be practical or profitable to teach or employ patients upon works which they may have been previously unaccustomed to perform.

A large proportion of the male patients in many asylums are employed upon the farms, gardens, roads, &c. The agricultural works executed by them are often of considerable value to the various institutions, whether regarded as a desirable bodily occupation leading to mental improvement, or as a profitable investment of their labour upon the land; potatoes, cabbages, and various vegetables, as well as hay, oats, rye, grain, mangold-wurtzel, &c., are produced for consumption on the estate, and are often an important consideration, having regard to the exceptional circumstances relating to the nature and value of the labour of the insane patients, and matters of a kindred nature.

And even the care of dumb creatures, horses, cows, pigs, poultry, &c., is calculated in some instances to foster those habits of thought and consideration for others than self, which have so salutary an influence upon the lives of all. With many, sane as well as insane, it is an intense concentration of thought upon self that leads to so much misery. Occupation for mind and body is good for all, whether it brings in a pecuniary return or otherwise; but as a rule the produce resulting from the works performed by patients on an asylum estate should show at least a bare profit, if only by reason of the low cost of the labour.

Sewage-irrigation of the asylum estate is carried out in many instances with more or less success. It should be with fresh sewage, the volume made each day being passed over some portion of the land, and never stored in tanks. An area specially prepared should be provided to act as a sewage filter for the outflow of the whole asylum sewage. The land requires to be specially prepared and worked for effective sewage irrigation, and should be broken up to a depth of 18in. at reqular intervals not exceeding two or three years, either by deep or double ploughing, or by spade labour, thus loosening and working the soil and subsoil so as to enable the sewage to become incorporated with the earth. In irrigation there must not be stagnation, either on the surface or amongst the subsoil. The land should be so laid out that the "carriers" will distribute the sewage in a thin film over the whole surface, and the subsoil drains should be so contrived that they may regularly remove the subsoil water. Under such conditions as these, the use of special means of deodorisation would seldom become necessary; but the sewage-farm should, of course, be placed as far away from the asylum main-buildings as may conveniently be arranged.

In arranging for the plans of the asylum farm-buildings, consideration must obviously be given to the numbers of male patients capable of outdoor employment, the nature of the soil, and the extent of the asylum estate. In the Banstead Asylum there are about 2,000 patients, of whom rather more than 700 are males. The following table gives the areas and appropriation of the land:—

	A.	R.	P.
Site of the asylum	13	0	0
Recreation grounds—males	7	0	0
Recreation grounds—females	13	0	0
Farm buildings and gas-works	1	1	0
Dwellings and mortuary	0	3	1
Cemetery	2	0	0
Roads and boundary walls	5	1	1
Kitchen garden	8	0	0
Arable land	49	2	38
Fairlawn Field—Arable	17	2	30
Total	117	2	30

In the asylum farm-buildings here, provision is made for the accommodation of 203 pigs, 40 cows, 8 horses, and some 60 or 70 head of poultry, also buildings for the storage of implements, tools, &c., for garden and field use, and for the reception of carriages, carts, harness, roots, hay, seeds, manure, and other farming matters. About 50 of the patients are stated to have been occupied about the farm—that is, about one to every 14 of the male patients in the asylum were employed upon the farm roads, kitchen gardens, fields, and cemetery land, &c.

Conservatories should also be provided to a moderate extent, from which flowers and plants can be produced for use (especially in the wards for the sick and infirm inmates) for the decoration of the day-rooms and the dining and recreation halls. The position of the conservatories and greenhouses, however, depends much upon the general arrangements of each asylum, in some instances being conveniently placed near to the medical superintendent's residence, and under the general control of the foreman gardener.

I have mentioned several of the occupations of patients, in connection with which it is necessary that the asylum architect should provide rooms or sheds, and have pointed out that many works and improvements may be deferred, for the sake of economy, to be completed by the patients after an asylum has been opened. There is yet another work which may come under the supervision of the asylum architect or enginerr, and that is road-making. These officials have to arrange and provide for the several roads within the estate of the asylum, as well as, at times, for the approaches thereto. This involves a large expenditure, especially when the asylum is located in a district where labour and materials are scarce or unsuitable. Some of the roads require to be laid in a most substantial manner, and this will be admitted if it be considered how many thousands of tons of coal, provisions, and materials (compelling traffic of a heavy nature), must pass to and from an asylum of even moderate dimensions. Some of the roads should be formed before the building of the asylum is commenced, to enable heavy masses of stone, bricks, and building materials to be brought to the site with due economy (unless, indeed, a branch railway be laid directly up to and on to the asylum site in connection with the nearest main railroad. This course has sometimes been found the most economical, and contractors have often found it to be worth their while when executing such work upon a large scale to lay a line of rails of very considerable length at their own cost, in order to save the expenses of cartage; this plan was adopted, I believe, at the Claybury asylum, and also in the extensions to the Essex County Asylum at Warley, near Brentwood).

Some authorities are of opinion that it is better that a roadway should be *undulating* rather than level, it being contended that the horses are eased by the change of position of the harness and load, and that they are thereby less fatigued on a road with slight ascents and descents than on one that is of a dead level. There may be some foundation for the theory that a horse finds relief by having his harness and line of traction varied, but there can be no reason for asserting that an *undulating* road is preferable to a level one as a means of diminishing the expenditure of muscular power. It is quite true that level roads are occasionally more difficult for horses than undulating ground, especially on low levels, but this is not because the road is more level, but because it is frequently more soft and wet, and so productive of greater friction than when on higher and firmer ground. There is no more exhaustive road than a sandy plain; but this is not because it is level, but because it is sandy and soft. Coachmen and others who extol the advantages of undulating roads, do not, it may be believed, reason very deeply on the matter, and wrongly ascribe to the horses the satisfaction they themselves experience from a change of position, while the horses probably feel no other satisfaction than that which temporarily arises from the diminution of their burden on descending an incline, and there can be no doubt that all roads to asylums, both within the estate and from the neighbouring towns, should be as level as circumstances will admit, and should be made with a hard and smooth surface so as to resist the pressure of heavy loads. The removal of large quantities of earth and rock is usually a very expensive process, but even in the formation of ordinary roadways it is too generally neglected. This, when it arises from insufficiency of funds is to be regretted; but the first expense of the formation of a road is but small in proportion to the permanent diminution of power from imperfect construction and cost of repair. There is no doubt that loss in a great many cases arises through undervaluing the importance of level roadways and the effects of ascent and descent on the force of traction. The roads should be as straight as possible, and if made curved or winding to avoid inequalities of levels, the curves must not be sharp or sudden.

These questions of asylum roads, farms, and sewage irrigation are, therefore, of special importance, not only for reasons of economy, but also as offering opportunities of useful labour by the male patients, and with regard to that of sewage-irrigation, the Commissioners in Lunacy have long since considered it desirable to issue practical suggestions (*to asylum authorities*), by Sir Robert Rawlinson, K.C.B., who states that sewage may be used for agricultural purposes with advantage if proper knowledge and care are made available; that it contains the elements of every field or garden crop which is grown, and may be applied to both root and vegetable crops, &c.; and that for surface irrigation not less than one acre to each 150 patients should be provided, unless the land is very porous and is especially prepared to act as a filter; and gives much other useful information upon the subject generally.

Very frequently the asylum estate, prior to its purchase for the use of the insane, consisted of farm land, more or less suitably drained and prepared for the purpose; but occasionally the property had fallen out of cultivation, and in various respects required much work in excavations, levellings, embankments, and drainage. A certain quantity of water is essential to healthy vegetable life; but an excess of it contained in the soil becomes injurious to the greater number of the kinds of plants required to be produced, which suffer from the effects of a continued saturation of the ground. When land is surcharged with water, the air is prevented from due access to the pores of the earth, and actions take place in the soil which retard the decomposition of putrescent manures applied to it, and impair the utility of some of mineral origin; the seeds of the plants frequently perish, and plants not aquatic in their habits grow feebly when their roots are thus in contact with water stagnant in the ground. The temperature of the *saturated soil* is colder by several degrees in the months of spring, summer, and autumn than when the ground is dry; and when saturation takes place in the winter a longer period elapses before it can acquire a temperature favourable to vegetation. The water retained in the soil may either be retained by the particles of the earth by cohesion, or may fill its pores and interstices, unable to make its escape. It is in the latter condition that it may be supposed to be injurious to the soil and growing plants. The care of the drainer must therefore be directed either to prevent this accumulation of water in the soil, or to remove it by forming for it outlets by which it may pass away.

As may be seen by a comparison of the following tables of areas of land at the Claybury and Hanwell asylums respectively, there is a considerable difference in the extent of the land attached, although each asylum is alike capable of providing for about 2,000 patients. Hanwell Asylum was opened about the year 1831, while Claybury Asylum was not opened for the admission of patients until May 16, 1893; but the latter asylum estate also provides accommodation for a few private paying patients.

HANWELL ASYLUM.	A.	R.	P.
Site of the asylum and buildings	8	1	29
Farm buildings	1	0	2
Shrubberies	2	0	0
Airing courts (male)	8	3	38
Ditto (female)	8	1	30
Cricket ground	5	0	0
Burial ground	1	2	30
Water in dock	0	0	28
Laundry-yard and drying-ground	0	2	0
Roads and yards	6	0	0
Brent Island	0	2	15
Kent Lodge	0	1	30
Kitchen garden (including paths)	2	2	0
Orchard ,, ,,	1	2	0
Old Field ,, ,,	11	2	28
New Field ,, ,,	19	2	19
Brent Meadow ,, ,,	6	0	0
Viaduct Field ,, ,,	18	2	0
Total	103	0	9

Although also intended for about two thousand patients, it will be observed that not only is there much more land attached to the Claybury asylum, but also the airing courts and buildings cover a much more extensive area than at Hanwell, where 151 men work on the land.

CLAYBURY ASYLUM.	A.	R.	P.
Site of asylum, including four internal airing courts	20	0	0
Recreation grounds and airing courts	20	0	0
Isolation hospital and mortuary	2	0	0
Mansion, stables, yards, and grounds	9	3	0
Old lodge and garden	0	2	3
Steward's house, lodges, and plantations	5	0	38
Farm buildings, cottages, gas works, &c.	6	3	30
Kitchen garden	10	0	0
Orchard	4	1	24
Roads and footpaths	8	0	0
Woods	49	0	0
Arable land	49	1	30
Pastures	81	0	20
Boundaries and fencing	3	0	35
Total	269	2	20

In connection with the farm-buildings, one or two cottages for labourers might be arranged for. At the Hanwell Asylum, in addition to the farm working patients, there are about a dozen labourers and gardeners employed about the grounds, and only two of these are housed at the cost of the asylum. These are as follows:—One vegetable-shed labourer, five general labourers, three gardeners, one carter, and two cowmen. The custom as to providing cottages for these classes varies in different districts, and where the county asylum is situated at a considerable distance from a village or town, it is frequently necessary for the asylum architect to provide a number of small cottages either upon or within a reasonable distance of the asylum estate, *in addition* to those to which I have before referred as necessary for the accommodation of artisans and workpeople constantly employed upon the estate, and for the married attendants and others. If placed on the asylum estate, most of these cottages should be placed near to the public roads, and not near the centre or distant parts of grounds, unless there be special reasons relating to aspect and altitude, &c., and the cottages should *not* be midway between the fever hospital and the asylum. The one or two cottages required by the farm labourers, &c., might conveniently be located near to the asylum farm-buildings.

(*To be continued.*)

KIRKSTALL ABBEY.

THE ruins of this Cistercian Abbey, at Leeds, are interesting fragments of the monastic splendour of the 12th century. The abbey was founded in 1147 by Henri de Laci, Baron of Pontefract. It was first established at Barnoldswick-in-Craven, but afterwards the Order removed to Kirkstall, and on the site of the present ruins erected a temporary church. The present church and claustral building were completed during the life of the first abbot, who died in the year 1182. At the general dissolution of monasteries, in the year 1540, the abbey was surrendered to the Crown, and the property subsequently became the property of the Earls of Cardigan. In 1888 the estate came to the hammer, and was nominally purchased by Colonel Wilson, of Leeds. Colonel J. T. North, who is a Leeds man, at once signified his determination to secure the ruins for his fellow-citizens, and the outcome of subsequent negotations was that the Abbey became the property of Colonel North for £10,000. In 1889 the estate was formally handed over to the Corporation of Leeds by Colonel North, who was presented with the freedom of the city. At this time the ruins were a dark and ivy-covered mass, picturesque, but rapidly crumbling to dust. Scarcely a strong wind blew but it carried away some piece of masonry, and it became absolutely necessary for the Corporation, in order to preserve the ruins, as well as in the interests of the safety of the public, to support the tottering walls. In 1890 the aid of Mr. J. T. Micklethwaite, F.S.A., of Westminster, was called in, and the work of repair and investigation began. The first step decided upon was the removal of the ivy, a proceeding which has given rise to a certain amount of adverse comment, and this work revealed a state of decay far more advanced than was supposed. The tower was in a very unstable condition, and a large buttress has had to be erected in the transept to support it. The end wall of the chapter-house had also to be rebuilt. In the Abbey grounds great improvements have been effected. About 5ft. of earth has been excavated all round the abbey, exposing to view the mouldings round its base. The earth thus excavated has been used for the making of an embankment along the river-side, which has been planted with willow. A 36ft. carriage drive has been made round the abbey, and numerous gravel-covered footpaths are now in the process of construction. Here and there are flower beds, which as yet are not planted. In laying out and extending the grounds about £5,000 has been expended, whilst the work of preserving the ruins has cost between £7,000 and £8,000. The formal reopening of the Abbey, after the work of renovation, took place on Saturday.

WHY THE MORECAMBE LANDING-STAGE FELL.

SOME remarkable evidence was given on Thursday in last week at the adjourned inquiry into the deaths of the three persons who lost their lives in the pier disaster at Morecambe. Emilus Hill, the manager, said the pier was surveyed in December last, at his request, by Mr. Thomas P. Worthington, of Blackpool, who sent his report to the directors; but it was not acted upon in any way by the board. The directors then had their doubts as to the condition of the pier; but, notwithstanding this, persons were permitted to use the landing-stage, which was considered quite safe. Thomas Parkinson Worthington, architect and engineer, said he examined the pier in November last, in accordance with instructions from the last witness, and sent a written report and detailed plans on the 14th February of this year. He recommended various repairs, improvements, and alterations, including a new system of bracing, fresh landings, and the substitution of sound bolts for those corroded, but was not consulted about going on with the work. He had examined the pier that morning. The bolts at the end of the middle carrying-girders were corroded, and had lost so much strength as not to be equal to carrying the weight of the girders, the grates, and the people upon them. It was not safe at all. The general cause of this weakness and wearing of the bolts was the great oscillation of the pier, which he did not regard as stable. The pier itself was strong, but wanted bracing. He estimated the proportion of the weight upon the girder to be about 5¼ tons, with which weight it was bound to collapse. Witness was handed a bolt, which he said would at first weigh about 4lb.; but it now only weighed about 1½lb., as it had been reduced by corrosion. The fixings of the landing-stage above the one which gave way were nearly as bad. A "dog" had been used instead of a bolt, and in some places there were only four bolts instead of eight. There were several places where the bolts had dropped out, and hundreds wanted renewing. By the Coroner: Bolts less than an inch in size should be examined every six, eight, or ten years. Seeing that the pier had been erected twenty-six years, every bolt should have been examined two or three times. The structure had gone far too long without examination. Mr. Hill (recalled) said the landing-stage was added in 1872. Witness (continuing) said when the weather was rough the pier-head was insecure, and not safe for people to go upon. The gratings might fall, and in doing so might strike against the cast-iron columns, which would at once break. The state of the fixings, added to the natural decay of the bolts and attachments, was the cause of the disaster. There was nothing whatever to show that the pier had originally been a railway bridge; but he saw sufficient to show that it was not strong enough for a proper railway bridge. He noticed that the girder was simply held by bolts, and was not socketed in a beam; that would materially weaken its carrying power. In his report, witness condemned the fixings and attachments, and advocated a new system of bracing and the erection of new landing-stages altogether. He had contemplated that the Pier Company would go on with the work at once, and had not expected that a fresh season would be allowed to pass without the structure being strengthened.—The Coroner read extracts from Mr. Worthington's report to the directors, in which he detailed the repairs required, and estimated the cost at £5,561 7s. 6d.—John Edward Gill, chief draughtsman for Messrs. Butler and Co., ironfounders, said he had examined the landing-stage, and had come to the conclusion that the cause of the collapse was the corrosion of the bolts produced. He had pointed out to the manager that some of the pillars were 12in. out of the vertical. He thought the method of construction was not a proper one.—The inquest was adjourned until Wednesday in next week, September 25th, when an official report will be presented to the Coroner by Lieut.-Col. Addison, R.E., who examined the structure on Monday on behalf of the Board of Trade.

THE A.A. BROWN BOOK.

IN anticipation of the forthcoming session of the Architectural Association, to be inaugurated on Friday, October 11th, by the presidential address of Mr. W. D. Caröe, the familiar "Brown Book," embracing a calendar, roll of membership, time tables of the studio and classes, and list of officers and meetings, has just been published by the A.A. Committee. The volume steadily increases in bulk, and now numbers 198 pages against 194 last year. A new and excellent feature is a tabulated list of the past presidents, hon. secretaries, and hon. treasurers of the Association. The first president, Professor Robert Kerr, who served in 1847-8, is still living, as are also two other well-known members of the profession who occupied the chair more than forty years ago, Mr. James Edmeston (1853-4) and Mr. Thomas M. Rickman (1854-5); Messrs. James K. Collings and John P. Seddon, the honorary secretaries of 1850-1, and their successors, Messrs. H. J. Braithwaite and Arthur Billing (1852-3), and Mr. Arthur Cates (1853-5), happily likewise are still with us, together with Mr. T. W. Goodman, joint secretary and treasurer forty years since—proofs of the youthfulness of the early officers of the body.

In their annual report, the committee state that 50 new members were elected and 7 were reinstated; the losses by death and resignation, however, amounted to 77, being a net decrease of 20. The total number of members is 1,111 (as compared with 1,131 in 1894, 1,129 in 1893, 1,125 in 1892, 1,138 in 1891, 1,129 in 1890, 1,094 in 1889, 1,052 in 1888, 993 in 1887, and 972 in 1886). A special sub-committee has been formed to take active steps to inquire into the working of the classes, and to suggest means to secure a larger attendance of students. The committee express regret that the courses of lectures on Professional Practice, Geology, Colour Decoration, and Heating and Ventilation were not held, owing to an insufficient number of students in these subjects. In accordance with what has now become an established custom, the lecturers and instructors met at the close of the session to discuss any alterations or suggestions which they thought it desirable to make with regard to the efficient working of the Educational Scheme. The question of premises has again received the earnest consideration of the committee, and the enlargement of the office and library will be completed by the opening of the new session. The attendance at the ordinary meetings has been well maintained, and larger than for many years past. Papers were read by Messrs. A. Beresford Pite, Keith D. Young, E. O. Sachs, C. G. Harper, John Slater, B.A., W. S. Weatherley, H. H. Statham, T. Stirling Lee, F. W. Pomeroy, J. W. Singer, E. C. Pinks, Henry Holloway, C. W. Whale, John Belcher, and Walter Crane. The library and register of assistants were well used. Summer visits were made during 1894 to the Houses of Parliament, Westminster Abbey, Oxford, Eton College, Kettering, Rushton Hall, and North Mymms Place and Church. The annual excursion was held in August, 1894, with the city of Wells as a centre. An increased attendance is reported at the spring visits, upwards of 100 members being frequently present. These were made to the Church House, Pavilion Music Hall, All Hallows, North St. Pancras; Brompton Oratory, St. Peter's, Ealing; the Building Trades Exhibition, and St. Olave's Grammar School. The common room which has been opened at 56, Great Marlborough-street, W., has been well patronised. The "A.A. Sketch Book" continues to prosper under the joint editorship of Messrs. W. G. B. Lewis and J. Begg, and its committee have received gratifying additions to the number of subscribers. A conference on the Technical Education of London Workmen was convened, and two meetings were held, at which there were present representatives of architects and builders, educational bodies, and trade unions. Sir Arthur W. Blomfield, A.R.A., was elected chairman, Mr. E. W. Mountford vice-chairman, and Mr. F. T. W. Goldsmith hon. sec. of the conference. The committee add: "The sittings of the conference have been temporarily suspended, owing to a difference of opinion having developed between the representatives of the trade unions and the National Free Labour Association." The annual balance sheet shows a total outlay of £1,671 18s. 6d., and an excess of expenditure over income of £247 15s. 9d., the balance carried forward being £612 7s. 2d.

OBITUARY.

The death is announced of Mr. Thomas Nicholson, F.R.I.B.A., of Hereford, the well-known ecclesiastical architect and surveyor, at the advanced age of 72 years. Mr. Nicholson was apprenticed to an architect in Portsmouth, but commenced practice on his own account in Hereford 50 years ago, when only 22. He was widely known for his church work, and had been diocesan surveyor and architect for Hereford since 1871. His works include one new church and three enlargements of churches in Hereford, the new churches of St. Michael, St. James, St. Thomas, and St. Helen, Swansea; and others at Aberystwith, Penrhiwceiber, Pembroke Dock, and Sauntry, near Dublin; the markets and public buildings at Presteign; a corn exchange, market, and reading-room at Ross; farmers' club, assembly rooms, hotel, and police-station at Knighton; and numerous schools and parsonages. He also restored Brockhampton Court at an outlay of £20,000, the Episcopal Palace at Hereford, and Goodrich Court. He had been a Fellow of the Royal Institute of British Architects since 1861. He is survived by his second wife and by three sons.

Mr. Henry G. Harrison, an architect once of considerable distinction in New York, died a short time ago at the age of eighty-two. Although, says the *American Architect*, he designed a considerable number of important buildings in New York, including the Woman's Hospital and the Manhattan Market, which was, at the time of its erection, one of the wonders of the town, he became particularly prominent through his connection with the magnificent schemes which the late A. T. Stewart attempted to carry out at Garden City, Long Island. Mr. Stewart had an idea that a great rural city, so to speak, could be established around a nucleus of fine public buildings, and he intrusted Mr. Harrison with the designing of the buildings. Of these, the principal was to be a cathedral, and the cathedral was really built and dedicated, but, of the other intended structures for public use, none was carried out, except certain school buildings. The cathedral, however, was, and still remains, a fine and costly structure, which will perpetuate, as it was intended to do, the memory of its founder, and also that of its architect.

CHIPS.

Earl Rosebery will visit Scarborough on Friday, October 18th, to open the new Liberal club-house, erected at a cost of over £15,000.

The ceremony of laying the foundation-stone of the new St. John's Roman Catholic Church at Bridgnorth took place on Thursday in last week. Dr. Carroll, Bishop of Shrewsbury, officiated.

A new private school at Bodmin, known as Hartleigh House, was opened on Tuesday. It has been built from plans by Mr. W. J. P. Jenkins, the contractors being Messrs. Grose and Brown and Son, all of Bodmin.

The monthly report of the Labour Department states that: "The building trades continue well employed, and the percentage of unemployed members of unions making returns has fallen from 2·4 in July to 1·8 in August, compared with 3·4 in August, 1894. The furnishing and wood-working trades have improved to some extent, the percentage of unemployed union members having fallen from 3·0 in July to 2·7 in August, compared with 4·8 in August, 1894."

The town council of Morpeth have, under notice from the Northumberland County Council, instructed Mr. D. Balfour, of Newcastle-on-Tyne, to prepare report, plans, and estimate for complete sewage disposal works for the town, so as to prevent the pollution of the river Wansbeck, to meet the requirements of the Local Government Board, and to secure its sanction for a 30 years' loan.

Old King-street Baptist chapel, Bristol, was reopened on Sunday, after extensive alterations, carried out from designs by Mr. H. J. Jones, M.S.A., Bridge-street, Bristol. The works include the removal of the organ from the front of the building to a specially constructed chamber behind the pulpit, the remodelling of the instrument (carried out by Messrs. Voules and Sons), and supply of a new case, redecoration, the reconstruction of the glazing and ventilation, and the addition of classrooms and vestries at the rear of the chapel. The entire outlay has been £2,500, and Mr. G. H. Wilkins, Thomas-street, Bristol, was the contractor.

The new business house erected on the Embankment for Mr. J. J. Astor is approaching completion. It is Free Renaissance in style, and is faced with Bath stone, the internal fittings being of oak. Mr. J. L. Pearson, R.A., is the architect, and Mr. John Thompson, of Peterborough, the builder.

At the monthly meeting of the Morecambe District Council, it was resolved to apply to the Local Government Board for sanction to borrow money for the erection of a new promenade bay and conveniences thereon at the West End, between the new pier in course of construction and the Battery Inn; and that the Marine-road be widened 15ft. and the promenade 9ft. between those two points, both additions to be taken from the existing green.

The church of St. Thomas, at Northaw, Herts, has recently received further interior decorations. On the east wall of the north transept over the vestry door has been placed a fresco painting of our Lord giving His last charge to His disciples. The transept walls have the sacred monogram, and that of St. Thomas of Canterbury, surmounted by a mitre, placed alternately on a grey ground. On the north and south walls of the nave a dark red dado has been added. Over this, up to the level of the top of the windows, there is a conventional pattern of pomegranates. On the walls of the north and south transepts a conventional border has been carried round the arches, and the spaces above covered with grape vines, while the arches and caps have been picked out with gold. The decorations have been executed by Messrs. Heaton, Butler, and Bayne, of Garrick-street, London. There has been added a third stained-glass window on the north side of the nave, of the same style and character as those placed there in the early part of the year, and also executed by Messrs. Heaton, Butler, and Bayne. The subject is the Parable of the Talents.

Engineering Notes.

Liverpool and Leeds Canal.—About five years ago the directors of the Canal Company submitted a proposition to expend over £500,000 in extending the reservoir accommodation, in building retaining walls, in deepening and widening the bed of the canal, and increasing the warehouse accommodation and working plant. The scheme obtained the consent of the shareholders, and in 1891 Parliamentary powers were obtained to raise £400,000 of debentures and £275,000 of additional capital. Soon afterwards the works were commenced, under the direction of the engineer, Mr. R. H. White, and at present the company has expended £150,000 on extending the reservoir accommodation, which now amounts to 1,200 millions of gallons, about £110,000 on improvement works, £43,000 on warehouses and other buildings, and £13,000 on working plant. Already the retaining walls have been carried nearly the whole length from Liverpool to Burscough Bridge, a distance of 24 miles, on the towpath side, and for a considerable distance also on the other side of the canal. The formal inspection of this section took place on Saturday. Dredging operations have also been in progress in the Halsall and Lydiate district for 11 miles, the result being that the sectional water surface has been increased from 149 to 220sq.ft., or an increase of about 50 per cent. The work is now proceeding at the rate of about 10 miles per annum. The full effect of the improvements will be that whereas two barges going in contrary directions could only just pass each other, there will now be plenty of space for three; the training walls doing away with the inevitable shallowness of the canal towards each of its banks. The dredging apparatus has been specially designed by Messrs. Cockburn and Montgomery, of London, for continuous working without interference with the traffic. In connection with it is an apparatus for depositing the dredged material at any required distance at the rate of a ton per minute. The directors propose to overhaul and improve the whole of the 127 miles of their canal, and some improvements are already in progress in part of the Yorkshire section.

The New Lynton and Barnstaple Railway.—The first sod of the new Lynton and Barnstaple Railway was cut on Tuesday at Shamblehay, near Lynbridge, by Lady Newnes. The new railway will be of 2ft. gauge, and will start from the North Walk, Barnstaple, where a joint station with the London and South-Western Railway will be built. A quay will also be constructed at Barnstaple, at which shipping traffic will be transferred direct into the company's trucks. The line will follow the Valley of the Yeo, and the terminus is on the hill above Lynbridge and about a mile from Lynton. Considering the hilly nature of the country, the gradients are very easy, being in no case steeper than 1 in 50, but such gradients prevail for 60 per cent. of the line. The total length will be 19¼ miles. There will be five stations between Barnstaple and Lynton—namely, at Chelfham-bridge, Bratton, Blackmore-gate, Parracombe, and Martinhoe-cross. The cost of construction is estimated not to exceed £50,000, or £2,500 a mile, and it is expected that the line, which will contain no tunnels and no works o great magnitude, being almost altogether a surface line, will be ready for traffic by the summer of 1897. Sir James Szlumper, of Westminster, has acted as consulting engineer, and Mr. G. Smyth Richards, of Barnstaple, as surveyor and valuer.

The relics of Lord Nelson exhibited to the public in the Painted Hall of Greenwich Hospital, to which important additions were recently made, have been further augmented, also from Viscount Bridport's collection, by the presentation to the nation of a silver jug and cover on a tripod stand with lamp, formerly the property of Lord Nelson, and an oak box, silver mounted, in which the document was contained attesting that the freedom of the borough of Thetford was conferred on the Admiral in 1798.

The engines for the Snowdon Railway are not built by Messrs. Rinecker, Abt, and Co., as has been previously stated, but by the Swiss Locomotive Works Company, of Winterthur. The double bars forming the Abt rack rail are of rolled steel, the teeth being cut out of the solid bars by means of special machinery. The rack permanent way material is manufactured by Messrs. Cammell and Co., Ltd., of Sheffield, under the supervision of Messrs. Rinecker, Abt, and Co., the proprietors of the Abt system.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to The Strand Newspaper Company, Limited.

TERMS OF SUBSCRIPTION.

One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India, £1 6s. 0d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front-page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No Front-page or Paragraph Advertisement inserted for less than 5s.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page Advertisements and alterations in serial advertisements must reach the office by Tuesday morning to secure insertion.

Situations.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., LI., LIII., LIV., LVIII., LIX., LX., LXI., LXII., LXIII., LXIV., and LXV. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Received.—F. J. Holman.—C. W.—Inquirer.—C. M. W. —J. S. and Co.—F. G. (Batley).—E. Benson.

Correspondence.

HOW THEY DO IT IN THE WEST INDIES.

To the Editor of the Building News.

Sir,—The architectural all-round genius is not altogether unknown in the United Kingdom, but your readers may be interested to find that he also flourishes in our colonial possessions.

As an English architect now residing in the West Indies, I was astonished to come across the following gem among other advertisements relating to teas, fancy goods, &c., at the back of a book having a fair circulation in these islands, entitled "About Barbados." The professional at home is not in it with this suave child of the Tropics, whose announcement is appended in all its native purity :—

> JAMES MURPHY, engineer, architect, builder general contractor, painter, paper hanger, and house decorator. All materials guaranteed genuine. Workmanship of first quality. Plans, specifications, and estimates furnished on the shortest notice. All work intrusted to the above will be carried out with the utmost despatch, combined with good workmanship. Charges moderate and terms liberal. A staff of good workmen always at hand for general jobbing. Iron verandahs, rails, gates, crestings, finials, marble slabs, tomb rails, and parquet floors imported, or made from native woods. "Verona," Bank Hall-road, Barbados. Telephone No. 135.

And yet some individuals declare the public do not need protection, and that there is no necessity for registration and the compulsory examination of architects.—I am, &c.,

St. Lucia, Sept. 6. J. T. R.

* * *

The county council of Devonshire have appointed a committee to consider and report whether steps should be taken to acquire the Forest of Dartmoor so as to protect it from being used in any manner injurious to the general interests of the county.

Intercommunication.

QUESTIONS.

[11424.] — **Sub-Contracts.** — What are the usual conditions of payment to be made to a sub-contractor by the head contractor for the erection of a building, where no arrangements had been made relative thereto? Is the sub-contractor entitled to the same percentage of value of the work done by him as the head contractor, and at the same time? When the former has finished his sub-contract, is it customary to have to wait for the balance until the latter receives his final payment, or is it due by custom when his work is completed?—G. H.

[11425.]—**Moment of Inertia.**—I shall be obliged for a solution of the following question. What is the moment of inertia of a rectangular beam of uniform section, its depth being d, and its breadth b in inches? Give the expression for the moment of resistance at any section of the same beam, when the extreme stress of the fibres is S tons on the inch.—X.

[11426.]—**Met. Act.—Public Buildings.**—Can anyone inform me if there is any treatise, pamphlet, or code relating to the construction of schools in the City, which gives, at least, a general idea of what is expected by a district surveyor?—J. D.

[11427.]—**Concrete Floor.**—I have some warehouse fireproof flooring to lay, of an average span of 9ft. I propose to lay 2in. by 2in. T-irons, 12in. apart, and fill in with 4in. of concrete. Can any of your readers inform me whether this would be strong enough for the purpose? —No Confidence.

[11428.]—**Circular Houses.**—Standing at either end of the Cornish village of Burryan are two stone-built circular houses with thatched roofs, surmounted in each case, if I remember rightly, by a tall wooden cross. There are five or six of these curious old dwellings in the valley, but during my stay I was unable to obtain any particulars as to their origin and history. The guide-book does not name them, though they are so curious, and I should be much interested if some fellow-reader could supply the information.—Layman.

[11429.]—**Waterworks.**—Will some reader kindly give the names of one or two of the best books on the construction of waterworks for town supplies, especially treating on the construction of reservoirs, laying pipes, arrangement of intakes, fireplugs, valves, &c.?—Aqua.

[11430.]—**Estates.**—In laying out estates (to be leased to builders), preparing plans, supervising, &c., what are the usual fees to charge client and builder?—Stumping.

REPLIES.

[11412.] — **Varnished Wood Ceiling.** — As "G. B. D." states that the ceiling has been repeatedly varnished, it is probable that the stain has not reached the wood. If so, thoroughly scour with stale beer, and immediately after wash with soft water and a little soap, just sufficient to give a slight lather. Wash again with soft water, and rub dry with a chamois leather. This would restore the colour, and the wood could be varnished, as it was in the original instance. If, however, the woodwork is stained, it would be best to give it a coat or two of paint, and then varnish.—A. S.

[11417.]—**Models.**—I think "J. G. O." will find the information he requires in "Architectural Modelling," by Richardson, No. 127 of Weale's series, published by Crosby Lockwood and Son.—A. S.

[11417.] — **Models.** — "J. G. O." should obtain "Richardson's Architectural Modelling in Paper," published at 1s. 6d. by Crosby Lockwood and Son, a very useful little treatise on the subject.—H. Busbridge.

[11417.]—**Models.**—"J. G. O." cannot do better than get a little treatise on "Architectural Modelling," by Richardson, published by Lockwood, Stationers' Hall-court, E.C.—G.

[11418.]—**Cool Roof.**—The best plan of keeping a slate roof cool in summer is to board and felt the roof. The felt can be fixed below the rafters if the roof is already constructed. If this cannot easily be done, I should recommend "W. J. J." to line the ceilings of attics with slag wool, as I presume the object sought is to render the rooms under the roof cool.—G. H. G.

[11418.]—**Cool Roof.**—"W. J. J." should line his roof with Jones and Co.'s silicate cotton, about ½in. to 1in. thick, placed between the rafters. This will exclude cold as well as heat. I believe the makers can supply this material in sheets, if desired.—M. Hurdis.

[11421.]—**Girder Calculations.**—"Sigma" will fine all the information he requires in "Strains on Structures," by Middleton, published by Batsford, 52, High Holborn; and "Strains in Ironwork," by Henry Adams, published by Spon, 125, Strand. He will also find Harrison's Clinograph, made by Harling, 47, Finsbury-pavement, E.C., of great service in setting-out diagrams of graphic statics.—A. S.

[11421.]—**Girder Calculations.**—There are many graphic methods of solving problems arising in the design of girders, and in many cases these are far preferable to calculations for practical purposes. The principles of the subject are very clearly explained in the excellent little work by Gray and Lowson on "Graphic Statics" (published by Collins at 3s. 6d.); but "Sigma" would do well to take some regular course of lessons on graphic statics if he wishes to master the subject. The slide-rule is also of great assistance in abbreviating the tedious arithmetical calculations required in designing girders.—H. Busbridge.

[11421.]—**Girder Calculations.**—Timmin's "Girder Calculator" is a very ingenious and useful method for calculating strength, also of giving rules as to riveting. The instrument was lately noticed in the Building News. —G. H. G.

[11422.]—**Eastbourne.**—Several old and interesting typical churches may be seen in this neighbourhood. One of the chief is the fine old parish church of St. Mary the Virgin, in the Old Town, about a mile and a half from the sea. It is of general 15th-century design, though there are some very interesting Norman or Transitional Early English arches in the long chancel. There is a noble nave with massive timber roof, and a grand tower the whole width of nave, with very boldly projecting angle buttresses on the west side. There are eight bells. Several fine painted windows are to be seen. Willingdon, three miles to the north of Eastbourne, has an interesting old church of flint and Eastbourne rock, dating from the 13th century. It is plain externally, having a tower with low shingle broach spire of the Sussex type. Internally the principal features are the ancient timber roof (open) of rough-hewn tie-beams and centre-posts carrying curved struts. The arcade is of plain 16th-century character. The old wooden screens in north aisle and chancel are of very rich Decorated tracery, well worth study, and there are some fine Elizabethan monuments in the north aisle, and a few interesting painted-glass windows. Wilmington, seven miles north-west, has a very interesting church. Hailsham, seven miles, has a fine old church of Transitional Early English character, having an embattled tower of later date. At Eastdean, Folkington, Heathfield, Hellingly, Jevington, Sullington, all places within easy reach, there are churches of interest. The latter is said to be the smallest in England, 16ft. square, the chancel of a much larger church. Of modern buildings of this class the most noteworthy is the late Mr. Street's spacious church of St. Saviour at Eastbourne in red brick and stone, which has a wide nave.—G. H. G.

CHIPS.

The Bishop of Truro hopes to build a mission chapel as soon as possible on Par-green, not far from his residence, where a suitable site has been given by Mr. Bassett. Mr. E. Sedding, of Plymouth, is to design the building.

The memorial-stone of new Roman Catholic schools, in connection with St. Robert's Church, Harrogate, was laid on Tuesday. The schools are to be erected from designs by Mr. E. Goldie, architect, of Kensington, and are to cost upwards of £3,000. They are to be built of red brick with stone dressings, to match the church, and are to accommodate 318 children.

The restoration of the Black Prince's Chantry of Canterbury Cathedral, in which the descendants of the French Huguenots living in the city are in future to worship, has revealed the remarkable delicacy of the sculptured bosses which were such an interesting feature of the architecture of the period to which the chantry belongs. The restoration will soon be complete.

The Speaker of the House of Commons opened on Wednesday week a garden *fête*, held in behalf of the fund for the improvement of Upperby Church. The church was built in 1840, and plans were made a few months ago by Mr. Ferguson, of Carlisle, for extension and improvement, and a portion of this is now being carried out. Of the £700 wanted, about £560 has already been subscribed.

The corporation of Rochester, who have the custody of the Norman castle in that city, have recently repaired the north-western turret of the keep with fresh masonry, and now propose to similarly renovate that at the south-western angle.

The bells of St. Michael's Church, Coventry, which ten years ago were taken out of the belfry during the restoration of the spire, are this week being replaced. The bells are not to be rung, for fear of damaging the fabric, but will be chimed. The peal contains ten bells, incorporating the original metal of the six bells known to have been in the tower as early as 1429. The original six bells were recast in 1674 into eight bells; these were recast in 1774, and two more bells added, making the present peal. The bells will be first chimed on Sunday week, St. Michael's Day.

The new tramway between Perth and Scone, extending to over three miles, was formally opened on Tuesday.

The peal of bells at North Petherton, which has been recast by Messrs. Mears and Stainbank, was dedicated on Tuesday.

Designs for an infectious diseases hospital at Paignton have been prepared by Mr. J. Stansfield-Brun, C.E., F.R.I.B.A., surveyor to the urban district council, and submitted to the Local Government Board, who have requested the council to send a deputation, with its surveyor and medical officer of health, to London to confer with the Government officials on the subject.

A new public hall is being erected at Devons-road, Bromley, and special consideration has been given to the ventilation, which will be effected on the Boyle system, the latest improved form of the patent self-acting air-pump ventilator being adopted for the extraction of the vitiated air.

Owing to the estimated cost of the new grammar school for Paisley exceeding by over £10,000 the bequest of £15,000 by the late Mr. Barbour, M.P., the Burgh School Board have considered the question of a modified scheme. A motion was submitted to the effect that a revised version of the accepted plan be prepared showing a school for 600 pupils, to cost £16,000, exclusive of site; and it was carried, against an amendment to modify the present plans to save £3,000.

Legal.

WHAT IS A NEW BUILDING?

THE London Building Act 1894, section 5 (6) defines a "new building" as "any building which has been taken down for more than one-half of its cubical extent and re-erected, or commenced to be re-erected wholly or partially on the same site after the commencement of the Act." To such new buildings the more stringent regulations of the Statute of 1894 would apply. In the recent case of "Crow v. Redhouse" (*Times*, 31 July), the meaning of this clause had to be considered. The facts were, that there had been a fire at 3, Church-street, Whitechapel, in consequence of which the structure had been taken down almost entirely, some two-thirds of the old party-wall, with the adjoining house, only remaining. The district surveyor having been served with a notice from the owner that he was about to rebuild this place as a six-storied warehouse, objected that the old party-wall was not thick enough, according to the new regulations. He, in short, contended that this was a new building altogether, and so that the wall must be strengthened.

On the other hand, the owner argued that his case came within section 208 of the Act of 1894, which deals with fires and walls, and expressly provides that "where a party-wall or an external wall not in conformity with this Act has been taken down, burnt, or destroyed to the extent of one-half thereof (measured in superficial feet), every remaining portion of the old wall not in conformity with this Act shall be taken down before the rebuilding thereof." The magistrate supported the view taken by the owner, and held that he could not be compelled to take down, rebuild, or thicken his old party-wall, because as only one-third of it had been removed in consequence of the fire, it did not come within section 208. In the Divisional Court the two judges were divided in opinion; but now in the Court of Appeal the Master of the Rolls and Lords Justices Kay and A. L. Smith have confirmed the decision of the magistrate. They did so on the ground that they could not find any section in the Act of 1894 which enabled the surveyor to deal with this wall, and that the clause defining a "new building" was not an enacting clause, and so could not cover this case of a wall by including it in the building more than half of which had been removed. So this very fine point was decided in favour of the owner and against the district surveyor.

FRED. WETHERFIELD, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

NOTE.—All questions for reply in this column must be headed "BUILDING NEWS," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

SIGMA.—BRIDGE.—PARISH.—REBUILDING.—This may probably have to be done at the expense of the county if it is part of the highway. It would be better to consult the county council of the district, or write to the Local Government Board.

◆

The effort to build a memorial Congregational Church at Gainsborough to John Robinson, the Pilgrim Father preacher, is making progress. American Congregationalists have given the project support, and £3,309 has been raised towards the building fund, the outlay being estimated at £6,000. In the spring of next year the Hon. T. F. Bayard, the American Ambassador, will lay the corner stone of the memorial church.

Mr. Leeson, the architect for the restoration of the steeple and lantern of St. Nicholas' Cathedral, Newcastle, reported to the Newcastle Finance Committee, on Friday, that scaffolding was now erected up to the spire of the cathedral, and he asked for instructions to proceed with the proposed repairs. It was unanimously agreed that the work be intrusted to Mr. Walter Scott, contractor, of Newcastle, and that it should be begun forthwith.

On the invitation of the River Wear Commissioners, the ceremony of laying one of the large blocks in connection with the new south protecting piers was performed on Thursday, the 12th inst., by Rear-Admiral Arthur H. Alington. Mr. James Laing, the chairman of the commission, explained that, when finished, the new north pier and the new south protecting pier will be about 500 yards apart at their extremities. The north pier will overlap the south, so that during northern gales the south end will be protected from the sea. The works are being carried out from plans prepared by, and under the supervision of, Mr. H. H. Wake, the commissioners' engineer.

LEGAL INTELLIGENCE.

BUILDER AND CLIENT IN CONFLICT.—At the Poole Police-court, on Sept. 12, Henry Nelson Jenkins, builder and town councillor, of Bournemouth, was summoned by Lieut.-Col. Charles Mercier, of Canford Cliffs, for assaulting and beating him on Aug. 31. There was also a cross-summons, in which Col. Mercier, Gertrude Mercier, and George Lambert Clear were charged by Henry Nelson Jenkins with having, on the same date, unlawfully assaulted him. The colonel's case was that in August, 1894, he invited tenders for the construction of a marine residence at Canford Cliffs. Messrs. Jenkins and Son, of which firm defendant was one of the partners, entered into a contract to build the house for the sum of between £4,000 and £5,000. From the first the relations between the complainant, the architect, and the builders were unhappy, and the matters were referred to arbitration. On Aug. 28, Mr. Fogerty, the architect, caused a notice to be delivered to Messrs. Jenkins and Sons to the effect that unless his instructions were carried out in all matters, clause 14 of the contract would be enforced, the contract determined, and the premises taken possession of. On August 31 Colonel Mercier took possession of the premises, and during a struggle defendant was alleged to have struck him in the face. John Frederick Fogerty, of St. Peter's-terrace, Bournemouth, the architect, and Messrs. Jenkins and Sons, on the other part, deposed that on August 30 he visited the works and found the workmen covering over some joists which he had directed the contractor to remove. He essayed to get the joists removed, but this was prevented forcibly by the workmen. On August 31 he again visited the premises with policemen and ejected the contractors' workmen. For the defence it was urged that Jenkins only struck back after the colonel had punched him in an endeavour to push him over the gate. Evidence having been given for the defence by Mr. Tom Stevens, architect, of Bournemouth, and by Benjamin Painter, a foreman in the employ of the defendant, the Bench retired. The Bench considered the offence proved, but that it was committed under great provocation, and a fine of 20s. was imposed. The cross-summons was then withdrawn by leave.

AN ACQUITTAL.—Samuel Page, a ganger, Charles Smith, James Sindle, John Rottenbury, Edwin George Rottenbury, described as carmen, and Edmund Rottenbury, forty-eight, contractor, were indicted at the London County Sessions on Saturday for stealing a quantity of gravel, valued at 30s., the property of the Camberwell Vestry. The gravel was taken from Alleyne Park, and was afterwards discovered in Rottenbury's yard. For the defence, it was contended that the prisoners thought they had authority from a man named Sawyer to remove the sand, but they misunderstood his instructions. The jury found the prisoners not guilty, and they were thereupon discharged.

MORTAR AND "MORTAR."—Mr. A. Geard, builder, of Archway-road, answered, on Tuesday, to an adjourned summons, taken out by Mr. Wm. Smallpeice, district surveyor for East Hampstead, for, in the erection of two houses at 108 and 110, Fleet-road, Hampstead, using mortar not made in accordance with the by-laws of the London County Council. The evidence for the prosecution was that the mortar used by the defendant was found by the council's analyst to be deficient in lime. For the defence it was contended that the article used contained properties which rendered it perfectly sound. Mr. Plowden said the only question was, whether the defendant had complied with the regulations. The mortar used might be excellent, but it was not the mortar which the County Council required to be used, and this had been clearly proved. He imposed a fine of 40s., and granted £2 2s. costs.

◆

The new infectious hospital, Burton-on-Trent, is being warmed and ventilated throughout by means of Shorland's patent double-fronted Manchester stoves with descending smoke-flues and Manchester grates, the same being supplied by Messrs. E. H. Shorland and Brother, of Manchester.

There has just been erected by public subscription in the interior of New Porthill School, Gallowgate, Aberdeen, a mural tablet of Gothic design, to commemorate the late Dr. Reith's services in that poor and populous district. The memorial is in grey and red granites, and was designed and executed by Mr. Arthur Taylor, sculptor, Aberdeen.

Major General Carey, R.E., Local Government Board inspector, attended at the Town-hall, Dudley, on Friday, to inquire into the application of the Town Council for sanction to borrow £2,510 for street improvement purposes. The loan asked for was to complete the schedule of streets prepared in 1887. The following loans had been obtained for the same purpose:—£1,500 in 1888, £1,500 in 1889, £1,500 in 1891, £1,850 in 1893, and £530 in the present year. The borough surveyor said there were 26 streets to be paved.

STATUES, MEMORIALS, &c.

CARLISLE.—The memorial of the late Dr. Harvey Goodwin, Bishop of Carlisle, erected by subscription, was unveiled on Tuesday in Carlisle Cathedral by the Archbishop of York. The memorial consists of a bronze recumbent statue by Mr. Hamo Thornycroft, R.A., exhibited in this year's Royal Academy, surmounted by a carved oak canopy, designed by Mr. Alfred Waterhouse, R.A. The figure of the late bishop is shown reclining at full length, dressed in episcopal robes, his head resting upon a pillow, round which cherubs are grouped, and with his feet planted against a rock, near to which stands his mitre. The hands are joined together upon the breast in the conventional attitude. The following appears on the central panel at the back of the canopy:—"In memory of Harvey Goodwin, fifty-eighth Bishop of Carlisle; at Cambridge, at Ely, and in this diocese, a proved leader of men; learned, eloquent, wise, untiring, he used his rare gifts of mind and heart in the service of his Master for the good of the English people, and of the Church of Christ at home and abroad. Born October 9, 1818; consecrated November 30, 1869; died November 25, 1891." The memorial stands in a bay in the south aisle of the cathedral, adjoining a marble recumbent effigy of the late Dean Close.

◆

CHIPS.

The School Board for West Hartlepool have adopted plans by Mr. E. Percy Hinde, of Liverpool, for the Brougham school. The building will accommodate 1,375 children, and the caretaker's house will be built on a portion of the site, which has frontages to Brougham-terrace and Wharton-terrace, West Hartlepool.

The Congregational Church at Pokesdown, near Bournemouth, was reopened on Wednesday week, after renovation and enlargement. The accommodation has been increased from 200 to 440 sittings. Messrs. Lawson and Donkin, of Bournemouth, were the architects, and the builder was Mr. F. Elcock.

Special services were held at the church of St. Lawrence, Lawrence Hill, Bristol, on Sunday, in celebration of the tenth anniversary of consecration, and at the same time the opening of a new organ. The instrument is a two-manual organ, and has been built by Mr. W. G. Vowles, of Bristol, at a cost of between £200 and £300.

The Great Western Railway Company are making arrangements for materially accelerating the passenger service between Paddington and the West of England and South Wales by picking up water as the trains proceed, on the system long since adopted by the North-Western Railway Company. For this purpose tanks are being fixed which will be supplied from a deep well near the river Thames at the Grotto Bridge, between Pangbourne and Goring Stations. These tanks will supply troughs which are being sunk on both the up and down lines, and from which the engines will pick up their water while running. The works between Pangbourne and Goring, upon which a large number of men are employed, are in a forward state.

On the new line of the Great Northern Company, in Nottinghamshire, the bridges are to be of stone with steel girder tops. This is with a view of enabling these bridges to be lifted should the ground give way through being hollowed out underneath by coal workers. This new line, by the way, although only some six miles long, is expected to cost between £30,000 and £40,000 per mile.

The members of the Scottish Plumbers' Congress and their friends, to the number of about a hundred in all, had an excursion from Dumfries on Friday to Wanlockhead and Leadhills, in order to visit the lead mines. Proceeding to Thornhill by rail, they had thence a circular drive which took in the Mennock, Elvan, and Dalveen passes. The conference was resumed in Dumfries in the evening, when the chief topic of discussion was, "Should soil and waste pipes be placed outside or inside the walls of a building?" It was resolved to hold next year's congress at Edinburgh.

The Manchester board of guardians decided on Friday to proceed with the erection of additional rooms for nurses at an estimated cost of £4,430.

The employment of electricity for street lighting at Folkestone has again been deferred by the corporation of that borough, after a long discussion as to the relative merits of the schemes formulated by Mr. Parker and Mr. F. H. Smedhurst. The former would involve an anticipated expenditure of £35,000, and the latter was estimated to cost £13,000.

The day schools adjoining the Convent of the Cross in Parkwood-road, Pokesdown, are being enlarged, the enlargement being so extensive as to almost double the size of the schools. The work is being carried out by Mr. W. Hoare, of Bournemouth, who built the existing schools.

Our Office Table.

At the last meeting of the Sheffield Town Council a long and irregular debate took place on the cost of the new Town Hall, now in course of erection from Mr. E. W. Mountford's designs, arising out of a resolution of the Improvement Committee to accept tenders for fittings and furniture, amounting to a sum of over £17,000. Alderman Batty Langley, M.P., the chairman of the committee, read a general statement, showing as nearly as he could fix it the actual cost of the Town Hall when completed and in habitable condition. The contract for the building was £83,945, and with extras already sanctioned, together with the architect's commission and other similar items, it came up to £104,357. The fittings and furniture now brought up amounted to £17,721, and there would be further expenditure in the shape of electric light fittings, cooking apparatus, blinds, carpets, and the like, amounting to £8,550, which included £2,000 for possible contingencies. This brought up the expenditure to £130,628, and adding £49,000 as cost of site, the total expenditure came to £179,600. These figures startled councillors, some of whom declared that at the outset the figure of £80,000 was stipulated as the outside cost. It was stated in answer to questions that the architect would not be paid by commission on the cost of the fittings, but an agreed upon definite sum of £250, whether the outlay were great or small. One or two of the members still thought the proposed cost on too high a scale. Alderman Langley declared that if further delay took place, by referring the tenders back to the committee, it would be impossible to say when the Town Hall would be opened. As it was, he failed to see how the opening could take place before July or August next year. The amendment to send the tenders back was eventually defeated.

It would have been thought to be comparatively easy to settle definitely who was the architect of the Georgian-Renaissance screen of columns and entablature which forms so effective a mask to the Whitehall front of the old Admiralty Buildings; but a newspaper controversy has arisen as to whether this should be credited to Robert Adam or Thomas Papworth. A writer in the *Standard* of Thursday last casually referred to the screen as the work of "Adams." A day or two later "Grandson of Thomas Papworth" asserted that "Adams" was not responsible for it; but that it was designed and executed by John Papworth, adding that the designer's son (? the late Wyatt Papworth, F.R.I.B.A.) used to declare that the work was never paid for. A correction to this correction has been promptly proffered by Mr. Percy Fitzgerald, who states that the screen is by the Brothers Adam, pointing out that the design, which has been mutilated in late years, with a description, is given in the great Atlas folio of this work. Mr. Fitzgerald adds: "There was originally but one opening—that in the centre. Two others have since been broken to the right and left, thus destroying its significance as a screen. Adam—not Adams, as he is so often called—also designed various ornaments (statues and the like), which have never been supplied. When it was a real screen it was justly admired for its elegance. In its perforated state it is unmeaning and incoherent." The "grandson" has returned to the charge, stating that the son-in-law of Thomas Papworth, a solicitor named Van Sandau, applied to the Admiralty authorities for the remuneration due to Papworth, then deceased, but was refused; not on the ground that he was not the architect, but merely because a fresh Government had come into power.

An unusual change of relationship to a board of guardians—the descent from vice-chairman's seat to the sanitary inspectorship—is reported from Truro. At the last meeting of the poor-law guardians of that city, Mr. James Retallack, who has for nearly twelve years been a member of the board, and of late years the vice-chairman, resigned his seat, and was thereupon elected from among four candidates inspector of nuisances. The salary offered was £100 a-year.

The town council of Aberdeen discussed, on Monday, a proposal to lay tar macadam on a number of suburban roads and secondary streets of the city. The recommendations came from the streets and roads committee, a deputation from which recently visited various towns in England for the purpose of inquiring as to the suitability of the material for roadways. A deputation from the trades council was heard against the proposal, which was also severely criticised by several town councillors. The main objections to the proposal were that granite paving in the end would be much cheaper than tar macadam, and that the introduction of the new material would in all likelihood damage the trade in granite for paving setts and ordinary macadam, which was of considerable importance to Aberdeen. The recommendation to adopt tar macadam was defeated by fourteen votes to nine.

The waterproofing of brick and sandstone with oils formed the subject of a paper recently read before the Australian Association for the Advancement of Science by Professor Liversidge. Experiments were made with the view of ascertaining the length of time that brick and sandstone are rendered waterproof or protected by oil. The oils used were the three most readily obtainable for such purposes—viz., linseed oil, boiled linseed, and the crude mineral oil known as "blue oil," used for preserving timber. The weatherings were made upon a flat portion of the laboratory roof, fairly exposed to the sun and weather. Good, sound, machine-made bricks were experimented on. The amount of oil and water taken up by the sandstone was very much less than that absorbed by the brick, although the area of the sandstone cubes was much greater than that exposed by the bricks. Equal amounts of raw and boiled oils were absorbed; the blue oil, however, was taken up in much greater quantity by both brick and sandstone, but by the end of 12 months the whole of the 13¼oz. of blue oil had apparently evaporated away, and the brick had returned to its original weight. The bricks treated with raw and boiled oils remained unchanged. After the second oiling in November, 1890, and exposure for nearly four years and two months, they had practically retained all their oil, inasmuch as they had not lost weight, and were also nearly impervious to water. The sandstone cubes treated with raw and boiled oils returned to their original weights, but do not appear to have lost the beneficial effects of the oils, being also practically waterproof.

Messrs. Messenger and Co., the well-known horticultural builders and heating engineers, have this week removed their business operations to extensive new premises recently erected by them in connection with their foundry close to the station of the L. and N.W.Ry. at Loughborough. The new buildings occupy a site two acres in extent, and comprise spacious shops for joiners and fitters, erecting shop for horticultural buildings, show-room, timber sheds, offices, &c. The constant expansion of the firm's business for several years past has gradually outgrown the limited accommodation of the premises in which it was founded some thirty years ago, and the additional facilities derived from such commodious new buildings will no doubt give renewed impetus to the development of their old-established and high-class trade.

An electric-light installation will be provided for Ayr at the end of October, when it will largely supersede gas as an illuminant. Under Mr. Hammond and his assistant, Mr. E. G. Pink, who was last week appointed burgh electrical engineer, the work has been proceeding during the last twelve months. The generating works occupy a central station on the south bank of the river Ayr, about 100 yards below the railway bridge, which is within the tidal influence. Part of the buildings abut on the river, from which they are protected by a concrete wall, and access is had by Mill-street. The range of buildings are of the usual character, including power-house, boiler-house, and offices. The power is supplied by two boilers, 28ft. by 7ft., working a pressure of 125lb. when condensing and 140lb. when non-condensing, and capable of each supplying 200H.P. The system upon which the installation is based is the high-tension alternating. To generate the current there are four sets of engines in the power-house. The two principal engines each drives a 100 kilowatt alternator, by Siemens and Co., Woolwich. The principal machines are capable of supplying light to the amount of 6,600 eight-candle lamps, and a 50H.P. machine 850 eight-candle lamps. The total amount of light, measured in candle-power, is thus nearly 70,000 candles. The plant may yet be used to work a tramway between Burns Monument and Prestwick through Ayr, a distance of about six miles.

According to the latest survey, the cost of constructing the Nicaragua Canal will be ten millions sterling, and the time required for construction six years. The summit level of the canal will be 110ft. above mean sea-level, and will be reached at each extremity by three locks, each 650ft. long and 65ft. wide. An artificial lake and repairing basin for ships in transit will be created by means of a dam across the San Juan River, and an embankment across San Carlos, near their junction; and from the last lock to Greytown on the east and Brito on the west the canal will be enlarged, thus forming an extension of the harbours where vessels can pass each other without detention. The length from Greytown to Brito is 169 miles. The most serious engineering difficulties will be in the great divide cut across the San Francisco range through a three-mile stretch of rock with an average depth of 120ft., and the restoration of the Greytown Harbour, long ago destroyed by the deposit of silt from the San Juan. The International Company was incorporated in San Francisco in May, 1893, to aid in the construction of the canal from Brito to Lake Nicaragua—the Pacific end of it.

Mr. R. B. Eastman, a Brooklyn architect, recently brought a suit in the American Courts, against King's County, to recover some eighteen thousand dollars, as compensation for services rendered in the preparation of designs for a group of buildings, asylums and similar structures, at the request of the Board of Charities. After the plans were made, the cost of carrying them out was found to be so great that the idea was abandoned, and the architect's services seem to have been forgotten. Mr. Eastman asked several times for payment, but was repulsed. Four years after he had done the work, he commenced suit against the county for compensation, claiming 2½ per cent. on the estimated cost of carrying the plans into execution. As he had still in his possession a letter from the Chairman of the Board requesting him to make the designs, and another letter from the same person acknowledging the receipt of the drawings, there could be no doubt of his employment; and Justice Cullen, before whom the case was heard, decided that his claim was just and reasonable in every particular, and directed him to present the bill for payment to the Board of Supervisors. If they should refuse to pay it, the judge told Mr. Eastman to apply for a writ of mandamus to compel payment. The counsel for the Supervisors, however, advised them not to resist payment; and the bill was accordingly accepted, audited and paid, with interest.

The tar obtained in the manufacture of oil-gas is, says a German contemporary, subjected to fractional distillation up to the temperature of 250° C., when about 11·35 per cent. will have distilled over. The remaining 88·65 per cent. forms a glossy black mass, having the consistency of honey, and a specific gravity greater than that of water. It is dissolved by the aid of heat in about half its weight of volatile hydrocarbons, such as benzine and the like, and a paint for coating ironwork is thus obtained which dries very rapidly, adheres well, and does not crack or fall off. It will penetrate through iron rust and prevent further oxidation of the iron. Manganese or lead driers may be added if desired.

The annual convention of the American Institute of Architects is to be held in St. Louis, Mo., on the 15th, 16th, and 17th of October.

The Admiralty have decided to build a new block of twelve coastguard houses at Sandgate. The existing buildings suffered seriously in the landslip there.

The opening of the new Roman Catholic church at New Hartley was solemnised on Tuesday by Dr. Wilkinson, Lord Bishop of Hexham and Newcastle. The church which is dedicated to "Our Lady and St. Wilfred," is constructed of white bricks with stone dressings; it is 80ft. in length, 25ft. in breadth, and contains sitting accommodation for 300 persons. Its estimated cost is £1,300 exclusive of fittings. Mr. C. E. McCann is the architect. It is situated in close proximity to the Hartley shaft, where the lamentable catastrophe occurred in 1862.

The memorial-stone of a new church dedicated to St. George was laid on Tuesday at Cwmparc, Rhondda Valley, by the Bishop of Llandaff. The cost of the edifice, which is estimated at £4,000, is defrayed by Mrs. Llewellyn, of Baglan, near Neath, who three years ago built, at her own expense, St. Peter's Church at Pentre, Rhondda, the edifice and organ costing £25,000. Two other large churches are being built at her expense in the Welsh coal-mining districts.

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXIX.—No. 2125.

FRIDAY, SEPTEMBER 27, 1895.

ELEVATIONS OR PERSPECTIVES AT THE R.A.?

At a time of year when those of us who have any works important enough to exhibit are thinking about making drawings of them for the next Academy exhibition, Mr. Chisholm's paper in the Institute Journal of last week comes opportunely. Mr. Chisholm thinks architects have a grievance. When they draw their own views, the Academy is apt to reject them, and what makes this more annoying is, that it hangs views of buildings which are no better simply because they are better drawn. We believe there is some truth in this statement, and it is very natural that there should be. Of the forty R.A.'s, more than thirty would hardly pretend to any acquaintance with architecture as an art. If they are at all in advance of "the man in the street," it is simply in knowing that they do not know; for whereas he always thinks himself gifted by nature to judge of all the buildings he sees, they must have learned enough of art to remember the need of culture and training. But they can all tell whether a drawing, as such, is good or bad. In choosing between drawings they therefore rely on this knowledge, and the result is that many indifferent designs are exhibited, and possibly some meritorious ones are thrown out. This state of things has produced a result which Mr. Chisholm appears to think very undesirable. A race of professional illustrators of architecture has sprung up who either draw, or more frequently merely shade and finish, perspectives for architects who have no time or no knack of working them up into pictures. We do not see that this is such a terrible evil; but Mr. Chisholm thinks that "it touches the very existence of architecture as a profession," and to get rid of it he proposes three things. One is, if we understand him rightly, that the Academy should be readier than it is to exhibit mere elevations; another is that the name of the draughtsman of the view, and not of the architect of the building, should be published in the Catalogue; and the last is that the Academy should rigidly exclude models, photographs, and the like!

It is interesting to trace the process by which a gentleman who has evidently thought much about the subject comes to advocate a remedy which would be incomparably worse than the disease. The train of reasoning seems to be as follows: An architect is, or should be, an artist. What, then, is the work of art that he produces? It cannot surely be his building, for he probably never worked at it himself. It cannot be his plans and sections, because the making of these, we are told, "does not constitute a fine art." Therefore it must be the making of elevations, "which are the only [artistic] work of his own hands which the architect has to show," and the inference is that elevations, drawn by his own hands, are what he ought to exhibit at the Royal Academy.

We have here, in a concise form, several of the most mischievous fallacies of the period. It might be enough to judge of them by their fruits, and to show that they have led a thoughtful architect to advise the astonishing course which we have quoted above. But we will take one or two of them in detail. There is, first, the fallacy that a man's art must necessarily lie in the work of his own hands: in other words, that unless he puts before the world some actual thing which he made by his manual labour, he is not an artist at all. What sort of artist, then, is the very highest - the poet? No artist, on this theory, unless he issues his poems in his own handwriting. If they are printed, Mr. Chisholm must, in consistency, acknowledge that they cannot be art. The poet did not set up the types or pull the press. His volume, therefore, not being the work of his own hands, he deserves no artistic credit for it, and when it is published it is the printer's name, and not his, that ought to appear on the title-page. What sort of artist, again, is the composer? When Beethoven played his own sonatas, this singular doctrine would allow him the name: he was then the artist, and they were works of art. But now he is dead, and cannot play them, they must be works of art no longer. When they are played, it is not by his hands, consequently he is not the artist to whom we owe them. When we hear them we should never mention him, but ascribe all the merit to the pianist. What sort of artist, once more, is the dramatist? He is even worse off than the composer, for, unless he can act a whole play by himself, he is scarcely even an artist while he lives. The part of Adam in "As You Like It," and the part of the Ghost in "Hamlet," may once have been works of art; for, according to tradition, Shakespeare not only wrote, but acted them. As to the rest of those plays, and the others which pass by his name, he merely composed them, invented them, designed them, for actors to execute: just as the architect composes, invents, or designs a building for workmen to execute. If doing this for a fine building does not make the architect an artist, then doing it for a fine play cannot make the dramatist one.

The next fallacy is implied in saying that "the making of plans and sections does not constitute a fine art," though it seems that the making of elevations does. Here we get a plain avowal which lends support to the popular opinion about our profession. "Architects," the public are fond of saying, "care about nothing except the outside of their buildings." The public only show by this that they are often unfortunate in the so-called architects they meet with; for the man who does not feel a primary interest in the interior of his building is no architect at all. Mr. Chisholm does not deny that he ought to feel this interest; but he apparently implies that there is nothing artistic to be made out of interiors. If there is, plans and sections evidently stand on the same footing as elevations, for they exhibit the inside of a building in the same way as that in which elevations exhibit the outside of it. In all three cases, it is a way in which no mortal can ever see it. Mr. Chisholm seems to think that this is a detail of no consequence. He says the man who cannot understand an elevation is destitute of an educated eye, and that his opinion, even on a perspective, must be valueless. It cannot be too plainly stated, on the contrary, that no man living can be sure of understanding an elevation without a plan to help him; and that even then, however complete his training may be, his conception of its actual effect is likely to be vague, unless he makes some slight perspective sketch of it. Elevations hung up without plans would often be grossly misleading; and even with plans they would be understood by few people except practical architects. Now, Mr. Chisholm says, in so many words, that "the making of plans and sections does not constitute a fine art," and that "the Academy authorities should rigidly exclude objects which it is impossible to raise to the level of fine arts." His proposal, therefore, amounts to this: that exteriors should be illustrated in a way which would often leave them quite unintelligible, and that interiors should not be illustrated at all!

It is a fallacy, again, and a very injurious one, to suppose that a building should first be thought out in plans and sections which have nothing of art in them; and that the architect should then take the exterior which happens to spring out of these plans and sections, and turn it into architecture by subsequent manipulation. This is a popular delusion, not only about our art, but as to others. We heard years ago of a notorious producer of sculpture who, in the course of a trial, was stated to have modelled the figures himself, and then to have employed a "ghost" to give them "artistic merit." But artistic merit lies deeper down than this. It is not, in architecture any more than in sculpture, something which can be put on or scraped out of the mere surface of a work. Our art, even more than others, has to do with general masses and groupings, not merely with details. The producer of the street pot-boiler, it is true, thinks otherwise. His building settles itself, as to general form or want of form. Nine times out of ten it is intrinsically a shapeless abortion. This does not disconcert him; he does not know or care that architecture means anything but finery applied to cover up deformity. He sticks his "front" over with pilasters and cornices, he turns a carver loose on it, and at last the man in the street pronounces it very good. But this is not the sort of work which any of us want the Royal Academy to encourage. It is only too ready to exhibit drawings of it already, and it is a pity that anyone should make suggestions which, if adopted, would lead it to exhibit more.

In spite of all these points in which we are at issue with Mr. Chisholm, we are in sympathy with what seems his underlying purpose—that of preventing the architectural part of the R.A. exhibition from sinking into a mere display of draughtsmanship. But we fear that this is just what his proposed alterations would more and more make it. It is not only in perspectives that draughtsmanship is liable to be rated higher than design. The same thing would happen in elevations, even if they alone were admissible. Few architects would draw their own—Why should they? and the only result would be that the professional perspective draughtsman would become, or be superseded by, the professional geometrical draughtsman. The putting of the draughtsman's name in the catalogue, and not that of the designer, can hardly be seriously intended. Of course, its only effect would be to make the public think, even more than they now do, that draughtsmanship is everything and design nothing. The architects would turn out—as far as reputation goes—from the one room which is left to them at Burlington House, and the draughtsmen would reign in their stead.

Mr. Chisholm, however, will not have written in vain if he leads his readers to see what the "manual labour fallacy" and the "applied art fallacy" do actually lead to. The latter one especially is the curse of England, and, as a friendly American architect remarked who criticised London buildings two or three months ago, it spoils our doings everywhere. Even our best men can seldom quite outgrow it, and it is as true now as in Pope's time that we "hide with ornament the want of art." The manual labour fallacy, on the contrary, is that worst of falsehoods, the falsehood that is half a truth. It is true that an artist, where he can, should not only invent his work with his own mind, but execute it with his own hands. Those hands will obey his brain as no other hands can do, and hence it is that a carver, for instance, ought to be able to invent for himself, instead of trying to copy what a draughtsman has invented for him. But then there are wits, like ours, in which it is practically impossible for the designer to execute his own designs. They are none the less works of wit for that, and their designer is none the less an artist. Their origin was in his mind, and he has produced them in the only way in which the facts of existence allow them to be produced. Our choice is between having them in that way, and not having them at all. In them the manual labour of the designer is out of the question. St. Paul's is a work of art, although Wren did not hew its stones himself; and it is a work of art of which he was the artist. If people will not have architecture on these terms, then they cannot have architecture at all; neither, if they are consistent in their principles, can they have poetry, or music, or the drama.

WEST HAM TECHNICAL INSTITUTE AND FREE LIBRARY COMPETITION.

NO fewer than 73 designs have been sent in for the proposed new Technical Institute and Public Library for West Ham, and are on view at the Public Hall, Barking-road, Canning Town, E. The site is a good one, surrounded on three sides by roads and an open space, and its main front is towards Romford-road, a wide and important thoroughfare. The designs that have been selected by the assessor, Mr. J. MacVicar Anderson, P.-P.R.I.B.A., are the following:—The first premium of £250 has been awarded to the design of Messrs. Gibson and Russell (No. 34); the second premium (£150) to the design by Messrs. Clark and Hutchinson (No. 51); and the third (£100) to the design of Mr. Thos. Davison, A.R.I.B.A., of Chelsea. To confine our remarks to these three designs, one may at once admit that the assessor has been justified in his choice of the first of them. With a few exceptions we shall point out, the plan is an able one, showing a skilful distribution of the departments, which are well placed on the ground, with some idea of architectural propriety and symmetrical order. Looking first at the ground plan, the authors have, with the exception of three small courts, covered the area, though the library department and lecture theatre are only of one story, top-lighted, thus leaving plenty of air-space between the surrounding blocks of the Institute and official departments. The library occupies a large portion of the space facing the Green and Water-lane, and is separated from the other block by a straight wall and by a corridor. The lending library, 55ft. by 47ft., is placed at the corner of the above-named sides, the lobby entrance for the public being in Water-lane. We think the space for borrowers contracted and rather spoilt by the projecting vestibule, and the arrangement of counter might be arranged better. A one-story domed reference library 38ft. square adjoins, lighted from a court. A reading-room, 110ft. by 38ft., top-lighted, comes next to right of entrance. The lecture theatre, with its main entrance for the public in the centre of the Water-lane side, is shown, 70ft. by 44ft., with a platform recess at the inner end to accommodate 500 people. Cloakrooms are well placed on each side of the entrance, and conveniences are placed on each side of platform, which is bounded by a long corridor along the eastern row of workshops. On the south side of the lecture theatre are two courts for light and air, between which runs the main corridor from Romford-road entrance. The women's laundry, cookery, social rooms, &c., complete the Water-lane block, with a distinct entrance. The Romford-road front has a centre entrance leading to a transverse corridor, with convenient staircases taken out of the angles of the courts which light it, and is called the "museum hall." In front, facing this road, are the men's social rooms, store-room, clerks' and secretary's offices, and board-room, the latter at the south-east corner. On the eastern side is a range of buildings for workshops, traversed with its own corridor, and entrance at the Green end. The women's and men's corridors and entrances are distinct. The first-floor plan is given up to the technical department. It shows two lecture-rooms, 50ft. by 32ft. each, facing Romford-road, with classrooms 24ft. square, and some of smaller width along the Water-lane front; the art school, containing art master, wood-carving, design, modelling, elementary and advanced drawing-rooms, on the northern side, facing the Green, the best position for a north light. These rooms have their own corridor along the inner side. The laboratories are placed end to end along the eastern side, with their corridor of access, and are thus well out of the way. Thus, the main corridors run round the four sides of the rectangle, and are well lighted from the courts. The sections show the large lecture theatre, 28ft. high to the flat, segmental ceiling, which springs from cantilevers at the sides. The roof is of iron, trussed, and the lighting is obtained through clerestory windows above the reading-room, also from the courts on the south side. The separation of the departments is not so clear and distinct as we might wish, especially between the library and technical departments; but the entrances and corridors can be arranged to meet the requirements. The design externally shows much artistic skill and feeling. The Romford-road façade has a well-balanced and appropriate treatment in its long front, broken by circular pediments and turrets. The deep band of relief ornament below the engaged Ionic columns of the front is drawn with much spirit; the inter-columnar treatment of windows of lecture-rooms is a nice feature, and the detail of the circular pedimented porch carried on trusses and carved seated female figures or caryatides is clever, though this and the carved frieze may be said to be more spirited than appropriate to the position they occupy. An artistically-drawn detail to a larger scale is given of these features. There is, perhaps, also a want of rhythm between the circular-headed porch and the rectangular-shaped window at the side. The Water-lane elevation is broken by three circular pediments, the centre one being a porch to the large theatre. A cupola is over the library entrance vestibule. The perspective, a clever pen-and-ink drawing, shows a well-broken and picturesque design.

The second premiated design is distinctly blocked into departments. The technical schools and lecture theatre block is the largest, and occupies the main portion of area bounded by Water-lane and Romford-road, the main entrance to the Institute being in the centre of the latter, with women's and men's entrances on either side. These latter are the ends of corridors which give access to the lecture and classrooms on each side. Those facing Water-lane are for the women. The lecture theatre is central, 72ft. by 43ft., with platform at northern end and a corridor approach from Romford-road, and is lighted on either side by courts. It has a timber roof. The main front is occupied by the women's social room and classroom on left of main entrance, and on the other side are the men's social room, board-room, office, &c. Men's cloak, refreshment, and classrooms are in the east wing. The authors make a similar mistake to others in placing their art schoolrooms along the south front. These rooms have south windows, but are top-lighted in the roof on the north side. This arrangement is not happy. The corner angle staircases and lavatories are convenient, and are taken out of the open courts at the angles. These are large. The lecture-rooms (56ft. by 36ft.) are at the ends of side wings. The library block occupies the north-west corner of area, and is entirely on the ground floor, like the first premiated plan. It contains a reading-room, 95ft. by 37ft., with one side and end lighted, besides top-lights, an entrance-hall, 28ft. square, with top-light; reference library, 43ft. by 28ft.; and lending library, 88ft. by 33ft. A long corridor, top-lighted, separates library block from institute building. The corridors are well lighted by the courts. The workshops are located in the basement. The elevation to Romford-road, two-storied, is symmetrical, of a Classic character, and of rather commonplace type.

The third premiated design shows the area well occupied, and small courts for light and air. The library department is placed towards Romford-road, the reading-room facing the road, broken by bay windows, and the technical institute on the north portion of area. The principal entrances both for library and institute are in Romford-road, and public entrance to lecture-hall on the Water-lane side. The hall is 70ft. 6in. by 41ft., and has a circular-shaped platform, and is placed east and west on the north side. The first floor contains the lecture-rooms next the Green, and classrooms in front, and on the second floor the laboratories facing Water-lane. The art-school rooms face Romford-road, but have north lights. The general plan shows study: the lecture-hall is a one-story building, and the library is top-lighted. The building is freely treated in brickwork in a sort of Renaissance, and is mainly a three-storied building, with gables in front.

Other designs, in our minds, compete closely with the three selected. Though there are unquestionable merits in those we have described, there are two or three others which possess features of plan and design which entitle them to rank with the first. No. 70 is one of these. The plan is somewhat irregular in distribution, but the blocks are so placed as to afford ample light and air to each of them; they are practically isolated. The library block, facing Water-lane, has the reading-room and lending library end to end, with entrance between, well lighted by windows. A spacious borrowers' lobby is shown in the lending library, with book store behind. The bayed recesses are also excellent features. The institute building faces the Romford-road, and is mainly separated from the other buildings by courts. The principal entrance is in the centre, which leads to a cross corridor giving access to the physical lecture-room, board-room, men's and women's social rooms, &c.; and the lecture theatre forms a distinct building, 80ft. by 56ft., its end towards the eastern boundary, and at an oblique angle with the main front block. The first floor has the physical lecture-room, and also the classrooms along the Romford-road front, and staircases; while on the floor above is the chemical lecture-room over the physical, and the drawing-rooms in front. The design is conceived in a picturesque English Renaissance spirit, with high roof, gabled ends, and turrets accentuating the main staircases at the inner angles of the wings; also a centre turret on centre of roof. A strong ink perspective, rather inky in part, shows a well-broken and pleasing building. A similar general plan is No. 18, we believe by Mr. E. T. Hall. The library block is placed to the oblique line of the Water-lane boundary, and the reading-room is widened by bays on each side. Next to it is the large hall, with corresponding bays, 72ft. by 46ft., and an octagonal end. The institute building is opposite Romford-road; the board rooms, chemical laboratory in front, with classrooms behind, in connection with lecture-rooms on east side. By this plan a larger open quad is obtained, and all the buildings have light and air. We notice also that the art schoolrooms are on the first floor behind corridor of front block, and have a good north light. The large quadrangle is available for tennis-court, future gymnasium, &c. The author's design to the main road is a bold adaptation of English Classic features; at the corners massive square towers surmounted by cupolas emphasise the front, and smaller cupolas flank the main entrance. No. 26, a very able and carefully worked-out design by Mr. W. Harrison, deserves attention for a bold departure; the library building is placed on the western side of an isolated block, the reading-room along Water-lane with a spacious entrance, and the reference and lending libraries in the front block square with road, having a main entrance to library in a bold projection carried up as a massive tower (as in the last-named design), which serves also as a staircase, and this is repeated at the other end. The main entrance is in the centre—Romford-road — and the hall practically separates the library from the institute building. It is spacious and has a good staircase, with lavatories and cloakrooms, &c., beyond in a distinct block—a desirable arrangement. The eastern institute block is surrounded by corridors lighted from a centre courtyard; the board-room is in front, and laboratories behind. One important feature is the position of the lecture theatre, 80ft. by 42ft., which is on first floor on the Water-lane side over reading-room, so arranged as to be let off separately—a point of importance to the authorities. The classrooms are in front, and the lecture-rooms at the ends. The elevations are artistically and broadly treated, of Renaissance character, gabled in the front, and the corner towers of main front give dignity to the design. The lecture-hall is emphasised as a separate building on the Water-lane side, with its two main entrances and stair. The author places his workshops in the basement, and his art school in second floor is well lighted by a north light, and has a front corridor.

The plan No. 21, by Mr. Sidney R. J. Smith, is also planned on the principle of two distinct blocks, the library placed along the Water-lane side, with its own entrance, and forming an acute angle with the institute building fronting Romford-road. This plan permits of open instead of closed courts, and of a more efficient separation of the main teaching and administrative departments. The author, who has built several important libraries, has given ample space to the public in his lending library, which is 80ft. by 51ft. 6in. On the other hand, many of the designs show very cramped arrangements, and the counter for borrowers is not long enough for the indicators. A well-placed office for librarian is shown between the lending and reference libraries, the reading-room on right of entrance, 85ft. by 41ft., is in the corner between tho two roads. The institute block is well arranged: a separate and isolated block in the rear of the front building to Romford-road is reserved for classrooms and laboratories, and is joined by a lobby to the main part; the entrances for men and women are separated on either end of the front, with their social rooms and cloakrooms in convenient positions. The stairs and lavatories are well located at each end of main corridor. The lecture theatre, 62ft. 6in. by 47ft., with platform, is situated along the east side, with separate entrance in Romford-road, and ample cloakrooms, &c., in the rear. On the upper floor are the lecture-rooms, 46ft. 6in. by 30ft. 6in., each facing south, and classrooms on left and right. Laboratories are placed in the detached block behind above classrooms. The library and hall are roofed on a lower level, and the architectural treatment is well balanced with octagonal turrets and cupolas at the corners over preparation rooms and a centre flèche. The art studios are north-lighted, with front corridor facing Romford-road. A carefully prepared and able design is No. 65—by Mr. J. M. Brydon, we believe. It is shown by a well-drawn set of drawings in an English Late Century Classic style with pediments, the two end ones of circular shape, with cupola over centre. The library block is on the Green side, with main entrance; the lecture-hall is placed parallel to it, with its entrance in Water-lane; and the institute block, occupying the largest portion of the site, faces this and Romford-road, where the main entrance is placed. This block is of quadrangular shape, round two open courts. The central hall and stairs in line with the main entrance are lighted from them, and in the rear, separating this block from the lecture-hall, is a row of one-storied rooms for engineering workshop, dynamo, &c. An inner corridor traverses each side of the institute building, lighted from the courts, and a surrounding corridor is also shown to the lecture theatre, which is 80ft. by 40ft., and is lighted by clerestory windows above the corridors. There is a good crush-room, forming a vestibule to the theatre, and the dressing-rooms and cloakrooms are convenient. The library block is single story and top-lighted, with side windows on three sides. The theatre or hall has an elliptical ceiling panelled for painting, with wall pilasters and ribs, and the drawings are well executed. We note that the lecture-rooms are on first floor behind, classrooms in front, each 45ft. by 35ft., good positions, and that the laboratories face Water-lane, and the engineering shops are well placed and single-story. The workshops are in the basement on Water-lane side, and the art school in front is well lighted. The main stairs and corridor approaches are excellent.

We can only very briefly mention a few other designs of exceptional merit Some of these are on the open or isolated block system, others quadrangular and inclosing courtyards. Of the former kind is No. 15, in which a circular domical reading-room occupies the centre of the main front, of the Radcliffe Library type; the design is of a Georgian Classic character, picturesque in its outlines, and with corner tower. A long lending library is behind. The institute building is towards Water-lane, with a central entrance and lecture theatre in rear, 64ft. by 42ft., with convenient class and retiring rooms. The physics lecture-room at the north-west corner, and a range of workshops facing the Green. Above are classrooms along Water-lane, art schoolrooms on north side, with inner corridor approach; chemical lecture-room at end facing Water-lane. No. 49 is L-shaped, with acute angles. A symmetrical front building of three stories, with octagonal entrance, tower, and massive projecting wings at the ends, of Renaissance character is shown by a clever ink perspective. The library block is at the north end of Water-lane, and women's department south end, and lecture theatre at south-east corner, with separate entrance, and a corridor connecting it with the institute rooms and library. A circular corner between Romford-road and Water-lane. The men's and women's departments have good entrances. No. 32 is a clever, artistic sketch, with a nice breadth of treatment; but the plan is wasteful, and the corridors badly lighted. No. 46, we believe by Mr. E. W. Mountford, shown by a nice ink perspective in a Classic Renaissance style, is another of the able quadrangular symmetrical arrangements, with two courts for air and light. The library is on the west side, with centre entrance and court, and the institute building and lecture theatre on the east side. The position of library attendant would have been better in the angle of reading-room; as shown, he could not see more than a small portion of the room. A number of bay windows break up the two main elevations, and there is a central tower on south side, serving as main entrance to the institute. The lecture theatre is of too square a proportion, and its accessories inadequate. The author has studied compactness. Clever drawings accompany No. 30; the corridors are not all well lighted. No. 17 has a cleverly-drawn perspective sketch, but the plan of departments is weak. No. 60 also shows a rectangular type, with some good planning; and No. 61 is of the same class, with open courts, the lecture-theatre on the east side, projecting. The smaller lecture-rooms are placed one over the other in the centre of building, side-lighted by the courts. The library is at the north side, with its own court and entrances, and the classrooms along Water-lane. The design is of Late Gothic character in the details. An able design is No. 69. The plan is symmetrical, with centre court, classrooms on the north side, with lecture-rooms in centre, with inner corridors lighted by court, and the library building is in front, with projecting newsroom as a wing on west side, and a corresponding block for lecture theatre. The technical school and the library entrances are both arranged in front. Nos. 28, 47, 55, 57 are well-considered sets, with some good planning, though wanting in classification, and, in one or two instances, costly in style, as in No. 28.

The committee have to be congratulated for having evoked so much talent. They have every reason to be satisfied with their choice of the first design; but in some respects, at least, the other two premiated sets will hardly compare with one or two designs we have spoken of commendably. That the departments should be separated as far as possible by open areas or by straight party-walls rather than by corridors and halls appears to be essential; that the lecture-hall should, if practicable, be a distinct and isolated building capable of being cut off from the other other departments, cannot be doubted, and the same separation appears to be necessary between the library and institute building. The ground floor is no doubt the better level for a public hall, though there are a few good plans which show it on the first floor and without inconvenience. Another important consideration is the position of the laboratories and workshops; there are good reasons for placing them on an inner or rear position; the former, or at least the physical laboratory, ought, if possible, to be on the ground floor, to insure freedom from all vibration, and the workshops and dynamo-rooms ought either to be isolated or placed in the basement, as the heat and noise from these ought not to incommode those engaged in other avocations. The cost of the building has been limited to £40,000.

CONTRACTS, SINGLE AND SEPARATE.

THE one-contract system as against the many-contract system appears to be exercising some interest both here and in the United States, amongst contractors and the profession. If we were to array a host of facts on both sides it would perhaps be seen that with few exceptions the client benefits by the employment of several contractors. Each has a stake in carrying out his particular work well for his own sake and reputation. A large American association of manufacturers have in a recent circular declared that the single-contract system favours bad workmanship, because it is for the general contractor's interest to employ the cheapest sub-contractors he can get. There is some truth in this indictment. A low tender for the work having been accepted, an architect cannot conscientiously complain about the contractor's selection of workmen. They are not entirely under his control, though he may make a proviso in the contract reserving to himself the right to approve or reject the sub-contractors. He can only exercise his right of rejecting any work done, say mason's work, if contrary to the specification, of condemning the quality of the stone, or the mode of laying it or executing the masonry. Again, it has been urged for the many-contract plan that the architect has an opportunity of settling questions of detail with the several contractors, of discussing with each matters which, under a general contract, he would have no chance of doing, of trying artistic experiments, and of making any little variations to the advantage of the building and his client. It would be much easier, for instance, to consult with A, the bricklayer, who has an independent contract, about a point of detail before deciding on the design, than it would be to go to the general contractor and tell him what he would like done. The latter would probably refer to his quantities and find the price affixed to the item too low to admit of any extra, and not being a practical bricklayer like A, he would hesitate to meet the architect's wishes. Mr. A, as a practical mechanic, could, on his own responsibility, decide to make any small deviation. The difference in each transaction is simply this: The general contractor is a middle-man—he cannot treat directly; but in dealing with A, the architect is brought into contact with the actual worker who has only himself to consult. These are unquestioned advantages of the many-contractor system which it would be hard to overlook. Again, the principle of the architect being brought into direct touch with the craftsman is favoured by this system. Every trade is under the immediate supervision of the master-mind instead of all being lumped together, and treated as an aggregate that can be manipulated under the contractor for his own advantage.

There are, of course, disadvantages of separate contracts. One is the increased trouble it is said to entail on the architect. Separate agreements must be prepared and negotiations made; supervision is increased; instead of holding one man responsible, each contractor has to be dealt with and reckoned with; there is more friction to be overcome in arranging their several duties, so that there may be no overlapping and all may work together harmoniously; and lastly, there is, some imagine, more expense in obtaining several tenders than in only one, though this is disputed, as in the one-contract system each sub-contractor must get a profit, and the general contractor a profit on the whole. Without any doubt all these disadvantages are intensified when the architect is inexperienced and has an imperfect control over the several trades, and it is just in proportion to this want of keenness in adjusting them that the single-contractor system is an advantage. A vast deal of trouble is taken off the shoulders of the architect by the intervention of a functionary who can select his own tradesmen, arrange the details of their labour, superintend the operations, and become personally responsible for their work or shortcomings. The general contractor is such a person, a useful intermediary; he guarantees the several trades. When we consider a building as an aggregate of many skilled labours, that it employs a number of craftsmen, it seems reasonable to conclude that a system which undertakes to provide all these factors, and to place one man in the position of many who makes himself responsible for all risks, is a more convenient system than that of dividing the contract.

Other considerations may help us to form a conclusion as to which of these methods of carrying out work is the more desirable under particular conditions. Special and artistic forms of building can only be done by men who have made the work the one of their lives, not one of commercial gain. A skilful bricksetter or mason learns his craft by a long apprenticeship, or by assiduous study in a technical school; he makes it his own work by personal attention, and to him the principal object of his life is to turn out skilful workmanship, no matter what his labour costs. Happy he who finds a scope for, and employment in, his work without any grinding down or cheapening process; but, alas! the competitive spirit of the day comes in between him and his labour. It says: You must do this cheaper, or turn out so many more feet or rods a day. If necessary, you must substitute for the older and proper method of execution one that is less laborious and requires less skill, but looks as good. Here the temptation comes in to scamp the workmanship, and make the material spin out the farthest. Everyone knows how easily these commercial demands can be met in brickwork and masonry by methods of bond, which makes the greatest display of face-work, and economises labour by using "stretchers" and "bats" and thin facing stones. The workman who really wants to do his work well positively cannot do so. Some one else steps in, and says "You must do it quicker, or make the material go farther. What you have been taught may be right, but it does not pay." These are the suggestions of the contractor. The "great unskilled" are ready to accept the task and its conditions, and what ultimatum is there for the skilled but to comply or starve? Again, the true honest workman always has sympathy with his work; he displays it in every joint and every chisel-mark, the way he lays his bricks and sets his stones; but there is no room for this in the hurried contract work of the day. The very hurry of modern work prevents anything like sympathy being felt. Well may a recent novelist in his very thoughtful book, "Six Common Things," dwell on the dismal tragedy of London life, and work the "ceaseless stress" of men and woman who are all hurrying, who may not stop, and have not time to think. "This hurrying," he says, "has become a necessity of the crowd, whose leisure is as feverish as their work." And, after all, so much depends on the hirer of the workman, upon whether he is the owner himself and wants good work, or only an intermediary who is trying to "farm" the labour and to make profit out of the workmen. Is it the owner or his agent, the architect, who obtains the bricklayer, mason and carpenter, or the contractor, who has undertaken the work for so much, and wants to see a clear profit? When we enter more closely into the details of workmanship, we may make this question a little clearer. Let us take woodwork. It makes some difference to the carpenter and joiner if the material he works in is the best that can be got, and supplied without stint; that he knows a foot or two superficial of deal is of no importance, or that an extra quarter or half an inch of thickness can be had without demur. He has heart to do his work better, because he feels he is not restricted to an inch or so of stuff, and he can make his joints with more care and finish. We all know what most modern contract work is. It is a name too often for all that is meagre and scamped in execution and finish. Why? Because the competitive element enters and compels the artificer to adopt the easiest and quickest method. The bare workhouse or barrack represents the spirit of the work. The cold bareness of walls and ceilings, the tiring repetition of windows and doors, all made after one pattern, are the qualities which distinguish this class of building. But the skilled artificer likes to see evidences of his thought and skill. And these reflections bring us to distinguish all workmanship into two clases, the Mechanical or repetitional, and the Artistic. The modern contract system favours the first; it enables a large quantity of work of a particular kind or pattern to be turned out with the least expenditure of labour, and we must always remember it was this class of building so largely called into existence by our commercial requirements, by the erection of workhouses, almshouses, factories, railways, and dwellings for the poor and middle classes in our larger towns that encouraged the contract system of carrying out work. The repetition of similar features, multiplication of details of the same kind, large quantities of brickwork, and roofing and flooring and plastering, anything, in fact, that can be easily turned out and multiplied by the rod, square or lineal foot, can be better and more economically estimated and performed by one man who employs a large number of hands, who can do such straightforward work, than by employing a number of more skilful artificers. What we mean is that a plain building having a number of similar parts, say, a large factory with solid walls and piers, and a number of iron roof-trusses, can be more profitably undertaken by a single contractor, and with equal satisfaction to the architect, than it would be by employing a number of special men, or making separate contracts for different portions of the work. It would be very different if several diverse parts existed, if the details were numerous and complex, such as we require in the construction of a large hotel or a costly mansion. Here each separate contractor takes his part in producing a complex whole. The general contractor cannot be supposed to know the requirements of each trade, or to direct or control the work of the joiner, the engineer, the plumber, or the decorative artist. These are trades which come within the second designation of special or artistic work, and they cannot be so easily estimated or priced in a bill of quantities as a rod of brickwork or a square of flooring. He who estimates must be a man capable of analysing each part, and of knowing the labour on each, how long it takes to make a joint or paint a panel; therefore, only the special tradesman or artist himself can give a fair estimate—fairer and less costly often because he knows exactly what is required, and the time he takes to execute it, while the general guess-work contractor would probably make a rough idea of cost, and add a large percentage to cover his ignorance. And the work itself is done better by men who have no one to hinder them or tie them down to a price. These are considerations which deserve the attention of architects who are intrusted with buildings in which the fittings and decoration constitute the main part of the design.

CAST IRON IN BUILDER'S AND CONTRACTOR'S WORK.—V.

By Joseph Horner.

THE test-bar is a beam in miniature, and the actions which go on in the test-bar go on also in the massive girder or column. The similarity, however, is not identical. In the first place, girders and columns are not designed and cast of rectangular section like the test-bars. The girders and columns are not so strong as the test-bar, because metal, even though sound when cast in large masses, is not so strong as that which is cast in smaller ones, and because in addition there are almost always some hidden defects in large castings which are not present in test-bars. Further, the test-bars are simply supported at their ends, while nearly all structural work is fixed at the ends. Thus a beam, the ends of which are built over, is fixed, and a column with flanges bolted above and below is fixed, and by fixing the strength of a beam is quadrupled. We will now pursue our subject on these lines. But as I do not want to mix up methods of calculation with practical work, I propose to devote the next few articles to the practical workshop results deducible from the lessons learned at the testing machine, and afterwards give a concise *résumé* of the most approved formulæ used in determining the dimensions and strength of beams, columns, &c. First, then, as to the sectional forms given to beams.

It is obvious from the facts relative to the differences of the strength of cast iron in tension and in compresion, with the high situation of the neutral plane, that the solid rectangular beam might be modified and altered with advantage to the section of the truncated isosceles triangle, Fig. 9, A. Also, supposing the section to be divided out into an infinite number of planes parallel with the neutral plane, and corresponding with the bending moments at these planes, the section of the beam might be represented by B, for tension and compression respectively. Then a practical form might be devised, as at C, and this might be developed into the suitably pro-

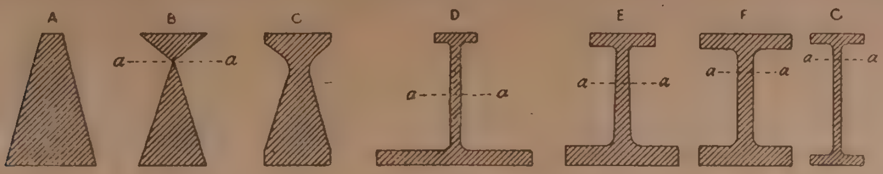


Fig. 9.

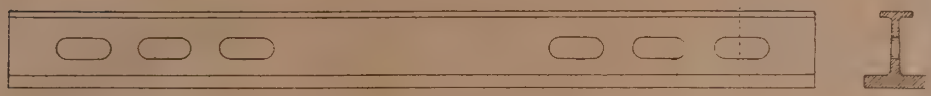


Fig. 10.

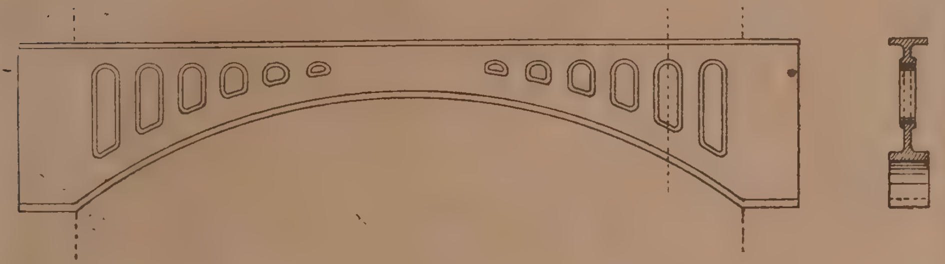


Fig. 11.

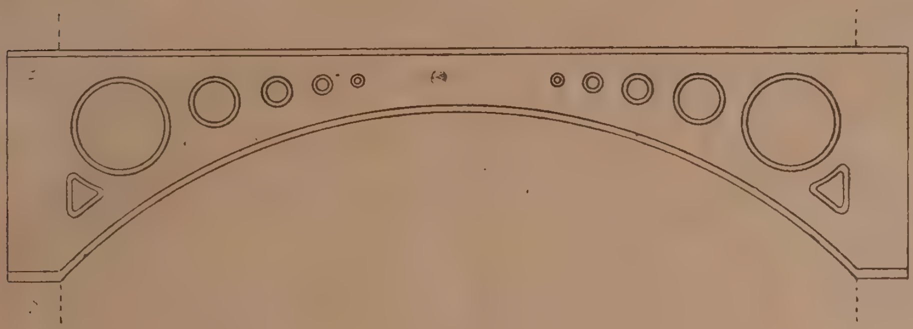


Fig. 12.

portioned beam of uniform strength, D, in which the top and bottom flanges are proportioned according to the difference which exists between the tensile and compressive stresses, and in which the web is designed, from practical requirements, stronger than is necessary along the neutral plane, but not stiffer than is necessitated by the stresses which lead to side buckling.

Such a girder as that shown in section at D is termed the "Hodgkinson girder," because Mr. Hodgkinson designed it as the result of his experiments on cast-iron beams. All that is ancient history now, and can be found in detail in many books, and I need not repeat it. But it is well to say that the conclusions of Mr. Hodgkinson have not been corroborated by more recent experimentalists, who have not been able to obtain such high results as his.

The form of the Hodgkinson beam, though designed in strict proportion to the moment of resistance, is a bad one in practice. It is troublesome to cast, and when cast it is not safe—first, because of the great disparity in the masses of metal; and, second, because if the load happens to thrust in a diagonal manner it will be thrown more on one flange than the other, causing fracture. Hence a compromise is made. The strength of the top flange is left altogether out of account, that of the bottom one only taken, and the latter is made narrower and thicker, as in E, which represents a well-proportioned section, strong and easy to cast. But often there is no difference made in the width of the top and bottom flanges, but only a slight excess of thickness in the latter, as in F. Frequently, too, there is no difference at all made, but the two flanges are alike, sufficient strength being given to the latter, the former being much in excess, as at G.

In all such work as this hard-and-fast rules and formulæ cannot be trusted. All the conditions of loading, and the nature of the material, and the sizes and proportions of the several parts of the castings must be taken into consideration. It has been proved, for instance, that beams loaded on one side—that is, on the flanges to one side of the central web—do not sustain more than half the weight calculated by Hodgkinson's rules. Of course, it will be said that this is not fair; but then such unequal loading does occur, just as unequal loading occurs in columns, with a similar diminution of their strength. Even if buildings are erected properly, unequal loading may occur subsequently through settlement of foundations. Then, again, large castings are never so strong as small ones, and badly-designed castings are weak from the first, and always weak. Metal, too, may be improperly selected. Hence the most perfect calculations based on resistances of the moments of a section to bending moments will fail if regard is not had to these vital matters. There is only one course of safety in cast iron, and that is after the calculations of strengths required by theoretical considerations to regulate the factor of safety by a consideration of the whole of the conditions which are known, or suspected to exist. Girders which are very disproportioned always curve in cooling, and the longer the girder the greater will be the amount of curvature. If there happen, too, to be pockets cast on the sides to receive trimmer girders, the metal is very likely to draw in the vicinity of the thick parts; whereas if the castings were more equally proportioned, so that one part would not cool off much quicker than another, the tendency to draw is much lessened.

In columns which, when long, are true girders, no difference at all can be made to correspond with tensile and compressive stresses, because these stresses will operate at all sections of the column indifferently, according as the directions of stress happen to be determined. Moreover, even supposing one side of a column was always subject to tensile and the other to compressive stress, then it would not do to cast the metal thicker and thinner to suit, because that would make the column crooked. Columns often do come from the foundry crooked for this reason, and when a column is thus bent, a difference in thickness may confidently be looked for. In reference to the neutral plane, the metal in girders is often lightened-out here. Figs. 10-12 illustrate how this may be done.

Fig. 10 is a Hodgkinson girder built into walls—a common form. The tightening holes are placed about midway between the top and bottom flanges, because the thickening of the lower, and the thinning the upper one, lowers the position of the neutral plane. It is usual not to cast lightening holes about the central part of the girder, though in strict theory they might be so cast with safety. Fig. 11 is a cast-iron girder for a light foot-bridge. In this the section is nearly uniform, and the lightening holes are placed above the centre to correspond approximately with the position of the neutral plane. The same remark applies to Fig. 12. The effect of alteration of section in raising or lowering the neutral plane is shown in the dotted lines *a*, *a*, in Fig. 9, and all lightening holes should be cast in these planes. The principle of lightening-out is correct and the application correct in the illustration given. But it is not judicious to lighten-out girders which are tied across with pockets and brackets, because the metal about the lightened portions cools off first, becoming rigid, and will not then yield to the shrinkage of the thicker parts adjacent, and the chances are that the casting will fracture through the holes, or if not fracture, will be in a condition of internal tension, and liable to fracture under a lower stress than that calculated for.

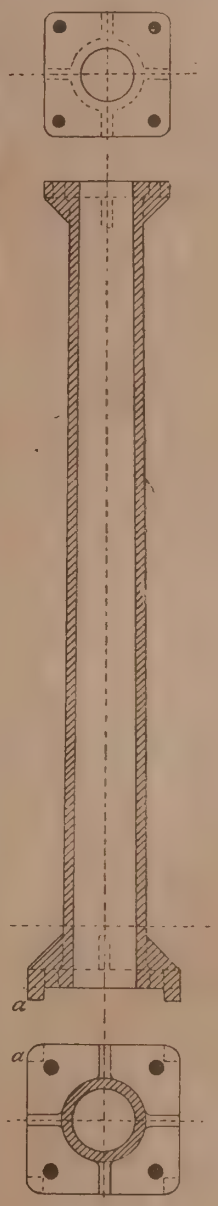


Fig. 13.

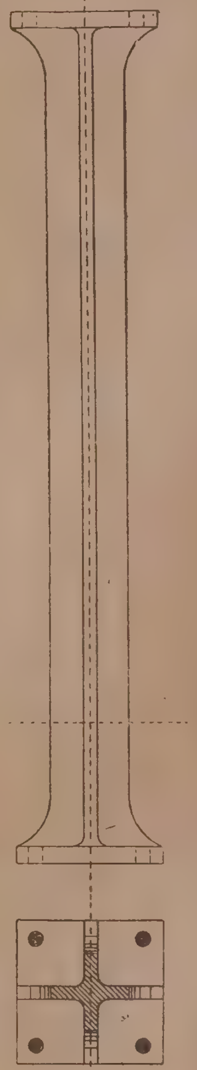


Fig. 14.

Fig. 13 illustrates a standard column, or typical column, in this respect—that it represents the most favourable conditions for withstanding the tendency to cross-bending. It has broad flanges, well bracketed, with bolt-holes for secure fixing. In such a column thus secured there is practically no tendency to diagonal stresses, and therefore there can be no cross bending. Practically, though not allowed for in formulæ, the column is in simple compression. If it failed, some conditions would first determine a cross-bending action in one direction, but up to the time when that would occur the stresses would pass wholly down the longitudinal axis of the column, and therefore be purely compressive. It is for this reason, therefore, to preserve this condition of stress, and to prevent all risk of incipient diagonal stresses which lead to cross-bending, that the ends of columns are, or should be, made with broad flanges, sufficiently bracketed and properly fixed. For the same reason it is of cardinal importance that columns should be perfectly straight, and in order to do this, cores must not be permitted to get out of centre, since thick and thin metal on opposite sides inevitably produce curvature in the casting. So that the curving of a column is not objectionable on the score of appearance merely, but it is an element of insecurity.

In columns which bed on masonry, joggles are often cast in the bottom flange, as shown at *a*, to fit into recesses chipped in the stone foundation. This is done to prevent risk of side movement, and then the hold-down bolts are generally dispensed with.

The stanchion, Fig. 14, is a true column. Though of cruciform section, the same principles are observed in its design as in that of the column, Fig. 13. The flanges are broad and well bracketed, and the casting must be straight. If it fails, it will fail by cross-bending. In a normal condition of stress it will be wholly in compression.

THE PROTECTION OF THEATRES FROM FIRE.*

THE protection of theatres from fire is a subject which has occupied much of the attention of the authorities of London during the past ten or fifteen years, and a great deal of good work has been done during that period under the auspices of the late Metropolitan Board of Works (and its successors, the present London County Council) in improving the existing structures, and enforcing the better arrangements of all new buildings of this class. This work has been done with a view to the prevention and extinction of fires, and the provision of the safety of the people frequenting places of public entertainment. Old buildings have been altered and many rebuilt, while new buildings have been erected under stringent regulations. The control of the London theatres and music-halls is under more than one authority as to licensing and the enforcement of good conduct—namely, the Lord Chamberlain, the police, and the London County Council; but the structural arrangements with regard to the prevention of fire are entirely under the supervision of the London County Council and its officials. It is my purpose in this paper only to deal with this structural control, and briefly to explain the methods now enforced in London. It would serve no useful purpose to quote the Acts of Parliament which give the Council their powers over theatres, &c.; sufficient here to explain that they have powers to make from time to time regulations as regards structural arrangements for the prevention of fire. It was my duty some years ago to prepare a draft of the regulations now enforced, for the consideration of the Theatres Committee of the Council, under the direction of the architect of the Council, Mr. Thomas Blashill, F.R.I.B.A., F.S.I. I will now dwell upon some of the chief features of these regulations as finally adopted in February, 1892. The chief difficulty which the committee had to deal with was to form a regulation as to site, for so many extraneous circumstances had to be considered in framing a rule which, while protecting the public, would not make theatre building prohibitive. London theatres are built by individuals or companies as investments to bring in a reasonable return for the outlay; there is no subsidy or State aid, the private purse alone being the source which can be drawn upon. Considering, therefore, that these buildings must be erected in the most crowded and fashionable quarters of the Metropolis, where land is the most expensive, the committee felt it impossible to enforce the provision of an entirely isolated site; for the cost of such land would cripple all theatrical enterprise, give no new theatres, and keep alive all the old ones. Therefore the regulation, as it now stands, only asks for one-half the boundary of the site to be upon a public thoroughfare, as diagram A. The committee were fully alive to the advantages of an isolated site and a symmetrical plan, with exits arranged on either side of the house in corresponding positions, and in order to meet the requirement of safety as far as possible a regulation was framed providing that two exits leading into different thoroughfares should be provided from each part or division of the audience. Now, as it would not always be possible, with only two thoroughfares, to comply with this rule, a "way" or "private passage" 10ft. wide was allowed on one side, to be accepted as suitable for the deliverance of exits, in addition to the two thoroughfares, as diagram B. The next feature of importance considered by the committee in framing the regulations was the construction of the theatre into three risks:—(1) The auditorium, with two exits from each part; (2) the stage, with brick proscenium wall passing through its roof and fireproof curtain; and (3) the dressing-rooms: the regulations as adopted enforce that dressing-rooms must be an entirely separate block with separate exits, quite apart from the stage exits. No theatre is now permitted to be built in London under or over any other building, or within a distance of 20ft. from overlooking windows in other property. The number of tiers is limited to three above the pit floor. The pit floor may be sunk below the street level, but not more than 15ft.; on the other hand, it cannot be placed more than 6in. above such level. The height between the tiers is defined as 10ft. between the pit and balcony ceiling, and 12ft. between the gallery and ceiling over. The number of exits, as I have already said, must in all theatres, &c., built or added to in this Metropolis, be two to every division of the audience, and the minimum width is 4ft. 6in. for each of the two exits to each division which contains not more than 400 persons. If any division of the audience exceeds in its seating capacity 400, then for every additional 100 (or part of 100) 6in. more must be added to the width of each of the two exits; 400 would require 4ft. 6in., 500 would require 5ft., 600 would require 5ft. 6in. in width, and so on up to a maximum width of 9ft. This rule applies to doorways, passages, staircases, and corridors. Any passage-way, staircase, &c., over 6ft. must be divided by a centre handrail. It is seldom, however, that this width is required, as the seating capacity of any one division does not often exceed 700 persons. Staircases must have steps of uniform tread and rise, and the flights must not exceed 12 steps or less than three steps. No staircase may have more than two flights of 12 steps without a turn. The landings must be square, and no winders are allowed. I do not propose touching upon the smaller regulations as to handrails, width of gangway between seats, wire covering to skylights, protection of constructional ironwork, construction of walls with brick or stone, &c., all of which are dealt with in detail in the regulations, but to pass on to the other regulations referring to the disposition of the more dangerous parts of the building. Workshops, store-rooms, wardrobes, painting-rooms are not allowed within the building proper; they must be separated from the theatre by brick walls and iron doors. The same rule applies to scene stores as well as to limelight rooms, gas-meter chambers, engine and dynamo rooms. This latter class of apartment must be fireproof throughout and perfectly ventilated. With regard to the use of the limelight, the Council have given much attention to the manner in which the gases should be stored and used, and to the class of fittings that should be employed, for it has been found that the careless use of the limelight is a most fruitful source of danger in a theatre. Most of the London theatres have, during the past few years, entirely discarded the limelight and adopted the electric search light instead, with the most satisfactory result, both with regard to safety and scenic effect. The rules as to the gas and electric light service are too detailed and complex to dwell on in full. They occupy some pages of the regulations and are purely technical. Separate gas services and separate meters are required (1) for the entrances, (2) for the auditorium, (3) for the stage. A dual system of lighting with oil lamps is enforced for safety; gas and electric is, however, accepted without any oil lamps as satisfactory. Automatic fastenings, which give way upon the public pushing the door, are the only fastenings permitted on doors which are not left on the swing during the time the public are in the building. The rules for ventilation include the provision of a smoke extract in the roof over the stage, and the manner in which the warming apparatus must be fitted up is set forth in full detail which need not be described here. With regard to the fire extinction, a plentiful supply of hydrants, with fittings of the same pattern as the Metropolitan Brigade, is chiefly depended upon. As a rule two hydrants are required, one on each tier in the auditorium, one on each side of the various levels, besides others in the approaches, dressing-rooms, and workshops. The usual provision for wet blankets, buckets full of water, hatchets, hooks, and other appliances is insisted upon. Exit notices are, of course, required over all the doors leading out of the theatre, and in addition to this in many theatres the safety lamps over the doors have "exit" painted upon the glasses. The construction of a theatre must, of course, be fireproof with regard to walls, floors, stairs, corridors, passages; but the regulations do not insist upon the tiers themselves being of fireproof construction. London architects, however, nearly always construct these of iron and concrete on the cantilever principle. I have not more than touched in this paper upon the leading features of these regulations; there are many of minor detail which space prevents my mentioning, but although of minor detail they are of great importance as to the prevention of the origin or spread of fire. I have, in conclusion, merely to mention the manner in which these regulations are enforced by the Council. With regard to old theatres, the Council have power to compel structural alterations to be made where they deem it necessary for the prevention of fire and safety of the public. Although old theatres cannot be made to comply exactly with the regulations, the alterations required are generally based upon the principle of these regulations, to make the old premises as nearly up to date as circumstances will allow. With regard to new theatres, plans have to be submitted for the examination of the Council's architects, who report to the committee as to whether the buildings when erected will comply with the regulations. If when finished all the regulations are complied with, then a certificate is issued, and the building, when licensed, is opened to the public. No building, however, is opened till the architect has certified its satisfactory completion in accordance with these regulations. The duties of the Council's architects do not end with the examination and reporting upon plans; they periodically inspect and survey the structure both by day and night, and visit the premises when the public are witnessing the performances, to see that all the exits are free, the safety-lamps alight, the "panic" bolts in working order, and the doors ready to be opened with a push by the public themselves. These inspections are made sometimes unbeknown to the proprietors, the officer mixing with the audience, and paying for admission as one of the public, but at other times the survey is made in company with the manager of the theatre. All defects noted are reported to the Theatres Committee of the Council, who, having considered them, request the manager to remedy them forthwith. There, however, is no regular fire brigade inspection of theatres enforced in London, and the Council feel to a great extent that this is a grave defect; there appear to be difficulties, or want of Parliamentary powers, in the way of providing for the expenses of this inspection, which everyone interested in the safety of the public and the protection of theatres from fire must wish to see promptly swept away.

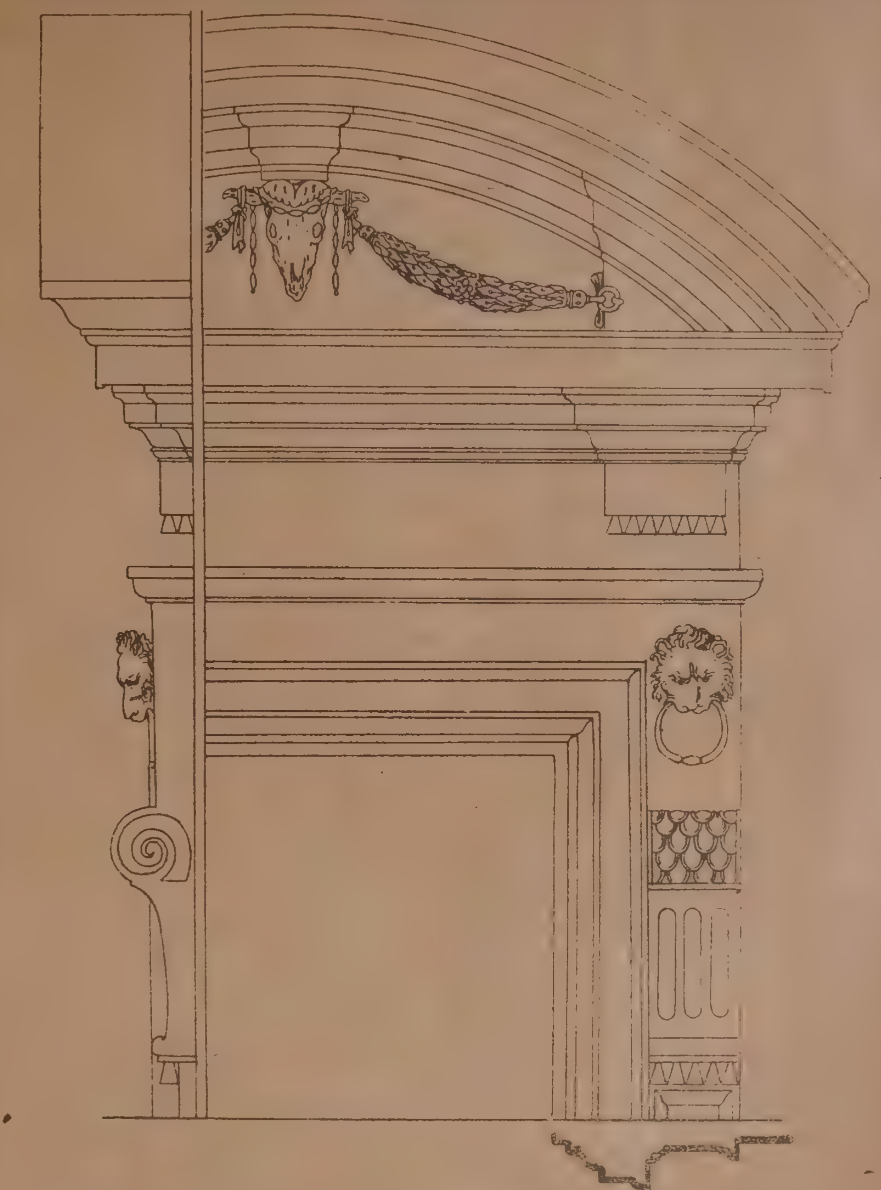
THE SAFETY OF THEATRE AUDIENCES.*

IT is not my intention to give a lecture, but simply to open a discussion. I shall not read a paper on modern theatre planning, or construction, or fire-watches, or theatre inspection; but shall simply invite discussion on the relative merits of planning, construction, watching, and inspection, as far as the safety of theatre audiences is concerned, with the view of obtaining your opinion as to their order of precedence. The opinion of the Congress, if framed as a formal resolution, would, I am sure, be considered by all authorities intrusted with the safety of places of public amusement, and would greatly facilitate the abolition of some of the anomalies to be found in existing laws or regulations governing such premises. We all know how many serious theatre fires we have had, the loss of life, and the lists of injured. We also know, though perhaps we scarcely realise the frequency, how often there are smaller fires at theatres of which the public, and even the authorities, hear little. I am not going into detail; but just to mention a few figures, let me say that there were no less than 180 fires between 1871 and 1881; since 1881 some 300 more fires have taken place, resulting in a total destruction of the building. These include the great catastrophes at Vienna, Nice, Exeter, and Paris. These figures are from the statistics of the late Herr August Foelsch, which I have the pleasure to continue, and have now so extended as to treat of 1,200 cases of total destruction. As to the smaller fires, I will only note that during the year I served with the Berlin Royal Police Fire Brigade there were a great many fires in the Berlin theatres, and this city is well-equipped with fire-watches during the hours of performance. Now, theatre fires have been almost identical in every country, both as regards the outbreak, spread, and result. Popularly expressed, the fire-fiend has behaved everywhere in the same manner, and, taken as a whole, the kind of resistance offered him when once he appeared on the field has also been very much the same. Theatre fires, as such, are generally too much for the local fire brigade, and if there is any extensive life-saving necessary, the means at the disposal of the authorities are usually quite inadequate to deal with such emergencies. Everywhere the theatre fire has shown us that a combative policy alone would be of no avail. The results everywhere called for an energetic preventive, backed by a moderate combative policy. Now, gentlemen, nearly every country has inaugurated a preventive policy. We have had every kind of legislation conceivable for the protection of the public. There has been hysterical panic legislation; ponderous regulations in which every detail is defined by law; legislation which leaves practically everything at the discretion of an executive of experts; and regulations which are merely so by name, and are a farce because they cannot be enforced. There is no uniformity in this legislation, not even in its elementary principles. If we read the regulations of the different countries consecutively, with an idea of discovering what is really necessary, the result is most confusing. Now I am not going into detail. I shall not quote clauses, &c., but I will say broadly that some countries seem to consider good construction the essence of safety, whilst clear planning, watching, or inspection is forgotten. Other countries give all attention to endless regular inspection, and omit the watching; others, again, require inspections only; others, perhaps, again, good planning, construction, and ample inspection, but no watching. Well, gentlemen, it is time for some representative body of experts to decide what they consider to be in the interests of the public. I am not going to raise any of the many questions as to the proper executive for locally determining or enforcing the requirements; nor am I going to enter into the merits of individual regulations. I am simply going to ask you to determine the main and elementary principles, as the first step towards uniformity. I now propose a resolution pointing out that good clear planning in a theatre is of far greater importance to the audience than clever construction with certain powers of fire resistance, and, further, that the regular attendance of fire-watches day and night, and more especially during the performances, is more essential than any amount of regular, or even surprise, inspection. I will go further and ask you to decide if you do not consider the order of precedence to be—(1) planning, (2) watching, (3) inspection, (4) construction. In proposing the adoption of this resolution, I should wish to point out that I consider it the duty of the authorities to attend to the protection of life in the first place, and to the protection of property in the second. In speaking of property, I consider the protection of adjoining property of greater importance than the theatre "risk" itself. As we all know, how easily panic occurs without any fire, and how dangerous the rush of a frightened audience can be. The clear exit of ample dimensions with the simplest route will be the safest, and perfect symmetry of plan of most value. The prevention of a cause for panic is best guarded against by the constant presence of experienced and responsible firemen, who will, on the one side, see the possibilities of danger and prevent it, and, on the other side, be able to act smartly in case of an outbreak. I do not wish to disparage good construction, or regular and surprise inspections; but I consider the most careful regulations as to construction practically valueless, as far as the safety of the audience is concerned, if the planning is not straightforward, and responsible firemen are not regularly in attendance. Theatres are built under the most varied circumstances, as we have national, court, municipal, subscription, and subsidised theatres, and theatres which are simply commercial enterprises. I do not consider it of such concern for the authorities if the building of a private or public owner will resist fire for a given time as that the public are able to leave the premises easily. Wood stairs will take them quite as quickly into the open as stone ones, and stone stairs with many winds and complicated plan will be far more dangerous than wooden ones of straight flights of, say, 14 steps each. Of course, good construction lessens the risk of an outbreak of fire, and I shall always advocate good construction where unreasonable requirements are not made. My resolution, gentlemen, is owing to my having been over many theatres built according to modern regulations of the best fire-resisting materials, and yet having found them dangerous in the extreme through bad arrangement of staircases and passages, and then on account of my knowing many important cities which, though equipped with modern regulations for the erection and maintenance of theatres, have no powers to enforce the presence of an official fire-watch during the performance, or, for that matter, any fire-watch at all. Your resolution, gentlemen, would, as I said, do much towards facilitating the abolition of such anomalies.

---

* By Ernest A. E. Woodrow, A.R.I.B.A. Read before the Amsterdam Fire Congress.

* By Edwin O. Sachs, Architect, Fellow of the Royal Statistical Society, Hon. Foreign Secretary National Fire Brigades Union. Read before the Amsterdam Fire Congress.



DETAILS OF WINDOWS TO SECOND FLOOR, FARNESE PALACE, ROME.
By Michael Angelo.

CLASSIC DETAILS AND THEIR APPLICATION.*

By G. A. T. Middleton.

XII.—ITALIAN RENAISSANCE—WINDOWS AND EXTERNAL DOORS.

THE changes which gradually took place in the treatment of doors and windows were as strongly marked as any during the Renaissance period. At first the openings were formed with semicircular arched heads in rusticated masonry, the doorways displaying no detail except the chamfering (if it may be so called) of the arris with a large quadrant cavetto, while the windows boasted of simple tracery—a relic of the Gothic influence which at that date pervaded Western and Northern Europe.

This stern simplicity, however, was not retained for long, and even some of the earlier Florentine palaces—such as the Pitti—contain a whole series of examples of windows treated similarly to those in the Caffarelli Palace at Rome (see the Building News for Aug. 23 last), with either pilasters of simple form carrying a deep frieze and pedimental cornice, as on the ground floor, or else an architrave not only across the top, but also returned down the sides of the windows—the "architrave" of the building construction class—with un-ornamented frieze and cornice over that. A further natural and beautiful development of this jamb-architrave was illustrated in the same issue of the Building News in the doorway of Conservatori Palace at Rome, it being bent to give an appearance of strength to the head—a method of treatment afterwards in common use in England. But Michael Angelo did not stop there. The curved pediment had already been introduced, and he adopted it in the windows on the second floor of the Farnese Palace (see Building News for Aug. 30); but in these same windows the jamb-architraves were ornamented with bold carving and lions' heads, and the tympanum was sculptured with bull's skull and wreaths. Here, too, appears a falsity, for the bull's skull carrries what, in pretence, is a key-stone to the bed mouldings of the tympanum. It is the introduction of apparent construction for ornament's sake, and consequently a mistake, sure to lead to worse—and much worse came. Michael Angelo was succeeded by less able men, who sought originality, and found it in contortion and misuse.

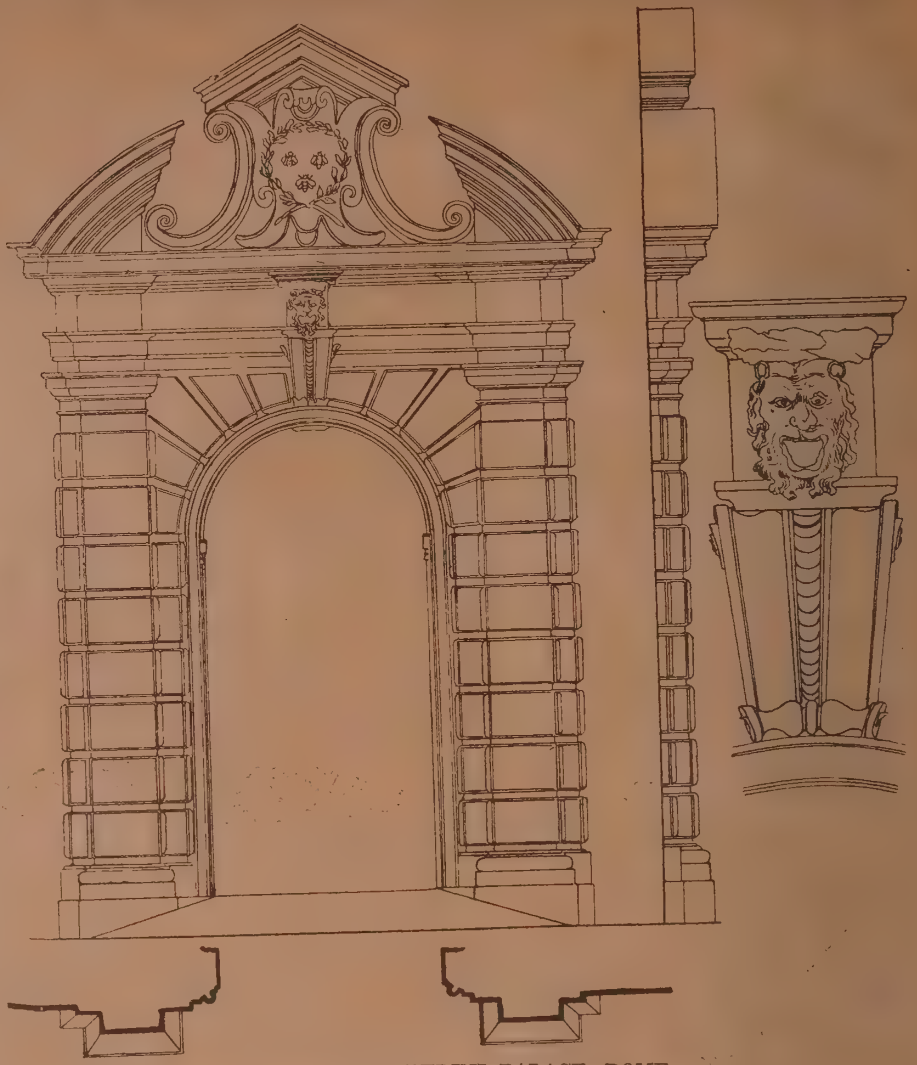
---

* All rights reserved.

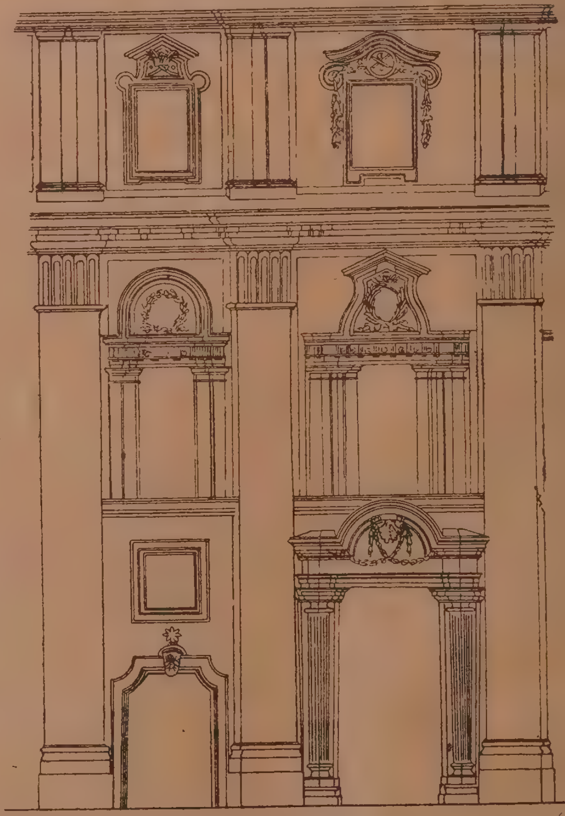
The Doorway of the Berberini Palace illustrates this, with its clumsy broken pediment, and its keystone carrying a carved head, and this carrying a projection in the bed-mould. The details, too, are coarse, and almost the only pleasing feature is the use of the bee upon the shield, to signify the initial letter of the name of Berberini. More striking, though, is the employment of rusticated blocks across the pilasters, especially as it is a thing which subsequently became common, and undoubtedly gives a forceable appearance; but it is certainly open to criticism, as not arising naturally out of the construction, and as generally being unnecessary to the artistic effect.

The Doorway by Borromini illustrates another type of broken pediment, the break being devised solely for the introduction of a tasteless shield, and being utterly destructive of the beauty of what would otherwise have been a pleasing door. The swelling of the frieze is worth attention here—another uncalled-for fancy, looking as if the weight of the cornice had been too much for it to bear. A slight or moderate swelling may be condoned upon optical grounds, but it is difficult to find excuse for an almost semicircular bulge.

But as an example of utter deterioration, it would be difficult to select a more flagrant case than the Propaganda College by Borromini, where almost every form and detail is distorted. It is only necessary to compare the elevation with those of the Caffarelli and Farnese Palaces, already given, to see what is meant; how the desire for elaboration and excess of ornament and possibly the self-conceit (another and plainer word for want of restraint) of the architect, and his consequent search after the original, have all combined to wreck the design.



DOORWAY, BERBERINI PALACE, ROME.
By Berretini da Cortona.

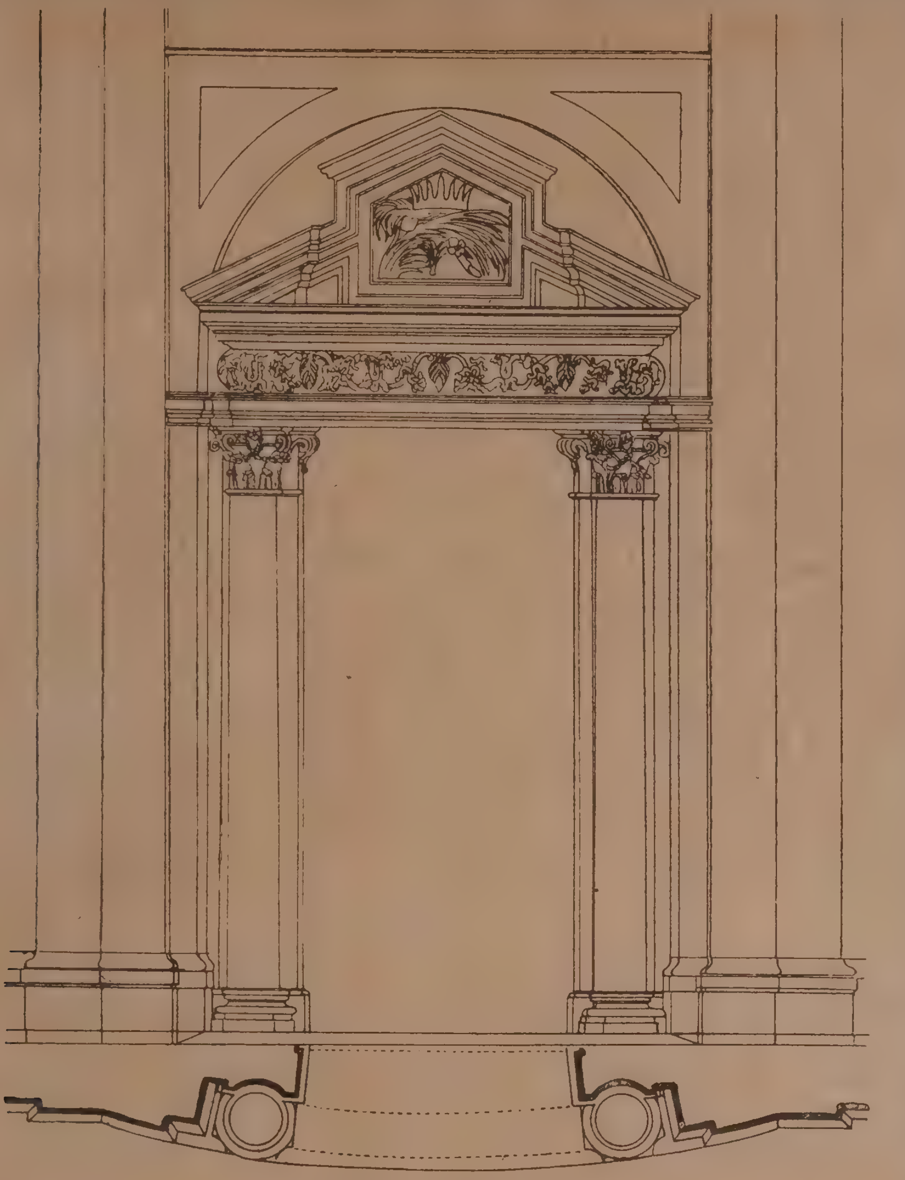


PART OF SIDE ELEVATION, COLLEGIO DI PROPAGANDA FIDE.
By Borromini.

WHY THE MORECAMBE LANDING STAGE FELL.

THE lessons suggested by the evidence given at the adjourned inquest on the victims of the Morecambe Pier "accident" lie upon the surface, and most persons, with the possible exception of the pier directors, will agree with the conclusions arrived at on Monday by the jury, whose verdict was to the effect that the deaths occurred through the collapse of a landing stage owing to the corrosion of a bolt, and that the pier directors showed great negligence in not having the structure periodically examined. The further recommendation by the jury that the Board of Trade should be asked to issue regulations enforcing the periodical inspection of piers seems to be urgently demanded. The inquiry by the coroner why Mr. Worthington had not spoken out as strongly in his report to the directors as he did at the inquest was pertinent; but this did not entirely palliate their neglect of his recommendations.

At the adjourned inquest on Monday, Mr. E. Hill, the manager of the pier company, explained that the eastern stage, the one which collapsed, was built in 1872, four years after the main pier was erected. Colonel Mawson, engineer, of Manchester, designed the extension, which included the stage, and the contractor was Mr. Andrew Thorne, of Barrow-in-Furness. The contract price for the pier extension was £4,550. He reiterated his assertion that the directors, after receiving Mr. Worthington's report (which, as we stated last week, recommended that repairs estimated to cost £5,600 should be carried out forthwith), still considered the landings safe. They had since expended £500, but on painting. Till November last the pier had not been examined since 1880. Mr. John Waugh, C.E., of Bradford, deposed that the western landing-stages were built about 1868-9; and the principle on which they were constructed was sound and good. Each joint of the grid was carried upon a cross-beam resting upon the horizontal principals. Further support was given in the middle by a wrought-iron beam. The grids had flanges at right angles to the floor line, and these were bolted through the cross-beams, producing great rigidity. The eastern landing-stages were made in 1872, and were constructed on a different principle. They were



DOORWAY.—BY BORROMINI.

about as bad as they could be in the matter of construction. The whole of the weight was carried by the bolts—in the case of the grid that gave way by a single bolt, the only one ever put in, in some cases by two. There was only one beam of iron to carry the grids, and that did not rest on any beam, but was slung by the bolt, and that bolt had all the weight of the grids and the people who might be upon it to carry. The plan could not be worse for the purpose of carrying a weight. The money which it had been stated the company paid for the extension carried out in 1872 was sufficient for a thoroughly substantial job to have been made of the work. The cause of the accident was the corrosion of a single bolt. There should certainly be an inspection every three or four years. The end of the pier, added in 1872, was scamped work. The written report of Lieut.-Col. Addison, R.E., of the Board of Trade, stated that the pier was designed in the first instance for erection at Valparaiso. Its length was 898ft., and width (in the clear) 20ft., the former including three square bays where the pier was 40ft. wide. It had a rectangular head 54ft. from back to front, making up the total length of the pier to 952ft. The pierhead was originally 120ft. in length, but it was extended outwards from either end in 1872 to give a frontage of 300ft. He was unable to trace in the records of the Board of Trade any authority for this extension of the pier-head; no plans of the latter were forthcoming. Between the four iron pillars (12in. diameter) of the eastern landing-stage were horizontal timber-beams 8in. wide and 12in. deep, resting on collars on the pillars, and secured by iron straps passing round the pillars; near the top of the inner face of the longitudinal beams an angle-iron was bolted along them, about 3in. wide. In the centre, between the transverse beams, was a rolled-iron beam, 8in. deep, with flanges 5in. in width, and a web about half an inch thick. At the ends of this girder the flanges seemed to have been cut off, to allow the web to be bent outwards, so as to butt against the beams, and the girder was then fixed by two bolts through each wood beam. The iron beam or girder had thus no bearing whatever, but was simply hung on the bolts. The latter were now so worn as to make it difficult to say what was their size originally, but they were probably 1in. bolts. On the top of the iron girder and angle-irons rested iron gratings, each about 6ft. 3in. by 2ft. 4in. wide, covering a space within the pillars of about 14ft. by 12ft. 6in., and which formed the landing-stages. In the case of the stage which gave way, only one bolt, instead of two, had been used to support the ends of the centre girder. This bolt was, practically speaking, eaten away by rust, and could no longer bear the weight. In addition to the defective bolt, the angle-irons above referred to were also in a very decayed and insecure state. Corrosion of the bolts was, therefore, the direct cause of the accident; but the construction of these stages was faulty in the extreme, and nothing short of their entire reconstruction could be at all satisfactory. The old western landing-stages (differently constructed) appeared to be in fair condition; but they and the whole of the pier should be most carefully examined, in order that all defects might be at once made good. In conclusion, Col. Addison observed that, although faulty construction and bad work were apparent, the pier had been sufficiently long in use to show that it could stand the exceptional strains and conditions which affect such a structure, so long as everything remained in good order. The necessity for thorough periodical inspection, in order that defects might be found out in time, could not be too strongly impressed upon all those who were in any way responsible for the maintenance of the pier.

NOTES FROM PARIS.

THE programme of the competition for the proposed new buildings to be erected in the Champs Elysées, in the place of the Palais de l'Industrie, which will be demolished, although under preparation, will not be published for some little time. This competition, a very important and interesting one, will not be opened till November, and will, in all probability, last three months. The final decision of the Chambre regarding the vote of credit for the Exposition of 1900 will first have to be given for the proposed buildings, which, together with the proposed magnificent avenue of the Champs Elysées, will form an important feature in the coming Exposition. The municipal council will also have to accept the terms of the competition before anything can be done. Meanwhile, a number of Parisian architects, who have formed a near opinion of what will be required, are already sketching out their plans and designs in order to be quite ready to proceed rapidly with the preparation of their drawings as soon as the programme is made known.

There exists at this moment a rather strong current of opinion in disfavour of universal exhibitions, a number of well-known men taking up the matter in grave earnest. The municipal council of Nancy has voted to the effect that such expositions at Paris be henceforth suppressed, beginning, if possible, with that of 1900. It is said that the country is looking forward to the next exhibition with feelings of disgust rather than with those of pleasurable anticipation. That the Cairo-street, the buildings of the History of Habitation, and such like, so much frequented during the last Exposition, are nothing more than playthings, estimated, however, much more highly than the Trianon of Marie Antoinette at Versailles, but really unworthy of becoming for more than a year the centre of French genius. Again, the substitution of these playthings for the real beauties of Paris, which take quite a second place, is not the only thing to be condemned: it is the character itself of the town which is distorted and defiled during the whole year. Paris, instead of remaining the capital of intellect and elegance, becomes the centre of prostitution. Besides, the scheme of a universal Exposition does not in any way correspond to any pressing or important want or necessity: it is, on the contrary, a fact that all former exhibitions have been the cause of grievous prejudice to business and trade in the provinces. It may be said that the coming exhibition will enrich Paris, but this would only be for a moment, and at the expense of the provinces; not only that, but it would injure the real interests of the capital by attracting within its walls a multitude of new inhabitants, who as soon as the exhibition was over would find themselves deprived of work and resources, and thus increase the ranks of the poverty-stricken, whilst at the same time all the necessities of life would become much more expensive. The scheme of universal expositions is entirely against that of decentralisation, which is now being strongly advocated in France. Besides all this, the mere idea of the upsetting which the town will have to undergo for the proper preparation of the proposed *fête*, should be sufficient to turn popular opinion against the scheme. A few months ago the mutilation of the Esplanade des Invalides gave rise to much indignation; shortly it will be the turn of the Champs Elysées and the Palais de l'Industrie to undergo similar trials, and who can say if the proposed new palaces and avenues will repay by their beauty and usefulness the upsetting of the present state of things? A certain number of influential members of the Chambre have the intention of voting against the grant of funds for the Exposition of 1900, and may-be they will have strong support from provincial members. The reply of M. Picard, director-general of the coming Exposition, appears sensible enough. He says that the playthings spoken of as being unworthy of Paris are absolute necessities to every exhibition. Human nature is the same all the world over, and attractive or frivolous mere nothings are necessary to induce the mass of people to visit more serious things. How many of those who visited the Machine Gallery and other interesting portions of the last exhibition would have come at all if there had not been close by the Cairo street and the light amusements therein? As regards the opinion that during the year of exhibition the character of Paris will be distorted, the town ceasing to be the centre of intellect and elegance, the idea is simply absurd. During exhibition time congress meetings increase, learned and scientific men from all quarters of the globe take part in these meetings, Paris will become the rendezvous of science and learning. The proposed palaces of art in the Champs Elysées will certainly be a magnificent group of buildings, providing greater and more convenient accommodation for art exhibitions and the various shows which are now held in the Palais de l'Industrie, whilst the new avenue and monumental bridge will be great and attractive improvements to that portion of the town. The opinion that such exhibitions are of great prejudice to the provinces is unworthy of any man of common sense. Very shortly the work of preparation will occupy thousands of workmen come from all parts of France. These will leave their wages, not only in the restaurants, but also amongst the smaller tradesmen of the capital. This money will return to the provinces in payment for corn and food necessary for the maintenance of the city.

In 1889, five million visitors came from the provinces, a million and a half from abroad, leaving over £40,000,000 sterling amongst Parisian tradesmen. Most of this money has since returned to the provinces for employment in various industries. In 1900 the amount of money left in Paris will be more than double that of the last exhibition, and French industry will benefit very largely thereby; in short, such an exhibition is of the greatest utility in forwarding the commerce of the country, and in establishing trade relations between France and foreign countries. That of 1900 will proclaim to the world our desire for peace, and will prove the truth of the above remarks.

The Exposition de Travail, or Work, now being held at the Palais de l'Industrie, is rather disappointing after the great expectations held out that this exhibition would be one of the most interesting. It being still open for another couple of months, it would be invidious to say too much; but the remark might be made that in this age of work, industry, and invention, a much more interesting and attractive series of exhibits might have been brought together, and that even with those now on view—which certainly offer some variety—much more life and vigour, and therefore more interest, might have been given by means of a few machines and apparatus in motion, and a few installations, showing the actual production and manufacture of some of the objects exhibited. The exhibition is a success as far as the musical attractions are concerned, for interesting concerts are given daily; but it is doubtful if, apart from this, the visitors find very much to interest them. The section of building exhibits, although very nicely arranged, unfortunately contains very little of sufficient interest to warrant a description.

The new prisons of Fresnes will shortly be commenced, from the plans of M. Poussin, departmental architect; these prisons are destined to replace, outside Paris, the old prisons of Sainte Pelagie and Grande Roquette in the interior of the town, and which will shortly be pulled down. The prison is planned on entirely new lines, the traditional star-shaped plan being abandoned; for the first time in France also the cell portions of the buildings will be raised to a height of five stories; the lighting will be entirely by means of electricity. The estimated cost is £425,000, this sum being fully covered by the sale of the valuable land occupied by the existing prisons.

The well-known sculptor, Barrias, has just completed the monument to be erected to the memory of Emile Augier; the work is at this moment in the workshop of the metal founder; the inauguration will probably take place in October. The monument consists of the bust of Augier, surmounting a column 14ft. high, and three figures, the first, a standing figure, being that of a woman representing Comedy writing the dedication to Augier, her left hand resting on the shoulder of a seated figure representing Adventure. Behind the column the genius of Comedy is holding the mask of Got. The monument will be placed in the centre of the square close to the Odeon theatre.

Parisians have only just escaped the necessity of drinking the bad-tasting and unhealthy Seine water; in fact, for a few days during the recent hot weather, several of the quarters of the city were supplied with the river water, and if the dry season had continued, by this time the whole town would have been obliged to put up with this unwelcome beverage, or, to avoid doing so, help to swell the fortunes of the mineral water manufacturers. Much discontent is expressed on all sides, that, after spending an immense amount of money for the recent construction of reservoirs and aqueducts for the purpose of supplying all Paris with fresh water, the town is scarcely any better off than before, a few days of hot weather resulting in the scarcity of proper drinking water. The authorities naturally excuse themselves by saying that the Parisians are not economical, and employ the water supplied for drinking purposes for many uses for which ordinary Seine water might be employed; at any rate, not quite a week of the extremely hot weather we have been enduring occasioned the unexpected disappearance of over 9,000,000c.ft. of fresh water, leaving the reservoirs almost dry. A scheme is now before Parliament for the storing and leading to Paris of water from the valleys of Loing and Lunain, and this new supply, it is hoped, will suffice for use under ordinary circumstances. As an example of the evolution brought about by necessity, it may be remarked that the Paris authorities are raising the price of water fit for hydraulic lifts to such an extent, that the hotels and other establishments who employ a large quantity of water for their lifts are abandoning the present system, and installing in its place lifts worked by compressed air or electricity, for the working of which the cheaper Seine water at low pressure may be employed.

A new company is being formed at Paris, entitled, Société des Chambres Mortuaires d'Attente, having for purpose the construction of buildings containing waiting-rooms or mortuaries destined to receive the bodies of persons recently deceased, to all appearance, until the certainty of real death is assured, and all risks of premature and living burial avoided. The first mortuary "hotel" will be constructed at Passy-Paris, near the banks of the Seine. The style of architecture will be very simple, and fitted to the purpose of the building, which will consist of a plan in the form of a parallelogram, crossed by a central passage giving access to the mortuary chambers. It will be composed of a ground floor and cellars. A second passage will cross the former at right angles, this being reserved for the service of the building. The public passage will give access to an ante-room, a room for the body, a salon, a chapel, and a terrace or winter-garden. The building will be paved with mosaic work, and heated by a low-pressure system. The entire lighting will be by electricity. There will be a system of aëration by means of air forced into the various rooms, a proper ventilation being secured through the ceilings. An apparatus Giffard will cool the incoming air in summer-time; it will also be sterilised by passage through asbestos cloth. The building will be surrounded by well-kept flower-gardens, containing the outbuildings for various uses. The aspect of the whole will be one of richness and elegance, with at the same time a befitting severity. In all the arrangements the most scrupulous attention will be paid to sanitation; all angles between walls, ceilings, and floors will be rounded; each ceiling will be pierced with outlets for ventilation in the perforation of one-tenth of the surface; the floors will slope slightly in the direction of properly-siphoned outlets. The cost of the first "hotel" is estimated at £10,000; the inauguration will probably take place in February next. There will be a special service of vehicles for transporting the body from the dwelling to the mortuary, and for carrying it back again "if there is the necessity." A service of doctors will watch the bodies until all uncertainty of real death is put aside. The relations and friends of the deceased, or apparent deceased, will be admitted to watch over and care for the body. As regards the financial side of the undertaking, the tariff fixed by the town is £24, £20, £16, £8, and £4, for from first to fifth classes respectively; taking an average of 360 francs, and supposing that the small proportion of 3,000 bodies are brought to this building per year, the receipts would be a little over a million francs, or £43,000. The expenses are estimated at £14,500, leaving a net profit of £28,500, allowing very good interest to the shareholders; besides, each share of £24 affords the right to the holder of one passage through the hotel—if not for himself, at least to anyone to whom he may sell his right.

The new buildings of the Faculté de Droit, or schools of law, are now being completed as far as concerns the most important portion of the work. They comprise a monumental entrance from the Rue Saint-Jacques, opening into a large waiting-hall, three stories of amphitheatres on the Rue Soufflot, and libraries on the Rue Cujas. The courtyard in the centre forms an immense square, covered with iron and glazed roofing, and destined to form a reading-room. The new façades have several interesting sculptured portions, from the designs of the sculptor Corbel. The old library will not be pulled down, as was first intended: the preservation will therefore adjourn for an indefinite time the research after a number of very interesting Gallo-Roman tombs which are known to be under the ancient portion of the old building.

The proposed work of supplying Paris with drinking water from the valley of the Loing will, it is hoped, be sufficient to avoid the inconvenient surprises from lack of water experienced this summer. The work will not necessarily cost a very large amount of money; but the extra supply of water will be about a million and a half cubic feet per day. Besides, it is the intention of several members of the Chambre to urge the construction of a third reservoir at Saint-Cloud. The land already belonging to the town of Paris, no expropriations will be necessary: the work will, therefore, cost about £60,000 only.

The serious railway accident, which recently happened at the tunnel of Batignolles, near the Saint-Lazare station, calls immediate attention to the question of demolishing the tunnel—an exceeding dangerous feature just at the junction and narrowing of the many lines leading to the station. The work, if undertaken, will be a very costly one, for the tunnel passes under an important boulevard and land occupied by a large number of very important business and dwelling-houses. The cost of expropriation will, therefore, be very considerable, and the work of making open line will quite transform this portion of Batignolles. It is urged, however, that the suppression of this dangerous tunnel should be made as soon as possible.

A very rare occurrence in the annals of Paris streets has just taken place. At Paris the private or semi-private streets not classed amongst the public streets of the town are supposed to be maintained by the various proprietors of the buildings and dwelling-houses in these streets, both as regards the work necessary for the proper supply of domestic and drinking water, and the cleansing and repairing of the road and pavements. A semi-private street, Rue Lagille, Montmartre, having been allowed by its proprietors to reach a state of filthiness and dilapidation far from desirable in a sanitary point of view, the Prefecture of Police issued orders requiring the proprietors to undertake the necessary measures for repairing, cleansing, and properly maintaining the road and drains. The owners having, for a reason of economy or other, refused to do the necessary work, the Prefect was obliged to use his right of condemning the street, and perform the work of barring the entrance by means of a solid barrier of hoarding, having, however, an entrance permitting the exit and entrance of the tenants, the entrance being kept locked, and keys given to each of the proprietors or their concierges. As this imprisonment is scarcely to the taste of the tenants of these houses, it is at present the cause of much difference between tenants and proprietors, and as the proprietors still refuse to do the necessary work ordered by the Prefect, it is probable that this state of affairs will be of long duration, at any rate, until some member of the town council takes the matter in hand. As the barrier has been several times broken down by the tenants of the houses in this street, and as each morning the barrier is replaced by order of the Prefect, at the expense of the proprietors of the street, by the time the dispute is settled it is probable that the expenses will have reached a respectable figure, and will form the basis of an interesting lawsuit.

The inauguration by M. Leygues, Minister of the Interior, of the asylum for old people, installed in the ancient Abbey of Saint Severin, at Château Landon, was the opportunity for an interesting visit to the Abbey and neighbourhood. The monument, which dates from the 12th century, restored by Jacques d'Aubusson in the 15th century, belonged to M. Ouvré, deputé, who has now made a present of it to the department for transformation into an asylum or workhouse. The monastery, which, owing to its position on a high hill, was a veritable citadel, has been arranged for its present use by M. Bulot, departmental architect; the original façade has been restored, and an immense staircase leads from the front of the building to the level below. The asylum contains 144 beds, refectory, and covered promenade; the entire lighting is by electricity. The surrounding grounds have been arranged most carefully and artistically—in fact, everything has been done to soften the few remaining years of the old people who may be fortunate enough to find hospitality in this fine old building, located in one of the most picturesque portions of France. The architect, M. Bulot, has been named Officier de l'Academie.

Paris. ARTHUR VYE PARMINTER.

◆

DESIGNING OF STEEL BRIDGES, THEORETICAL AND PRACTICAL.—XXIII.

IN connection with the important subject of counterbraces, the next case which presents itself for consideration is represented in Fig. 1,

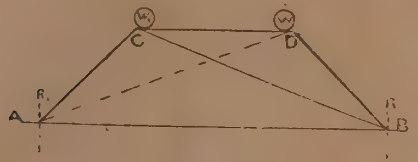


FIG. 1.

in which the example of truss we have selected for analysis is shown loaded with a couple of weights, W and W_1. If we take these weights equal to one another, the conditions will be sufficiently similar, for all practical purposes, to those attending a load uniformly distributed over the upper member of the truss. It will be both interesting and instructive to ascertain how this new disposition of loading affects the different members of the truss, and how the action of one weight completely nullifies, in some portions of the frame, the action of the other. So far as the total resulting stress on each bar (using the word in the sense already explained), they can be readily obtained by drawing to scale the stress diagram in Fig. 2. From this diagram we find that the

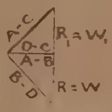


FIG. 2.

stresses upon the bars A C, B D are equal to one another; that the stresses upon A B and C D are also equal to one another; and that the stress upon the diagonal bar C B is equal to zero. It is thus demonstrated that, under three separate conditions of loading, the bar C B is differently affected. These three results should be carefully noted:—

(1) When the weight on supposed concentrated load is situated on the apex to which the diagonal bar is not connected, the bar undergoes a stress of tension.

(2) When the load is situated on the apex to which the diagonal bar is connected, the stress upon it is one of compression.

(3) When two loads of equal intensity are placed one on each apex—that is, when the truss is uniformly loaded—the diagonal bar undergoes a total stress which is equal to zero. This last statement requires some explanation. It is true that the stress diagram in Fig. 2 has no line corresponding to the bar C B in Fig. 1, and, therefore, shows that, as already stated, the *total* resulting load is equal to nothing. But it would be a great error to deduce from this fact that the diagonal bar C B undergoes no stress whatever from the separate action of each weight. It is not the fault of the stress diagram that it does not delineate the individual stresses upon each member of the truss, for these diagrams, like mathematical formulæ and equations, are not intended to give any but the total results. These instances of of the application of stress diagrams to roof-trusses in which the lines of forces cross one another, and the sub-divisions of the lines will represent the separate stresses brought upon some, but not all, of the corresponding bars.

To return to the separate and total stresses upon the diagonal counterbrace C B, it is evident that if we take the action of each weight, W and W_1 in Fig. 1, separately, the case, so far as the determination of the total stresses upon each bar is concerned, becomes a combination of the two examples represented in Figs. 1 and 3 in our last article, in the BUILDING NEWS of September 6. In order to render this important point clear, we must recapitulate a little, which will be facilitated by lettering the three diagrams in the same order. It must be borne in mind that no member can undergo stresses of a different character—that is, tension and compression, at the same time. The total resulting stress will be, therefore, the algebraical sum of the two, and we will represent in the present instance, for the sake of simplicity, stresses of tension by the sign of minus, and those of compression by the sign plus. The following Table, compiled from the stresses given by the stress diagrams in Figs. 2 and 4 in our last article, and in Fig. 2 of the present one, will show how the separate stresses produced upon the bars by the individual action of each weight, when summed up algebraically, will agree with the total stresses resulting from the combined action of the two weights. The slight discrepancies in the second places of the decimals may be disregarded, as they are of no practical importance, and are, moreover, inseparable from the employment of two or more independent diagrams. Although the one counterbrace C B in Fig. 1 is sufficient for the stability of the truss; yet to avoid the unsymmetrical, lop-sided appearance of such a piece of framework, an additional one, A D, shown by the dotted line, is usually employed. If both these bars be made ties—that is, incapable of transmitting any part of the loads W·W_1 to the support the farthest from each load, the total resulting stress upon A D similarly to that on C B will be *nil*. On the other hand, should these bars be made to act as struts, the case becomes similar to that in Fig. 3 of our last article, and the stresses can be determined in a similar manner. It will be found that the upper horizontal bar C D will have no stress upon it; but it is required practically, although it is theoretically redundant, for the truss is indeformable without it, as we have from our general equation—

TABLE 1.

Bars.	W.	W_1	W + W_1
A B	− 0·23	− 0·67	− 0·90
A C	+ 0·34	+ 1·00	+ 1·34
B D	+ 1·40	0·00	+ 1·40
D C	+ 0·94	0·00	+ 0·94
C B	− 0·74	+ 0·73	0·00

$$S = (2A - 3) \text{ and } 5 = (8 - 3) = 5.$$

When a member of an open-web girder or truss is subject, like a counterbrace, to stresses of different character, which are usually opposite in direction, it is said to undergo reversed stresses, or more simply "reversals," concerning which we have some remarks to offer. A clear distinction must be made between the repeated application of a stress, whether it be applied isochronously, or at irregular or un-uniform periods of time, of the same character, and reversed or alternating stresses in acting in opposite directions. Later experiments have fully confirmed the results arrived at by Sir William Fairbairn and other engineers and scientists: that repeated application of a stress of one character, whether tensile or compressive, which is less than the actual or ultimate breaking stress, will fracture the specimen of iron or steel subjected to the crucial ordeal. As an example, it was proved by actual experiment that a built-up riveted girder, after being subject to 315,000 applications of the same weight, was fractured—that is, gave way, although the load was equal to only one-third of that which would have caused its failure had it being gradually imposed, or under conditions similar to those attending the action of a static load. We have, therefore, the general law, that any specimen of iron or steel, and probably of other metallic substances, which have not undergone the experimental *peine forte et dure*, will yield not only to a static load exceeding the ultimate strength of the material, but also to repeated applications of a load very much inferior to the actual statical breaking load. In addition to the proof of this rule, which experiments have conclusively established, they also demonstrated that under similar conditions the breaking load varied with the difference of the ratio existing between the maximum and minimum stresses.

It follows as a corollary of the above statement, that if we know the maximum and minimum stresses to which any specimen of steel or iron may be subjected, and also the statical breaking weight of the same specimen, the actual breaking weight can be calculated. It is necessary, also, to know the maximum stress under which the specimen would yield after several million, or, in fact, after an indefinite number of applications. This last necessary datum has been supplied by experiment, and tables have been published recording it for different materials, and also for the same material under different forms and different conditions of testing. In this instance, it is assumed that the specimen is subject to stresses of only one character, and that there are not any reversals.

Let S represent the stress per square inch, or the unit stress, that would fracture the specimen after several million applications of the load. Put W to represent the statical breaking load of the specimen, and make B equal to the actual breaking load that is required. In the first place, we shall always have—

$$W > S \text{ and } W > B \ldots\ldots\ldots\ldots\ldots (1)$$

Let y = the ratio between the minimum and maximum stresses; then to find the value of B we have the general equation—

$$B = S + (W - S) \times y \ldots\ldots\ldots\ldots (2)$$

from which we obtain—

$$B = S + (yW - yS) \ldots\ldots\ldots\ldots (3)$$

and solving for B we have finally—

$$B = S(1 - y) + y \times W \ldots\ldots\ldots\ldots (4)$$

As a practical example and illustration of the formula, let us take the case of one of the members of a steel bridge which is subjected to a stress of five tons per square inch by the live load as it passes across, and to a stress of one ton due to dead or permanent load. Both these stresses are of the same character, and so far as the calculation is concerned, it is immaterial whether they be tensile or compressive. Practically, there is a difference in the ultimate effect upon a specimen of steel or iron, accordingly as it is acted upon by a stress of tension or compression. This will be alluded to subsequently. From what has been stated, we have the minimum stress equal to one ton, and the maximum equal to six tons, so that for the value of y we have—

$$y = \frac{1}{1 + 5} = \tfrac{1}{6}.$$

Experiments have shown that for steel, under the conditions assumed, we obtain—

$$S = 15, \text{ and } W = 28.$$

Substituting these values in equation (2)—

$$B = 15 + (28 - 15) \times \tfrac{1}{6},$$

and in equation (4)—

$$B = 15\left(1 - \tfrac{1}{6}\right) + \tfrac{1}{6} \times W \ \ldots\ldots\ldots (5)$$

from which we deduce—

$$B = \frac{15 \times 5}{6} + 28 \times \tfrac{1}{6} \ \ldots\ldots\ldots\ldots (6)$$

and, finally—

$$B = 17{\cdot}1\dot{6} \text{ tons.}$$

If we keep all these quantities constant with the exception of y, a proof will be afforded of the second statement that the breaking weight or the value of B varies inversely as the ratio of the limiting stresses. Let the stress upon the member of the girder or truss due to the line load be three tons, and that due to the permanent load one ton, then the corresponding value of y will be—

$$y = \frac{1}{1 + 3} = \tfrac{1}{4}.$$

Making y equal to this fraction in (5), we find—

$$B = 15\left(1 - \tfrac{1}{4}\right) + W \times \tfrac{1}{4},$$

from which B = 18 25 tons.

An important point in connection with the somewhat wide difference which has been shown to prevail between the statical breaking weight of a part of, or of the whole structure, and the breaking weight due to the action of a continually repeated load, is that this difference very seriously affects what is known as the factor of safety. If W be taken to represent the statical breaking load of a girder, truss, or, in fact, of any structure, and U the unit stress, or, as it is usually termed, when applied to metallic structures, the stress per inch of net sectional area, then if F equals the factor of safety, we have always—

$$F = \frac{W}{U}.$$

This factor of safety is usually based on the assumption that the ultimate breaking strength of the structure is the resistance it opposes to a statical or uniformly distributed load. It is obvious, from what has been demonstrated in the present article, that this assumption does not fairly represent the true nature of the actual action which takes place when the loading is not of a statical or uniformly distributed character. In all railway bridges the live or travelling load is the one to be specially provided for, and a factor of safety which would provide amply for the contingencies of a dead or permanent load, might be altogether inadequate to meet the exigencies and requirements of a heavy rolling load. In the example already quoted, the statical breaking weight was assumed to be equal to 28 tons per square inch, and if we put the factor of safety equal to four, the unit stress will be—

$$U = \frac{W}{F} = 7 \text{ tons.}$$

But the actual breaking stress of the material under certain circumstances of loading and impact was found to be only $17{\cdot}\dot{1}6$ tons, so that adopting the same unit stress as in the previous instance, the factor of safety is given by the equation—

$$F = \frac{W}{U} = \frac{17{\cdot}\dot{1}6}{7} = 2{\cdot}45 \text{ tons.}$$

The question of the "fatigue" of iron and steel work, and also the difference between the results of repetitions of stresses of the same character, and of those of opposite characters, or reversals, have to be next considered.

◆

BOOKS RECEIVED.

Gas-Fittings: A Practical Handbook Treating on every Description of Gas-laying and Fitting, by John Black, Second Edition (London: Crosby Lockwood and Son).—The many developments of gas-lighting, and the new burners and incandescent systems, have made it necessary to publish a second edition of this very useful little treatise. The author, amongst other things, points out the merits and demerits of iron and lead services. Iron services, now generally used by the leading gas companies, are more durable, and freer from corrosive influences than lead, especially in damp soils; on the other hand, in "made ground," the lead pipes are best if they are properly protected, so as to resist atmospheric and other influences. Many cautions are given which even gasfitters overlook, as the necessity of laying the pipes with a fall to the main or the meter. If the fall is below the meter, a siphon must be put in. Meter-fixing is often scamped, and the rules given by Mr. Black as to firm and secure fixing, and the connections with main, are important. The chapters on fitting up of small dwelling-houses, workshops, theatres, and other assembly halls, churches and chapels, cooking-stoves, &c., are practical and up to date. A supplementary chapter has been added on recent improvements in burners, the incandescent systems, and other appliances, and descriptions of the Wenham lamp, the "Welsbach," the "Clamond," and other burners will be found. The book is well illustrated.——*The Engineering Magazine* for September contains several articles of interest. One on the "Emancipation of Labour by Machinery," by A. E. Outerbridge, is worth reading, though it must be taken with a grain of salt. The author thinks machinery is destined to become the "missionary of the enlightenment" of the wage-earning class, and he rejects the idea that machinery and competition are instruments in the hands of the capitalist. We cannot here enter into the argument as presented by this writer, who is evidently blind to the evidence that can be brought forward on the other side of the question. The writer thinks the little book, "Merrie England," is calculated to do much harm to the working man in giving him false views of the social problem, and in sowing seeds of discontent. The articles on "Surveying and Mapping a City," by C. H. Rice, and "The Architecture of Modern Hospitals," by E. C. Gardner, are interesting. The latter is profusely illustrated by process blocks.——*Ancient Lights.* The Sheffield Society of Architects and Surveyors have republished as a thin cloth-bound octavo volume, a paper on "Ancient Lights," read before their members in February last by Mr. John Horden, F.R.I.B.A., F.S.I., President of the Manchester Society of Architects. The author traces the history of the acquisition of easements of light, quotes the three salient clauses of the well-known Prescription Act, 2 and 3 William IV. Cap. 71, and gives digests of a few of the leading cases and the decisions therein down to the present time. He observes that judges show no disposition to notice the angle of 45° of light often set up by surveyors, and points out that material damage must be shown to the Court in any action for loss of light, when the Court will deal with the matter on its own merits and irrespective of any particular angle. In all cases where there either is, or it is expected that there will be, an interference with the light to ancient windows, immediate action should, he urges, be taken, or a plea of acquiescence may be successfully set up. As to damages sought for loss of "air," possibly some cases may have occurred; but Mr. Holden says such an instance has never come before him, although 150 such disputes have passed through his hands, and he always strikes out the word "air" from any affidavits with which he has to deal. In conclusion, he points out that a great deal can be done by the exercise of discretion and tact, and it is advisable in most cases to settle the matter if possible without litigation. "If you cannot escape, fight the matter thoroughly; get the best men you can to assist you, and never underrate your opponent."——The *Essex Review* (London: T. Fisher Unwin) contains as its chief features illustrated articles on the churches of Little Dunmow and Little Leigh, respectively by Mr. Alfred Hartley and Mr. Fred. Chancellor; and a third on the Essex Buxtons, by Ewing Ritchie.

◆

CHIPS.

The town council of Leicester accepted on Tuesday a tender for the erection of a technical and art school, at a cost of £24,000, on a site already acquired at an outlay of £10,000.

A commencement was made on Monday with the drainage scheme for the burgh of Denny and Dunipace. It is estimated to cost over £7,000, including the purchase of land on the estate of Denovan, for filtration areas. Messrs. Alexander Stark and Son, of Kilsyth, have the contract.

An organ, built by Messrs. J. Binns and Co., Bramley, Leeds, was dedicated on Thursday in last week at Marholm parish church by the Dean of Peterborough.

Arrangements have been made for a practically free architectural school at the Mark Hopkins Institute in San Francisco. It will be under the direction of Professor B. R. Maybeck, of the University of California. A class in freehand drawing has been organised under H. T. Bestor, another in architectural history under G. H. Sanders, while G. W. Percy will have one in construction. The teachers give their services free. The proposed course will extend over three or four years.

The excavation of the Despina Temple at Lycosura, in Arcadia, has yielded new fragments of the colossal marble statues attributed to the sculptor Damophon, of Messene. These excavations seem to show that Damophon lived later than the fourth century before Christ, the date to which he has hitherto been assigned.

Mr. Robert Harvey, J.P., of Dundridge, near Totnes, visited the studios of Messrs. Harry Hems and Sons, at Exeter, on Friday, to view the life-sized recumbent figure, in white marble, of his eldest son, a boy of ten, who died suddenly at East Grinstead School last May. The remains now lie in the graveyard of St. Andrew's, at Harberton, where Messrs. Harry Hems and Sons are building a marble mausoleum. Mr. W. M. Tollit, of Totnes, is the architect.

At the last meeting of the Llandudno district council, it was reported that the surveyor, Mr. Stephenson, C.E., had submitted to the workmen's dwellings committee plans and estimates for the erection of 19 dwellings on a site near the station, the estimated cost being £4,608 13s. 6d.

George Romney, the painter, was a native of Dalton-in-Furness, and his remains were interred in Dalton Churchyard. Over the grave was laid a native stone bearing the following inscription:—"Georgius Romney, Armiger, Pictor Celeberrimus, Obiit Nov. 15, 1802. Requiescat in pace." This slab had become broken in two and dilapidated, so Mr. J. Orde Romney, a great-grandson of the painter, has commissioned Mr. Miles, sculptor, of Ulverston, to lay down a fitting memorial. The original slab has been preserved and cleaned, and has been let into a solid block of moulded Stainton limestone, veined and polished. Around this, in raised letters, is an additional inscription. The memorial, which measures 6ft. 10in. by 3ft. 10in., stands on a raised limestone plinth, surrounded by an iron railing.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Northern Architectural Association.—On Saturday afternoon the members of this association assembled at Wallsend with a view of inspecting the new buildings and plant at the shipbuilding yards of the firm of Messrs. C. S. Swan and Hunter. Mr. G. B. Hunter explained that the shipbuilding yards occupied an area of about 23 acres, and were divided by Station-road, leading from Wallsend Station to the river, into their east and west yards. It had been agreed with the Wallsend District Council to provide another road outside the yards with a large amount of quay space for the use of the public, and so dispense with the public road between the two shipyards. In each of the yards there were three building slips, capable of building steamers of the largest size, and during the last four years a great many additions had been and were being made, including a new joiner's shop, 184ft. by 80ft.; smiths' shop, 140ft. by 80ft.; fitting shop, electric power house, two additional boilers of the Babcock-Wilcox water-tube type, electric plant consisting of three powerful dynamos, driven by a compound Robey engine, four powerful electric cranes, electric machine motors for outlying machines, and an installation of arc and incandescent lights. The electric installation was on the continuous current system, working at 110 volts, and at present provides for about 200 brake horse-power in addition to the lighting. Space had been provided for doubling the power at an early date. The number of electric cranes would shortly be considerably increased. At present they consist of two revolving travelling cranes working overhead, and capable of travelling the full length of the ships' berths, each capable of lifting three tons and travelling at a speed of 300ft. per minute; one cantilever crane, working on the top of the roof, to lift the same weights at a similar speed, and with a span of 65ft., and one electric jib crane for racking plates up to three tons weight on the ground level. The generating plant and the two first-mentioned cranes and the machine motors are by Messrs. Clarke, Chapman, and Co., Gateshead. The two latter cranes were by Messrs. Thomas Broadbent and Sons, Huddersfield, and were now being tested. The firm had greatly extended their use of hydraulic power, both for riveting, punching, and bending plates, and for lifting the plates at the rolls, countersinks, planing machines, &c. It was intended to hydraulic rivet beam ends, stringer plates and bars, keel plates, intercostal plates, &c., as well as the usual hydraulic frame riveting. Novel features in the yard were the steel sheds, under which it is intended to build steamers of the largest class, and from the roof of which the electric cranes are worked. The new sheds are 68ft. broad, clear of the standards, 80ft. high in the clear, and at present 450ft. long, but are intended to be made 600ft. long as soon as that length is required to deal with the increased lengths of steamships which are now being adopted. The roofs, which will be covered with glass, are supported on steel lattice standards, each consisting of four corner bars, 6in. by 5in., and connected by horizontal and diagonal angle iron. The structure, which has been designed by Mr. F. Caws, F.R.I.B.A., Sunderland, in conjunction with Mr. Hunter and Mr. W. M. Webster, assistant manager, and the staff of the firm, is of a very light character, although it requires about 650 tons of steel for each berth. The concrete foundations of the sheds, together with a system of tram-lines throughout the yard, form excellent roadways for the conveyance of materials with a minimum of labour. It is intended to close in the sides of the sheds with portable screens, which can be left open in hot weather. Later in the afternoon the company were entertained to tea by the firm at the Athenæum Hall, and on the removal of the cloth Mr. William Glover, F.R.I.B.A., moved a vote of thanks to the firm, coupled with the name of Mr. Hunter. Mr. Shewbrooks, F.R.I.B.A., seconded the motion, which was supported by Mr. A. B. Plummer, F.R.I.B.A., hon. secretary to the association. Mr. George B. Hunter acknowledged the vote.

◆

The International Fire Brigade Congress was opened at Amsterdam on Tuesday by the Burgomaster. There was a large attendance of foreign delegates, and the British, German, Austro-Hungarian, Belgian, and French Governments were officially represented. We give elsewhere some of the papers read.

CONTENTS.

Elevations or Perspectives at the R.A.? 433
West Ham Technical Institute and Free Library Competition 434
Contracts, Single and Separate 435
Cast Iron in Builder's and Contractor's Works.—V.... 436
The Protection of Theatres from Fire 438
The Safety of Theatre Audiences 438
Classic Details and their Application 439
Why the Morecambe Landing Stage Fell 440
Notes from Paris 441
Designing of Steel Bridges, Theoretical and Practical. —XXIII. 443
Books Received 444
Architectural and Archæological Societies 444
The Building News Directory ... ... IX.
Our Illustrations 445
Engineering Notes... 445
Wrought Ironwork and Woodwork, Coats Memorial Church 446
Building Intelligence 464
Competitions 465
Correspondence... 465
Intercommunication 466
Legal 466
Legal Intelligence 466
Statues, Memorials, &c. 467
Water Supply and Sanitary Matters 467
Stained Glass 468
Our Office Table 468
Trade News 469
Tenders 470

ILLUSTRATIONS.

CHELSEA EMBANKMENT COURT.—WROUGHT IRONWORK AND WOODWORK BY MESSRS. JONES AND WILLIS.—PROPOSED MUNICIPAL BUILDINGS AT COVENTRY.

Our Illustrations.

CHELSEA EMBANKMENT COURT.

Under this name a group of twenty-three town houses is in course of construction upon the site on the Chelsea Embankment so well known as the scene of the Naval and Military Exhibitions. The site has a frontage of 237ft. to the Chelsea Embankment, and commands extensive views of the river, while its rear aspect is over the grounds of Gordon House and the incomparable gardens of Chelsea Hospital. With the view of advantageously developing this exceptional site, a new road of irregular crescent form has been made, to which the name Chelsea Embankment Court has been given, and on to which the twenty-three houses, here illustrated, front. All fear of undue formality was removed by the decision to construct a road of irregular form; but, apart from this, a unique character is given to the property by the fact that no one design of a house, either in exterior or interior, is repeated more than a second time. As a matter of fact, among the twenty-three houses thirteen distinct designs have been distributed, while an effort has been made, at the same time, to give cohesion to the entire façade, which extends to 280ft. The whole of the main fronts have been carried out in red bricks and white stone, and the whole of the rear fronts have been carried out in corresponding red bricks, so that the buildings are not simply masked by their principal elevations. The general character of the accommodation is indicated by the plans, of which there are varying types, presenting a uniform attempt to give character and value to the staircases and halls. The buildings were commenced about a year ago, and the entire block will be finished in a few weeks, this rapid achievement being the result of careful organisation by the architect and by the builders. The works, having been commenced before the 1st January of this year, have been carried out under the old Building Act, and the bay window applications in connection therewith are believed to have been the last made under that Act. The property has been built for Mr. W. Bridge, the contractors being Messrs. J. Allen and Sons, of Kilburn, the amount of their contract being £92,000. The chief foreman is Mr. W. J. Otterwell, and the architect Mr. Delissa Joseph, F.R.I.B.A., of 17 and 18, Basinghall-street, E.C.

COATS MEMORIAL CHURCH, PAISLEY.

(See description on p. 446.)

COVENTRY MUNICIPAL BUILDINGS.

In continuation of our illustrations of the design selected by Mr. Chas. Barry, F.S.A., the assessor for the new Municipal Buildings for the Coventry City Council, we give another double sheet of sketches, showing the end elevations to Earl-street and Hay-lane, and the interiors of council-chamber, hall and staircase, and upper floor. We published other illustrations of this design of which Messrs. Harry Quick, of Coventry, and Messrs. Brewill, Baily, and Mallows are the joint architects, in our issues of July 26th and the 6th inst.

Engineering Notes.

North British Railway Extensions.—At the half-yearly meeting of the North British Railway, to be held to-day (Friday) at Edinburgh, the engineers, Messrs. Cunningham, Blyth, and Westlaw, will report that the Banavie branch of the West Highland Railway was opened on June 1st. The new south pier at Methill is completed. On the east pier, out of a total length of 1,000ft., 440ft. have been completed, and a further length of 150ft. has been founded. The contractor is erecting a concrete cofferdam to enable him to construct the new entrance and quay walls. The Garngaber Junction Railway will be ready for opening in a few weeks. The contractors for the Abbeyhill extension continue to make good progress with the new tunnel, near 100 yards being completed. Nearly the whole of the ground required for the extension of Waverley station has now been cleared of buildings, and the brick arching is making fair progress. The small contract for the construction of a new main sewer from Waverley Bridge, under the whole length of the station, is now almost completed. The reconstruction of Waverley Bridge is being carried on as rapidly as possible. Messrs. Simpson and Wilson, engineers, Glasgow, report as to the Charing Cross Station: "We beg to report that the opening up of the tunnel is now completed. Contracts for the waiting-rooms, verandahs, and hoists have been recently entered into." Mr. James Carswell, engineer, Edinburgh, reports that the whole of the works in connection with the widening of the line between Corstorphine Station and the east end of the Mound tunnels at the entrance to Waverley Station were completed, and, after being inspected by the Board of Trade officer, the new lines and tunnels were opened for traffic on 21st July last. Good progress is being made with the carrying out of the works in connection with the Glencraig and Craighead branches. About 44 per cent. of the earth work has been executed, about 40 per cent. of the bridge-work has been completed, and the steelwork for the remainder is in hand. About 70 per cent. of the drains and culverts have been put in, the fencing and gates are practically completed, and half a mile of the permanent way has been laid down and ballasted. The doubling of the Monkland and Kirkintilloch line between Muckcroft and Avenuehead, in connection with the new Garngaber fork, is progressing favourably. The whole of the retaining walls and bridges have been completed, and about a mile and a half of the new line has been laid down.

Spurn Point.—A new lighthouse has just been built at Spurn Point, the sandy peninsula at the mouth of the Humber. It replaces one of brick built in 1776 by John Smeaton, which in turn supplanted a tower erected in 1675. The present structure, which was formally inaugurated on Thursday in last week, occupies a fresh site, and has been erected from designs by Mr. Thomas Matthews, engineer to the Trinity House. The foundations were prepared for by sinking 21 concrete cylinders, each 22ft. in depth and 7ft. in diameter, within a circular area of 1,256·6sq.ft., and 40ft. diameter. The interspaces between these cylinders and the interiors of the cylinders themselves are filled in with concrete of a slightly different texture to that of which the cylinders were made, the latter being somewhat closer and harder. The whole forms a complete mass through which no water can percolate, affording no facilities for the development of extensive cracks or weak places, and resting on a subsoil of gravel. Smeaton's piles were only 9ft. 6in. deep, and did not go below the depth of the sand layer. Upon the foundation of the concrete cylinders the new lighthouse tower has been built of blue vitrified bricks from Staffordshire, over 300,000 of which have been used, and it is 26ft. higher than that of Smeaton. In the basement of the tower provision is made for storing 8,000 gallons of heavy mineral oil, with a flashing-point of 240° Fahr. The tanks are lined with lead to prevent leakage, and the oil is pumped up to the service room at the top of the tower as required. The whole weight of the tower is 3,020 tons, the wall at the base being 5ft. 6in., and at the top 2ft. 9¾in. in thickness. The opportunity has been taken greatly to improve the light to be shown from this station, also to render unnecessary the maintenance of the low lighthouse. A white flash of two seconds' duration is shown every 20 seconds, thus giving three flashes in a minute, the dark interval being 18 seconds. Three subsidiary lights are shown from lower windows in the new tower, one white fixed light of 12,000 candle-power up the Humber, one white fixed light of 8,000 candle-power to show over the Chequer shoal, and one red fixed light of 4,750 candle-power to cover the Sand Huile buoy. The lantern and illuminating apparatus were made by Messrs. Chance Brothers, of Birmingham.

The Galway and Clifden Railway.—This line, the longest and most important undertaking sanctioned under the Light Railways in Ireland Act of 1889, has just been opened for traffic. The total length of the line, which is a single one of 5ft. 3in. gauge, and opens out to tourists Connemara, is 48 miles. It commences with a junction with the Midland and Great Western Railway system at Galway, and terminates at Clifden on the Atlantic coast, with intermediate stations at Moycullen, Oughterard, Maam Crossroads, Recess, and Ballynahinch. Mr. J. H. Ryan, of Dublin, and Mr. Townsend, of Galway, were the joint engineers, and Mr. E. J. Jackson the contractors' engineer.

Wirral and Wrexham Railway.—The last excursion of the half-dozen outings arranged by the Liverpool Engineering Society during the summer took place on Saturday afternoon, when a visit was paid to the Wirral Railway Works. Amongst those present were Mr. A. J. Maginnis (president) and Mr. S. B. Cottrell (vice-president). The new line of the Wirral Railway commences at Leasowe, near Bidston Hill, and here the contractors for the new works, Messrs. Monk and Nowell, Liverpool, had provided a locomotive and a carriage to convey the visitors over the new line, 15 miles in length, and laid with double rails. There will be stations at Upton, Barnston, Neston, and Hawarden Bridge, at which place the Wirral line will join that of the Manchester, Sheffield, and Lincolnshire Company. For almost a mile, between Neston and Hawarden Bridge, the line will run in a deep cutting made through the solid rock. Great difficulty has also been experienced in laying down the road alongside the Dee estuary, in consequence of the marshy condition of the ground. The construction of the line was commenced in October, 1892. Sir Douglas Fox is the chief engineer of the work, Mr. Cooke resident engineer, and Mr. E. S. Wilcox acting engineer. On arrival at Hawarden Bridge the party left the train and proceeded to inspect the swing-bridge, which was opened in August, 1888, and which carries the Manchester, Sheffield, and Lincolnshire Railway over the Dee.

CHIPS.

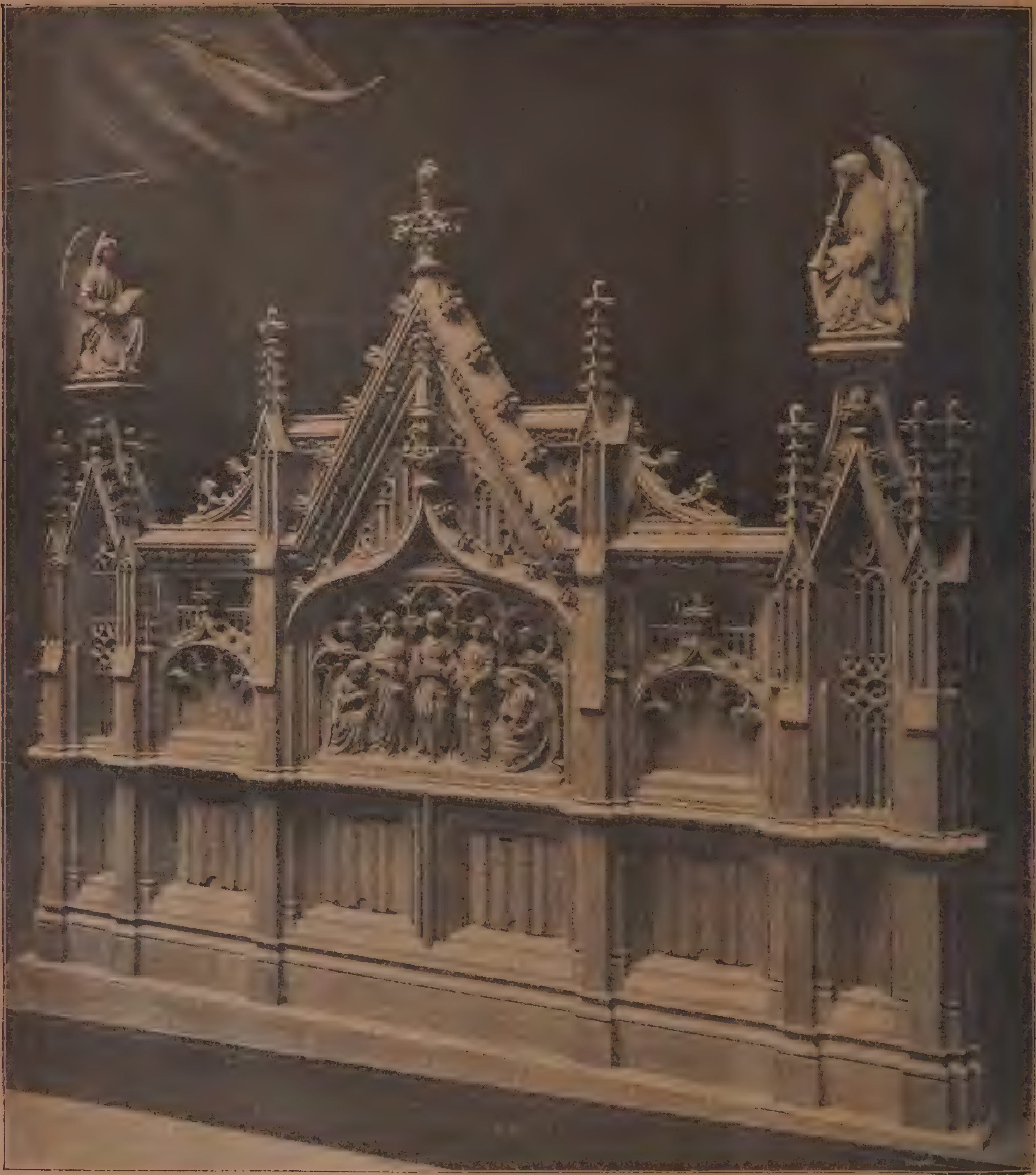
A scheme is on foot to construct a new line between Nottingham and Scarborough. The proposed route is through a great part of the Nottinghamshire coalfields and Retford.

In the case of an application on behalf of Harry Miller, of Brentwood, builder and timber merchant, the order for discharge from bankruptcy has been suspended for two years ending July 15, 1897.

At a meeting of landowners' representatives and farmers, held at Reynoldstone on Monday night, it was unanimously resolved to inaugurate a scheme for the construction of a light railway into the Gower peninsula. The promoters of the scheme propose to utilise the present Oystermouth Railway to Blackpill and the old railway along the Clyne Valley.

The town of Llanrwst will soon possess an additional attraction, a local solicitor having offered to grant to the council Lake Crafnant and its surroundings, comprising in all some 80 acres.

On Saturday last the members of the Bristol Clerks of Works and Builders' Foremen Association concluded a series of excursions by a visit to the quarries of the Bath Stone Firm, situated at Box. On arriving at Box, the party drove to the mouth of the quarries on Box Hill, and were conducted through the mines by Mr. Hancock (manager), assisted by Mr. Jelly. After an examination of the plans and a general explanation as to the discovery and history of the quarry, and the method adopted by the Government surveyors in making surveys, Mr. Hancock conducted the party through the workings. After inspecting the Box Ground stone, a passage was made through the tunnel connecting it to the Corsham side, and there the company ascended.



SCREEN OF ORGAN CONSOLE AT COATS MEMORIAL CHURCH, PAISLEY.

Made by Messrs JONES AND WILLIS.

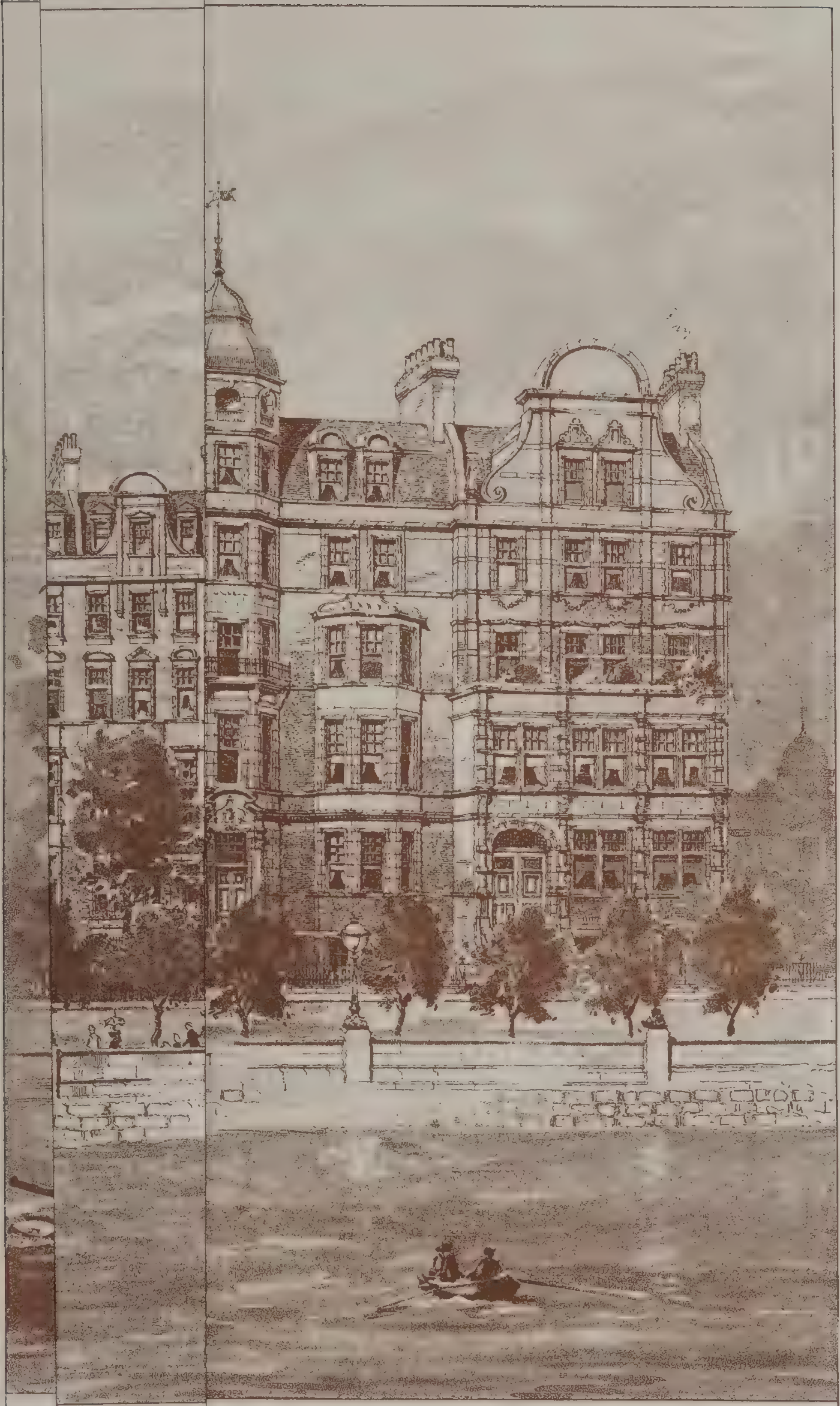
WROUGHT IRONWORK AND WOODWORK, COATS MEMORIAL CHURCH.

ON our lithographic sheet are shown a wrought-iron gas corona with hammered foliage for the nave and transepts (12 in all), suspended from ornamental projecting brackets with down-rods, enriched with scrolls and lead work; also one of four wrought-iron gas-brackets, with beaten-up foliage (about 5ft. high), fixed to tower columns; one of four copper and wrought-iron lanterns, suspended in vestibule; wrought and copper lantern, fixed to wall of west front to light staircase; wrought-iron and copper lantern, affixed to wall of steps leading to west entrance; and a copper and iron lantern for south entrance.—The Organ is placed on both sides of chancel above the canopied stalls, but is played from a console fixed in centre of chancel, and the photo here reproduced shows the front or screen of console facing west. It is all in oak, Late Decorated in style, with figure-panel representing the Heavenly Choir, and flanking figures typifying Prayer and Praise. The height is about 6ft. 6in., width 7ft. 6in.—All were executed at the works of Messrs. Jones and Willis, of 43, Great Russell-street, London, and Eagle Works, Hornsey, and Birmingham, to the designs of Mr. Hippolyte J. Blanc, A R.S.A., architect.

◆

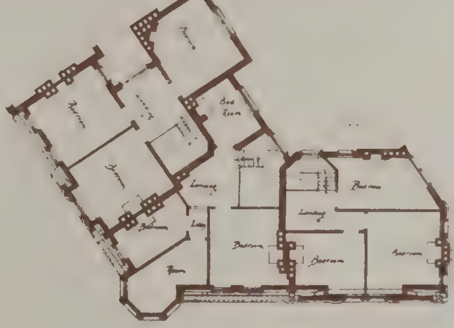
The city council of Exeter, after a long debate, have decided to purchase for £7,500 the works and plant of the electric lighting company in that city.

The parish church of St. Modwen, Burton-on-Trent, was reopened on Friday after extensive restoration. At one time a scheme was contemplated which involved the extension of the chancel, the construction of choir and clergy vestries, and the reseating of the church in the modern style; but this was found impracticable, and an alternative plan providing for the thorough repair of the fabric was decided upon. This has been carried out at a cost of between £5,000 and £6,000, under the supervision of Mr. J. A. Chatwin, architect, Birmingham; Messrs. Lowe and Sons, Burton, being the contractors. The present edifice dates from 1719; but it is erected on the site of the old abbey church built in 1002, and much of the material of that ancient structure was used in the erection of the St. Modwen's of the present day. To this cause was largely due the unsafe condition of the place.



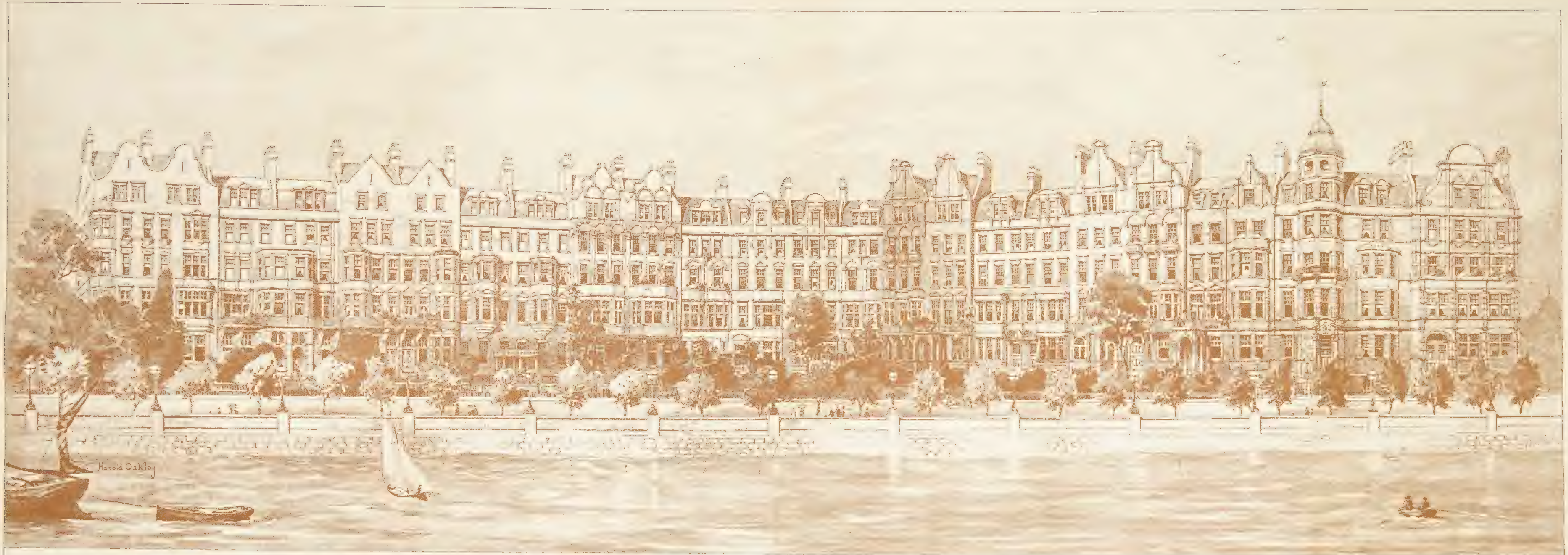
ES NOS 21,

ment C
Mansions.
Joseph. F.R.

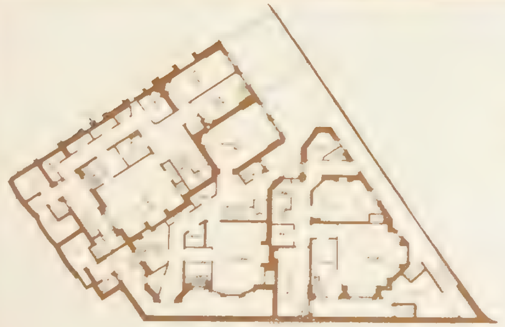


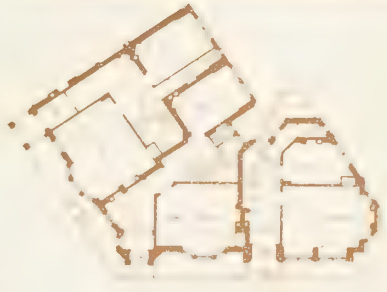
FOURTH FLOOR PLAN.

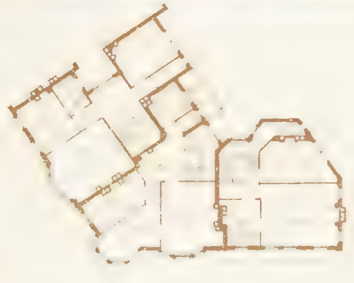
"PHOTO-TINT", by James Akerman. 6, Queen Square. London, W C



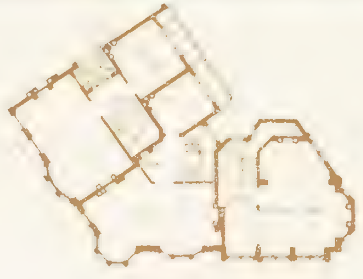
PLANS OF HOUSES Nos 21. 22. 23.

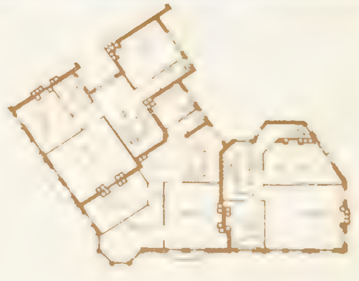

BASEMENT PLAN


GROUND FLOOR PLAN


FIRST FLOOR PLAN

Chelsea Embankment Court:
Twenty-three Town Mansions.
Delissa Joseph F.R.I.B.A. Archt


SECOND FLOOR PLAN


THIRD FLOOR PLAN

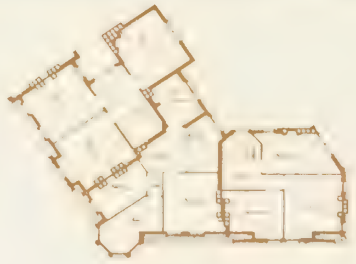
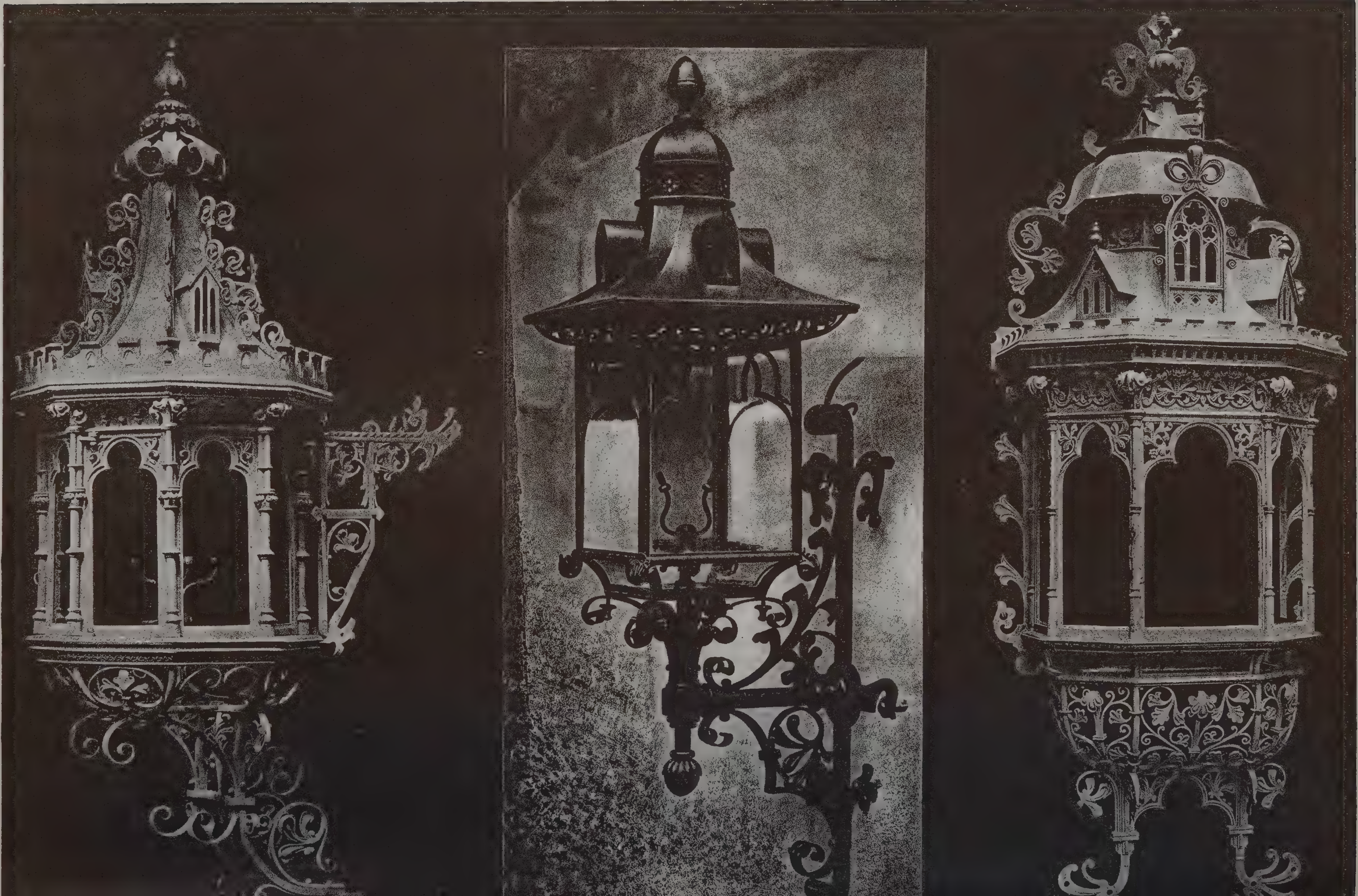
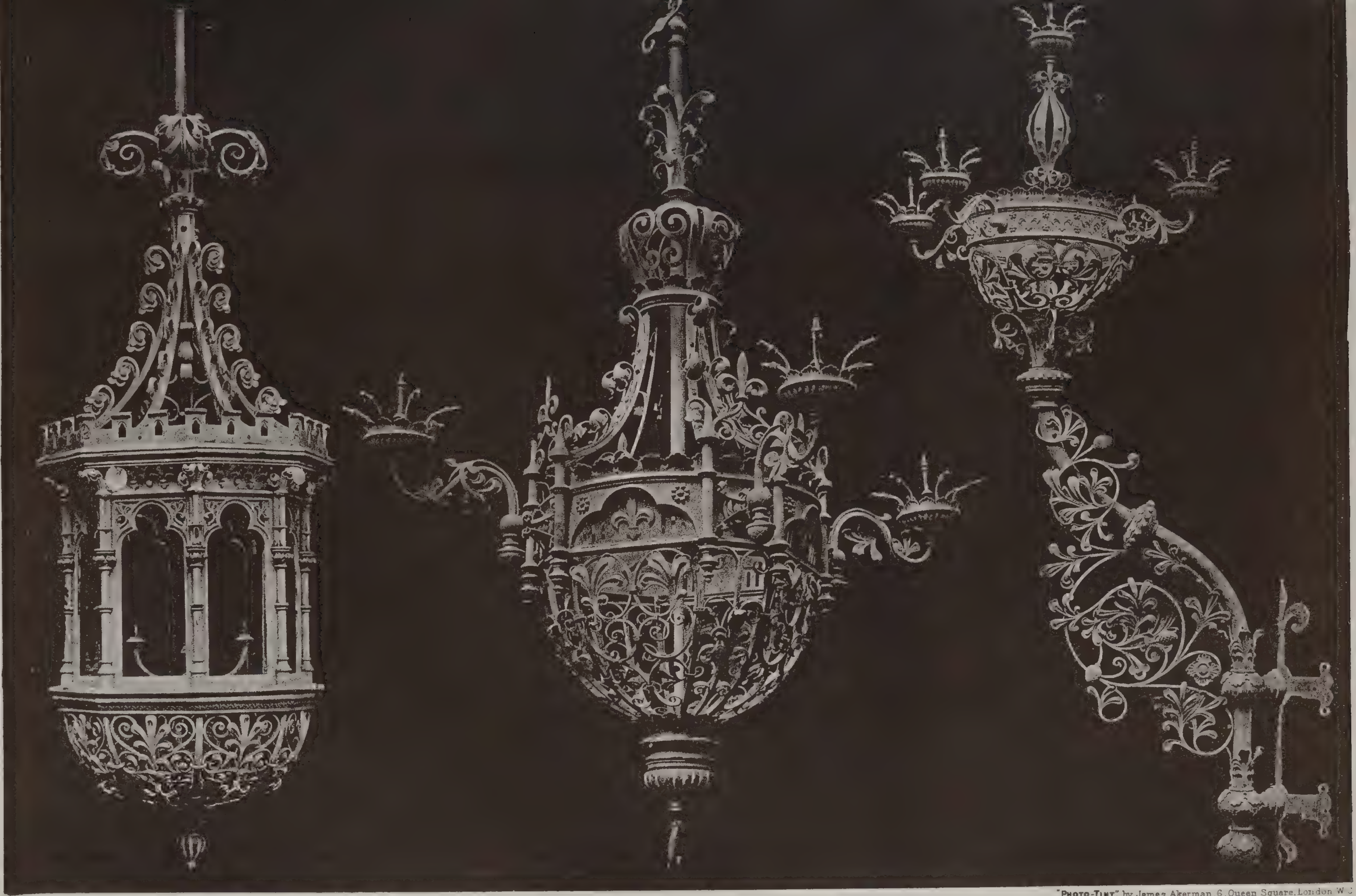

FOURTH FLOOR PLAN

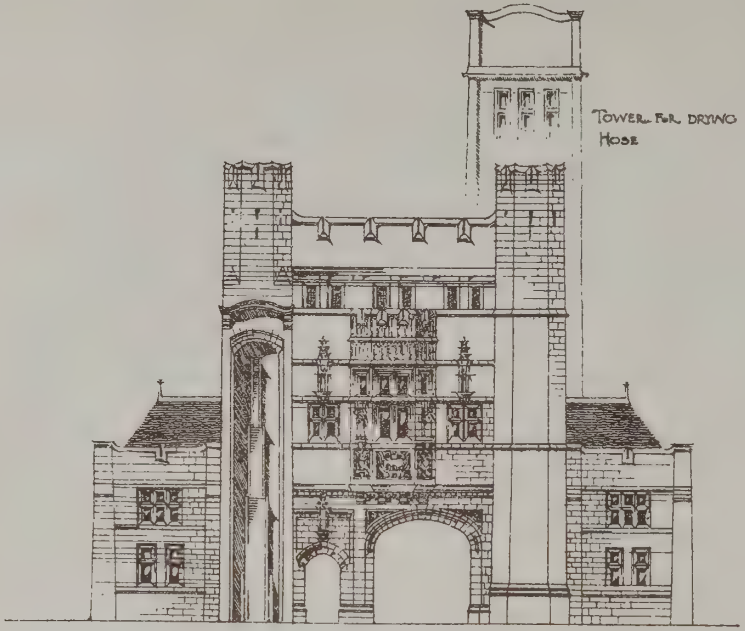
PHOTO TINT by James Akerman, Queen Square London W.



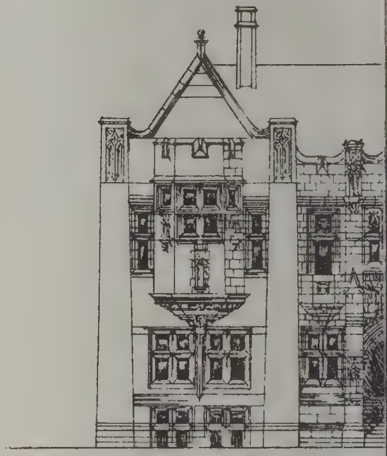


"PHOTO-TINT," by James Akerman, 6, Queen Square, London W

THE·COATS·MEMORIAL·CHURCH· PAISLEY·N·B· WROUGHT IRONWORK· DESIGNED·BY HIPPOLYTE J·BLANC ARSA ARCH^{T} EXECUTED BY MESS^{RS} JONES & WILLIS



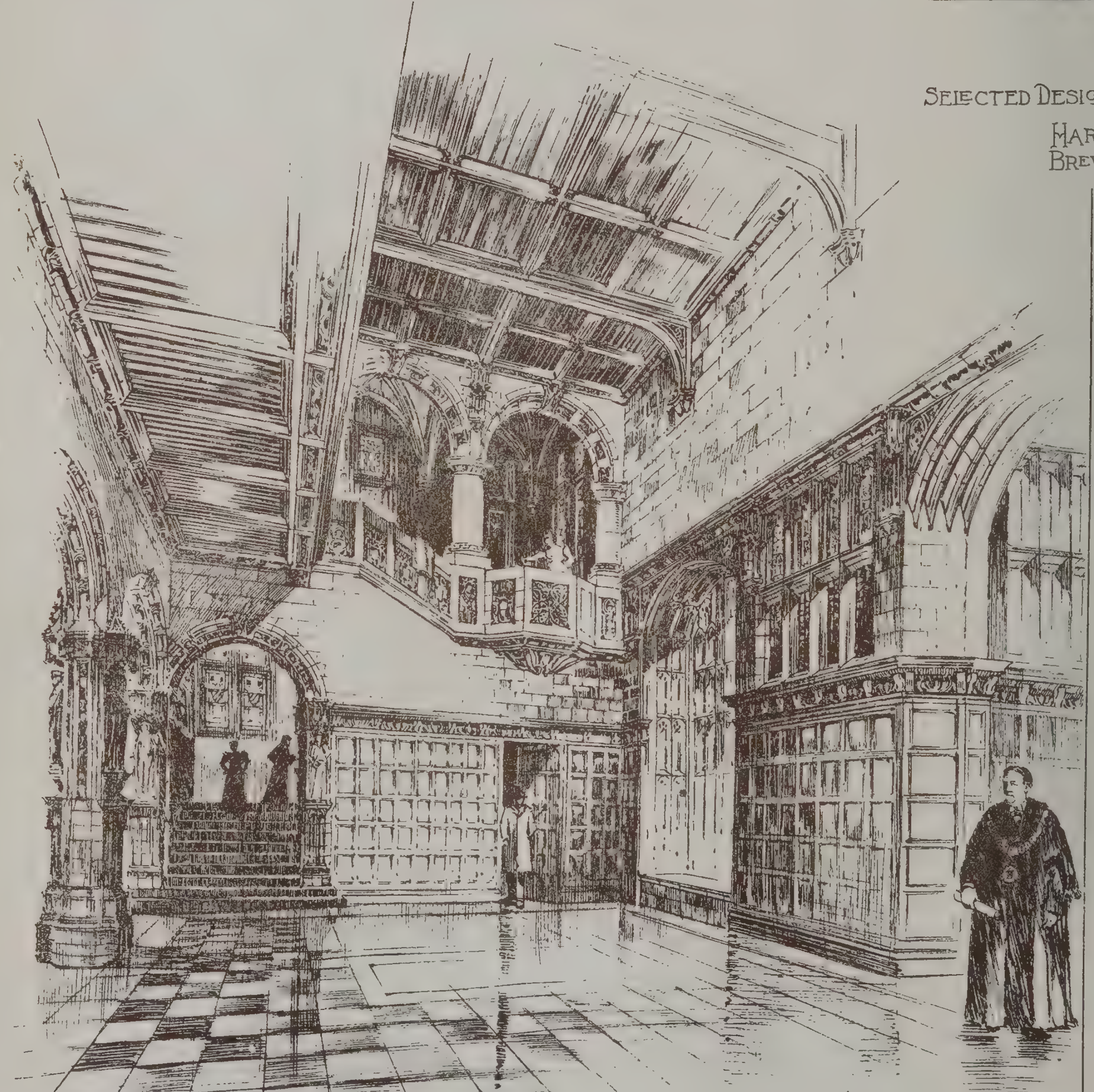
Elevation to May Lane.



Elevatio

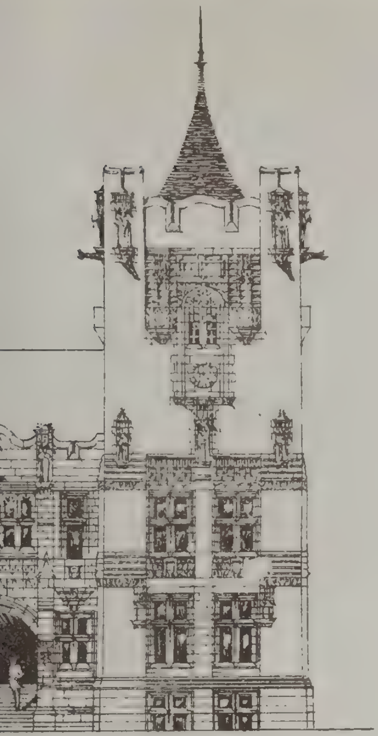
SELECTED DESIGN.

HARRY QUICK, COV
BREWILL BAILY & M



VIEW OF HALL & STAIRCASE

PROPO ICIPAL COVE

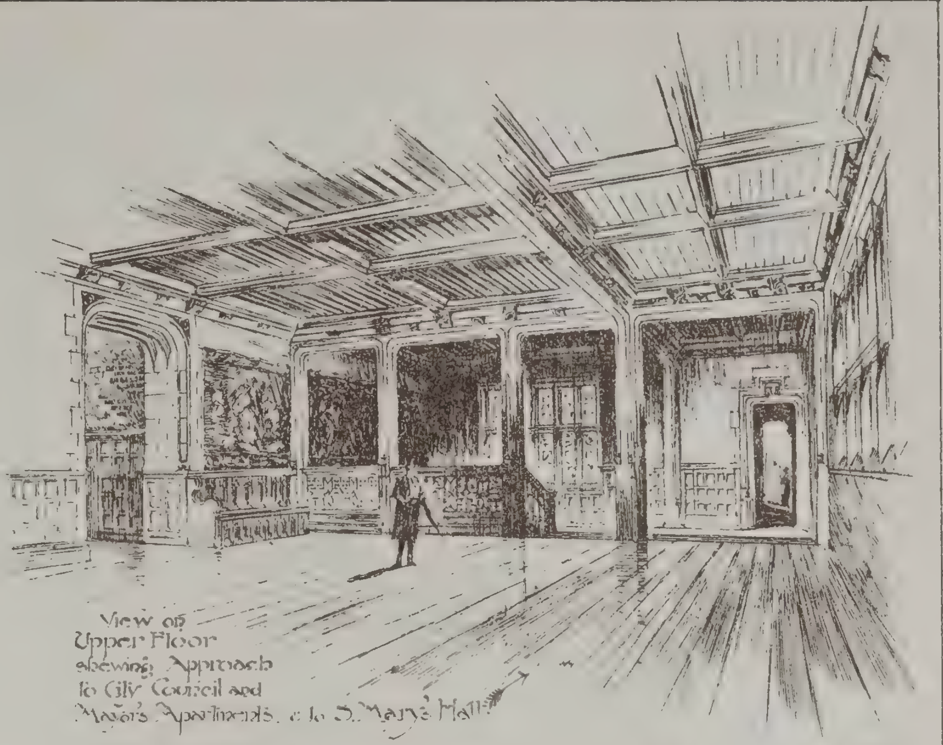


h Earl St.

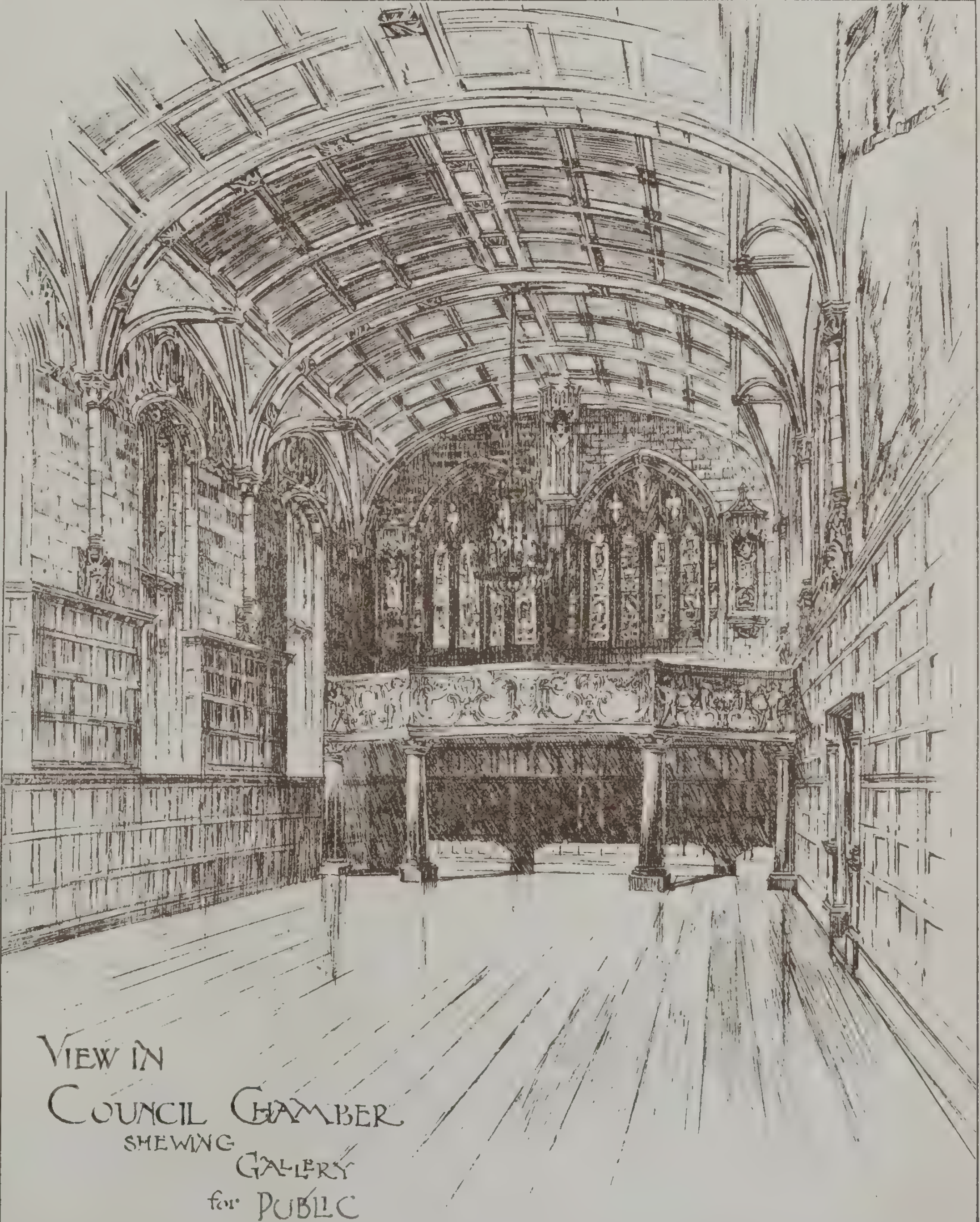
NTRY.
LOWS } JOINT ARCHITECTS.

f Fireplace
ENTRANCE.
HALL.

SED MUN-
BUILDINGS
NTRY



View of
Upper Floor
shewing Approach
to City Council and
Mayor's Apartments, & to St Mary's Hall

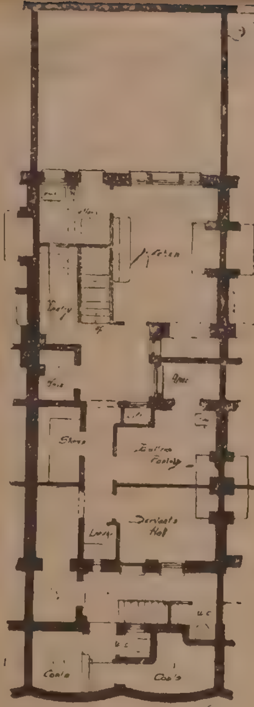


VIEW IN
COUNCIL CHAMBER
SHEWING
GALLERY
for PUBLIC

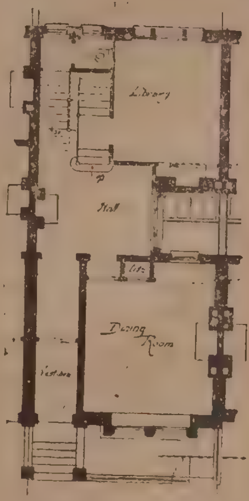
Photo Lithographed & Printed by James Akerman, 6, Queen Square, W.C.

CHELSEA EMBANKMENT COURT, S.W.

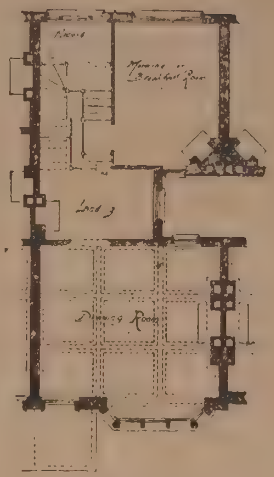
DELISSA · JOSEPH · FRIBA ARCHITECT



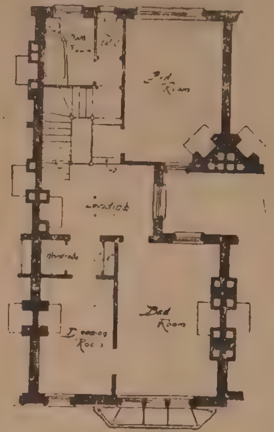
BASEMENT PLAN



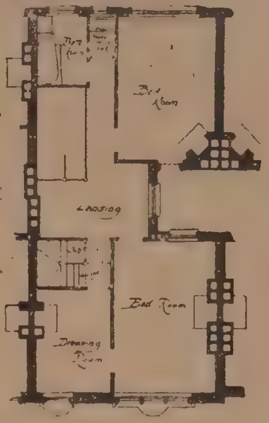
GROUND FLOOR PLAN.



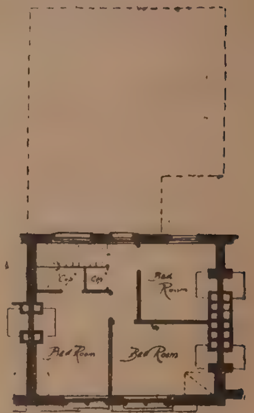
FIRST FLOOR PLAN.



2ND FLOOR PLAN.

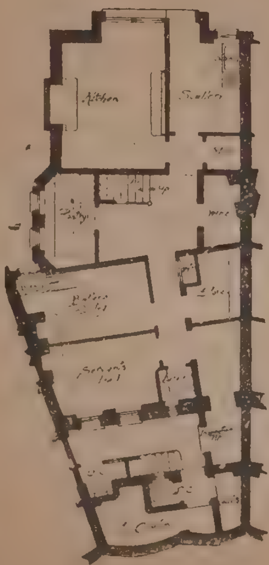


3RD FLOOR PLAN.

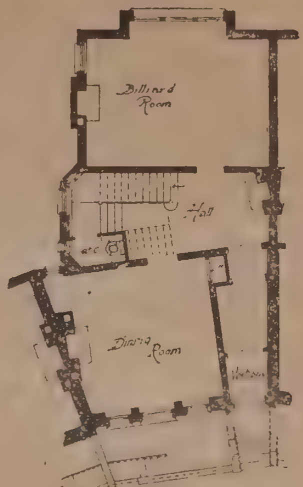


4TH FLOOR PLAN.

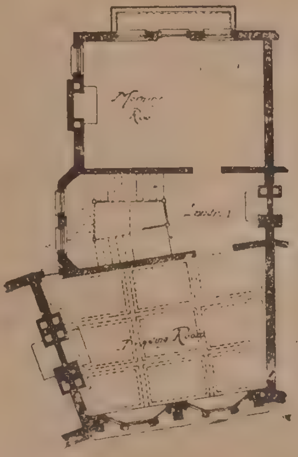
TYPE PLANS OF HOUSES Nos 1.2.3.4.5.6.7.8.9.10.15.16.17.18.19. & 20



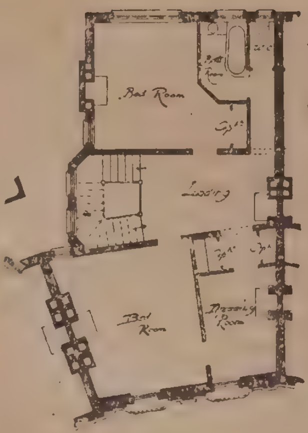
BASEMENT PLAN



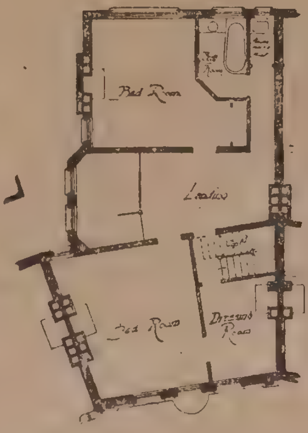
GROUND FLOOR PLAN



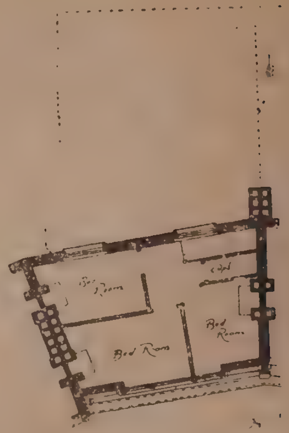
FIRST FLOOR PLAN



SECOND FLOOR PLAN.



THIRD FLOOR PLAN.



FOURTH FLOOR PLAN.

TYPE PLANS OF HOUSES Nos 11. 12. 13. & 14.

Building Intelligence.

Birmingham.—The extensions of the Grand Hotel have been for some time in progress, from designs by Messrs. Martin and Chamberlain, of Birmingham. The hotel was in a large degree reconstructed in 1889, and a new block of buildings is being added fronting Barwick-street, including basement and sub-basement of ten stories. Two stories have also been added to about half the range of buildings fronting Church-street; new offices have been constructed in Colmore-row, and two extra billiard-rooms under the front shops. A ballroom, 100ft. by 52ft., and 32ft. in height, occupies the principal portion of the ground floor of the new block, and is approached by vestibules opening from above the centre of the hotel corridor. The ceiling has 40ft. clear span from side to side, without supporting pillars, and above it there are seven stories of brick and stone work. For the purpose of bearing this weight, there have been arranged over the ballroom a series of five steel truss girders, with queen-posts, rising to the height of the story immediately above—13ft. They are built into five of the dividing walls of this story, while a central corridor runs transversely between the queen-posts. Steel upright girders are also used in the piers of the ballroom, as not being subject to the crushing effect to which simple masonry would have been exposed. The permanent decoration of the ballroom has been carried out by Mr. William Norton, of Corporation-street, Birmingham, in mouldings of fibrous plaster, in the style of Louis XVI. These are coloured ivory-white relieved with gold, while the panels of the ceiling are painted with aërial effects and figures of cupids. In the lower portions of the piers Devonshire marbles are used, and the room is entered from its adjoining drawing-rooms, of corresponding style, by a pair of mahogany doors. There are similar doors between the drawing-room and vestibule. At the lower end of the hall is a musicians' gallery, with a projecting screen of hammered brass and copper; the latter is the work of Messrs. T. Brawn and Co. There is also a crimson brocatelle curtain for dividing the room into two if required. Four hundred persons may be seated at dinner-tables, and at least double that number accommodated at a public meeting. In the basement there are two artesian wells, boiler-house, electric-light generating house, and steam laundry; there is also a range of stockrooms. At the top of the building is a tank, having a capacity of 21,762 gallons, and to which water is pumped from the wells. The new block contains eighty-nine new visitors' rooms, including six private sitting-rooms. In addition to the lift, it has four through staircases for visitors from floor to roof, including one which is external to the building. The extension will cost from £60,000 to £70,000, bringing up the sum which has been spent on the structure to about £100,000. The building contractors are Messrs. John Barnsley and Son, and Mr. James Lucas is the clerk of the works.

East Layton.—The formal dedication of the new mission church erected by Mrs. Proud, of East Layton Hall, took place on Sept. 19th. The building occupies a site on the ridge of Layton Hill, and Mr. J. P. Pritchett, of Darlington, is the architect. Mr. Dodds, of Gilling, has been the mason and clerk of works; Mr. Harwood, of Manfield, the joiner; Mr. Hedley, of Barnard Castle, plumber and glazier; Mr. Wandless, of Darlington, slater. Mr. Ebner, of London, supplied the marble mosaics for the floor; Messrs. Hart, Peard, and Co., Birmingham, ironwork; and Messrs. Richardson and Co., Darlington, heating apparatus. The stone used was from the Forcett freestone quarry, which lies within two miles of the church, and the roof covering is of brown Welsh tiles. The plan is cruciform, with buttressed walls and square tower. The style is Late Tudor, with mouldings and other details in the style of King's College Chapel, Cambridge. The east gable end contains a five-light window, and the west a four-light window. The transept gable ends contain each a pair of two-light windows. The nave is divided into four bays, each containing a three-light window, and the chancel has three bays, each containing a two-light window. All the windows have moulded jambs, arches, mullions, and tracery, and the doorways are deeply moulded to correspond, all with bosses left for future carving at the label terminations. Internally, the walls are lined with finely-dressed stone, the windows and doors having small pillars in the moulded jambs. The four piers and arches of the tower are also deeply moulded, but all the capitals, corbels, and label terminations are at present left rough for future carving. The roofs are of oak, on the curved brace principle, with moulded principals and purlins forming panels with boarding between them. The doors are also of oak, panelled with tracery on the inside, and having wrought-iron hinges on the external boarding. The windows are glazed with clear glass having coloured border. The floors of seats are of oak blocks, and the passages and chancel are floored with marble mosaic. The upper part of the pulpit is of wainscot oak, moulded, and carried on a moulded stone base and shaft. The font is also of stone. The stalls of the chancel, the nave, the prayer desk, and reredos, and screen to north transept (forming vestry) are all of wainscot oak, moulded and carved. The altar-table is of oak. The front is divided into three panels, with buttresses marking the divisions. The table is covered with a super-frontal of crimson velvet.

Great Easton.—The Bishop of Peterborough visited Great Easton on Wednesday week, and formally reopened the parish church, which has just undergone much-needed restoration. The church is Early English in style, consisting of a chancel, nave, and aisles, with a tower at the west end, surmounted by a spire, in all 90ft. high. The church was reseated in 1838, and affords accommodation for 320 worshippers. The work of restoration has been carried out by Mr. John Thompson, of Peterborough, without an architect. The principal feature of the restoration has been the reroofing of the church. Practically, the whole of the roof, internal and external, is new, with the exception of the heavier timbers, all of which remain. The lead outside, the oak planks inside, and the deal between, are all new. Some of the clerestory windows, which were considerably out of perpendicular, have been taken out and replaced in their proper position. All the old and crumbling stone in the edifice has been replaced, and the church has been repointed throughout. Two lights in the porch have been opened out. The four pinnacles of the tower have been removed, two of them having been blown down in the great gale on Sunday, March 24 last. One of the pinnacles has been blown down no fewer than three times, and, as the others were considered unsafe, it was decided to remove them. These pinnacles were added when the tower was restored and the spire was rebuilt about 30 years ago.

Jarrow-on-Tyne.—St. Mark's Church, erected at the corner of Dee-terrace and Salem-street, Jarrow, was opened on Saturday. The new church, like its parent stem, is situated in the poorest part of the town, and has cost £2,500. It accommodates, including choir, 300 persons, the nave seating 276 and the chancel 24. The nave and chancel are divided by a four-centred arch in stone. The vestries, on the north side, comprise a room on the ground floor for the choir, with a clergy vestry over. The organ chamber is on the south side of the chancel. The style of architecture is Late Gothic, the doors and windows being of simple character and detail, grouped to obtain effect. The chimney-stack and bell-turret are combined for a similar purpose. The materials employed are Hebburn stone, the roofs, which are of open timber, being covered with green Westmoreland slates. The heating is by hot water on the low-pressure system, fitted by Messrs. Walker and Son, of Newcastle. The general contractor is Mr. Stewart Craig, of Jarrow. The whole work has been carried out from the designs and under the superintendence of Messrs. Armstrong and Knowles, Grainger-street West, Newcastle. The church for the present will be seated with chairs; the altar, of carved oak, is by Messrs. Hancock, St. Germans, Cornwall.

Langside, Glasgow.—The memorial-stone of the new Langside Free Church, Glasgow, was laid on Saturday by the Earl of Moray. The site of the church is the spot where the Regent Moray drew up his army at the battle of Langside, and upon it lately stood the picturesque building known as Queen Mary Cottage. Planned by Mr. Alexander Skirling, I.A., the new building, which will cost £10,000, will be Græco-Roman in character, with modern adaptations. The main entrance from Battle-place has a massive doorway divided into three compartments by pilasters and imposts, over which is a moulded cornice with dentil course and antifixæ. Surmounting the main entrance is a portico of the Ionic order, composed of six columns supporting an entablature and pediment, simplicity being the main feature throughout. On either side are circular staircases leading to the galleries. The sittings of the church, which is arranged as a nave and aisles, are planned on the amphitheatre principle, the pews radiating from a centre and the floor sloped all round. Behind the pulpit platform is an organ recess, while accommodation is provided for the choir in front of the pulpit platform, which will be inclosed with a trellis-wood railing. In the basement are the kitchen and heating chamber, while on the same level with the church floor are a suite of rooms, comprising the vestry, session-house, ladies' parlour, and a large class-room. At the south side access is obtained to a hall above accommodating 350 persons. The church is planned to provide 1,000 sittings.

Newcastle-on-Tyne.—The Burt Memorial Hall in Northumberland-road, the headquarters of the Northumberland Miners' Association, was formally opened the other day. The building comprises two floors, and occupies a site 117ft. by 53ft. Externally, the walls are faced with red Leicestershire bricks, with stone dressings from Brunton and Dunhouse Quarries, and part dressings of terracotta. The roof is covered with green Westmoreland slates. The chief front has an oriel window, entirely of stone, and is completed by a gable, on the summit of which stands a miner in stone, taken from Mr. Ralph Hedley's picture, "Going Home." In the centre of the gable are the county arms. On each side of the oriel is a niche, and these recesses will some day be filled by statues of members of the Association. The principal entrance, which is approached by a flight of steps, leads to a wide corridor running the length of the main building, and off this are the waiting-room, offices for president, secretary, and treasurer, stores, &c. In the centre of the corridor is the staircase-hall, inclosed with an oak screen; the staircase to the upper floor is entirely of oak. On the upper floor is the hall for the delegate meetings, 48ft. by 26ft., and lofty. There is an oak dado round the room, and above the walls are divided by pilasters in plaster; the ceiling is coved, and constructed of Minnesota yellow pine. The seating in the hall is fixed, and entirely of oak, the seats and backs being covered with green morocco. There is a raised dais at one end for the president and officials. The glazing to the oriel window is leaded glass, and six panels have medallions with symbolic designs. Specially designed electroliers have been made in wrought iron for the hall. An ante-room adjoins, fitted up in oak. On this floor there is also a committee-room and a library, a museum of past mining appliances being located in the latter room. The remainder of the buildings comprise residences for the secretary and treasurer. The general heating is by steam; but, in addition, there are fireplaces to all the rooms except the hall. The mantels are of Doulton faïence, all of different tints. The general contractor has been Mr. S. B. Burton; the plumbing is by Mr. Stephen Percy; the slating by Mr. John Hewitson; the plastering throughout is in adamant; the window casements and heating apparatus by Messrs. Ashwell and Nesbit; the painting by Mr. John Gibson; the terracotta faïence and sanitary fittings by Messrs. Doulton and Co.; the carving of the figure by Mr. Canavan (of Mr. Robert Beall's carving works); the special fittings and furnishings by Messrs. Robson and Sons. The architect is Mr. John W. Dyson, of Newcastle, and Mr. Councillor W. Flynn, of Gateshead, has acted as the clerk of works.

A new post-office in Branch-road, Armley, Leeds, was formally opened on Tuesday. Mr. C. F. Wilkinson, of Leeds, is the architect.

The Countess of Derby opened, on Monday, the new homes for the blind of North and North-East Lancashire, at Fulwood, near Preston. The building is situated on a slight eminence just outside Preston, on the Garstang-road, and has been erected at a cost of about £8,000. It is built of Accrington pressed brick, faced with stone, and is certified for 52 scholars (an equal number of each sex). On the ground floor are classrooms, lavatory, committee-room, and the matron's quarters. The dormitories on the second floor each contain 13 beds, and between the dormitories is the teachers' room. There is a workroom for skip and basket-making, &c., and where the adult blind will work and receive instruction.

COMPETITIONS.

Machynlleth.—The district council of Machynlleth have awarded the premium of £40 for the best scheme of water supply for the town to Messrs. Kirkby, of Newport, Mon., who have also been appointed engineers for the construction of the works at a remuneration of 5 per cent. on the total outlay.

Shoreditch.—Competitive plans were sent in last Wednesday for new baths and washhouses, with a public library and museum attached, to be erected on an extensive site in the parish of St. Leonard, Shoreditch, having a frontage of 146ft. in Pitfield-street, with return fronts in Bowling Green-walk and Coronet-street. To the rear a space is reserved towards Hoxton-square for an electric light station. The area to be covered by the new buildings is somewhat impeded by some old houses left standing on the south side of the land, leaving ancient lights to be provided for. The sizes stipulated for the library are almost too large to be conveniently contrived with advantage on the space allotted by the Commissioners for the extent of the building—viz., 5,850ft. super. The area for the baths is 28 014ft. super. The cost for the whole is about £40,000. Minute particulars are stipulated for by the conditions requiring details of the steam-pipes and engineering work on the plans. The perspective is to be drawn from a given point and angle to the same scale as the geometric elevations—viz., ⅛in. to the foot, and a ½in. scale detail of the façade is insisted on. It is provided that the library and museum may be chosen from one design and the baths and washhouses from another. No architect is allowed to send in more than one design, and that without any alternatives. Premiums of £125, £75, and £50 are offered, and all the prize drawings to become the property of the promoters. Mr. Rowland Plumbe, F.R I.B.A., is the referee appointed to assist the commissioners in arriving at their award.

West Ham Technical Institute Competition.—The Technical Instruction Committee of the Council of the county borough of West Ham received the following report from Mr. J. MacVicar Anderson, F.R.I.B.A., with regard to the designs submitted in the above competition:—

6, Stratton-street, W.,
August 6th, 1895.

To the Council of the County Borough of West Ham.

Gentlemen,—Having very carefully examined each one of the 73 sets of designs that have been submitted in competition for the Technical Institute and Public Library which it is proposed to erect on the site in Romford-road, known as The Green, I beg to report that, having regard to (a) the conditions of the competition; (b) the by-laws of the borough, which, by the conditions, had to be complied with; (c) the general merit in design, more particularly excellence of plan, to which the attention of competitors was specially directed; (d) the adaptability of the designs for the intended purpose of the buildings, I award the first place to the design marked No. 34, the second place to the design marked No. 51, the third place to the design marked No. 22.

I have the honour to be, Gentlemen,
Your obedient servant,
(Signed) J. MacVicar Anderson.

The authors of the designs were found to be:—

No. 34.—Messrs. J. S. Gibson, A.R.I.B.A., and S. B. Russell, A.R.I.B.A., 11, Gray's Inn-square, W.C.

No. 51.—Messrs. Clark and Hutchinson, 28, John-street, Bedford-row, W.C.

No. 22.—Mr. Thomas Davison, A.R.I.B.A., 11, Oakley-crescent, Chelsea, S.W.

The council have, in accordance with the conditions of the competition, awarded the premiums of £250, £150, and £100 respectively to the three designs above named.

Mr. J. Passmore Edwards will open the art gallery which he has presented to Newlyn on the 14th or 16th of October. The building was illustrated in our issue of the 8th February last. Mr. James Hicks, M.S.A., of Redruth, is the architect, and Messrs. John Symonds and Son, of Blackwater, are the contractors.

A new Wesleyan church, erected in Argyle-street, Hull, was opened on Friday. The building, designed to seat 950 persons, comprises ground floor and gallery, with recessed organ-chamber. It is of brick, with stone and terracotta dressings. A new organ has been placed in the church, having two complete manuals, with a total of 876 pipes. The cost of the organ is £400, whilst the building itself cost about £3,200.

The memorial-stones of a new Congregational church, which is being built at Llangynog, were laid last week. The architect of the new chapel is Mr. T. Rees, A R.I.B.A., Birkenhead; the contractor is Mr. D. Mason, of Llansantffraid. The site is that of an old Wesleyan chapel, on the banks of the Tanat, and the chapel is designed to accommodate 150 persons.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to The Strand Newspaper Company, Limited.

TERMS OF SUBSCRIPTION.

One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India, £1 6s. 0d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front-page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No Front-page or Paragraph Advertisement inserted for less than 5s.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page Advertisements and alterations in serial advertisements must reach the office by Tuesday morning to secure insertion.

Situations.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., LI., LIII., LIV., LVIII., LIX., LX., LXI., LXII., LXIII., LXIV., and LXV. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Received.—E. S.—F. R. Blantyre.—J. P. and Co.—F. G.—Dauntless.—Sam. Flowers.—S. W.

Correspondence.

HALF-CROWNS FOR COMPETITION PARTICULARS.

To the Editor of the Building News.

Sir,—On the 14th I wrote to Mr. E. L. R. Jones, asking for instructions and other particulars of the County Intermediate Schools, Welshpool, as advertised in the "B. N." of the 6th, and in reply got a postcard. I replied to that by letter, which, together with the postal order for 2s. 6d., I received this morning, returned without a word. Is it not time such behaviour on the part of public bodies was exposed and protested against.—I am, &c.?

John Henry Williams.

15, Foregate-street, Worcester, Sept. 24.

DISASTER ON BOARD S.S. "IONA."

Sir,—Will you permit us, through the medium of your columns, briefly to draw attention to a method whereby such frightful disasters as occurred on the s.s. *Iona* may be greatly limited or altogether averted? The risk of fires in saloons or state rooms could be greatly minimised, if not eliminated, if the partitions and ceilings were covered with asbestos "Salamander" embossed decorations, which are absolutely non-inflammable, and capable of being coloured to taste to any extent. In the case of lamp and store-rooms, where decorations are not required, ignition of woodwork could be readily prevented by lining the walls and ceilings with asbestos millboard, or constructing same entirely of specially-prepared asbestos plates composed chiefly of fibrous asbestos, so indurated as to be suitable for partitions or ceilings, and requiring scantling only to support them in position.

The advantage which may be confidently claimed for the use of these articles on board ship would be, that in case of fire in any cabin protected in the way described, there would be little, if any, risk of it spreading beyond the point at which it commenced, and in this way the danger would be enormously reduced and the fire much more easily extinguished.

Allow us to add that the same suggestions are equally applicable to buildings, particularly to warehouses, stores, factories, and workshops, where the contents render the chances of fire great.—We are, &c.,

The United Asbestos Co., Ltd.

A CORRECTION.

Sir,—I notice in the list of tenders in your last week's issue that the amounts for the works to Nos. 27 and 29, Moorgate-street, are printed as hundreds instead of thousands, the lowest tender being £2,420. Would you be good enough to have this rectified, and oblige?—I am, &c.,

Howard Chatfeild Clarke.

63, Bishopsgate-street Within, London, E.C.
Sept. 24.

CHIPS.

Messrs. J. A. Lumley and Co., auctioneers and land and estate agents, of 35, St. James's-street, have removed next door to Lumley House, 34, St. James's-street, S.W.

The Mersey Docks and Harbour Board decided, on Friday, to carry out several improvements, including the paving of the surface of the quay lying between the Canada 100ft. Lock and the river wall at the north end of the Canada Dock, at an estimated cost of £3,600, and an increase to the width of the passage between the Hornby and Alexandra Docks, and also the removal and rebuilding of a group of residences on the east side of the passage, at a total estimated cost of £25,200.

By the Queen's wish, the room in Kensington Palace where Her Majesty was born, and which was closed for years, has been specially done up this year so as to present the exact appearance as it did in 1819. The gold and brass work of the room, although much worn, is still in a fair state of preservation.

Professor Victor Rydberg, the Swedish writer and archæologist, died on Saturday, aged 67 years. He was a member of the Swedish Riksdag from 1870 to 1872, and in 1876 was charged by the municipal authorities of Gothenburg to inaugurate the philosophical and historical conferences which were subsequently held annually.

A special service was held on Friday in connection with the restoration of St. Chad's Church, Lichfield, though the whole of the work contemplated has not yet been carried out. The alterations include the removal of the pulpit from the north side of the nave to the south, the removal of several of the high pews, and the placing of the new organ in a fresh position at the east end of the north aisle. The other works contemplated are the taking up of the present floor, and relaying it with asphalte, and the reseating of the whole of the church. The organ has been built by Messrs. Nicholson and Lord, Walsall.

The foundation-stones of the new wings of the Knaresborough National Schools were laid in the Castle Grounds on Thursday. The extensions, now in the course of erection, consist of a boys' class-room, a girls' class-room, and another for infants. £1,200 will be the cost of the new buildings, which are being erected from plans by Mr. J. G. Brown, architect.

George Beck, a Dalston plumber, has been committed for trial on the charge of being the cause of the manslaughter of William Wythe, builder, of Brownlow-road, near Dalston.

The new infirmary wards for the Derby Union, Derby, have been warmed and ventilated by means of Shorland's patent Manchester grates, exhaust roof ventilators, and inlet tubes, the same being supplied by Messrs. E. H. Shorland and Brother, of Manchester.

The Newhaven guardians have decided to carry out the following new works:—A porter's lodge, female tramps' workroom, eight cells and bath for female tramps, disinfecting chamber and heating apparatus for male tramps, stone-pounding shed with apparatus and yard with high wall, board-room (30ft. by 20ft., with committee-room), waiting-room, lavatory, and cloakroom.

Mr. Charles Truscott Farley, builder, died at his residence, Lemon-street, Truro, on Sunday, at the advanced age of 87 years. Mr. Farley was for over 50 years connected with the building trade, and was the builder and owner of Farley-terrace; and for many years acted as sub-agent under the Carclew estate. He was for long a useful member of Truro Town Council.

Intercommunication.

QUESTIONS.

[11431.]—**Mosaic Pavement.**—We are in a difficulty with regard to a mosaic pavement we have recently supplied, and we thought possibly some of the experts on your staff might be able to help us. The facts are these:—The floor is supported on iron joists which have in some places a span of 25ft. This floor certainly springs and vibrates as it is walked upon, and if two or three people walk together across it the vibration is very marked. The trouble is that the ½in. tesseræ, of which the floor is composed, are coming loose with the traffic. The cement does not seem to adhere to them, although the sides are quite rough, forming a good key. The cement used is White's, and excepting between the joints seems hard enough. One of the best tile-fixers in the trade did the work, who has done any amount of mosaic fixing before. The tesseræ themselves are the same that we always use. In fact, there seems great difficulty in saying exactly where the trouble is. It has been suggested that the vibration of the floor is the cause, and our object in writing to you is to ask if you can inform us whether anything of the kind has ever come under your notice. We have been told that an article appeared in your paper, or one of your contemporaries, calling attention to the fact that mosaic pavements are unsatisfactory on iron girder floors. Any help you can give us we shall be most grateful to you for. This floor is a very nice one of 200 to 300 yards, and although we are paid for the supplying of material, and are as far as that is concerned, all right, our customer who laid it has naturally applied to us to help him.—O.

[11432.]—**Mythology.**—Will some reader kindly give the name of a good work on outlines of ancient mythology? Winged lions, griffins, &c.—A. G.

REPLIES.

[11424.]—**Sub-Contracts.**—I should think that all contractors would have some understanding in writing, otherwise a contract would not exist, and the work would be paid for as executed, the same as priced work.—H. L.

[11425.]—**Moment of Inertia.**—The moment of inertia of a rectangular beam, whose breadth $= b$, and depth $= d$, is $\frac{b \, . \, d^3}{12}$. Also, if $M =$ moment of resistance of beam, $I =$ moment of inertia of beam, $p =$ maximum intensity of stress allowed in fibres, and $y =$ distance from neutral axis of the fibres bearing the greatest stress, then it can be proved mathematically that $M = I \times \frac{p}{y}$. In the present case, $p = S$, and $y = \frac{d}{2}$. Hence, by substituting these values, we obtain $M = \frac{b \, . \, d^3}{12} \times S \times \frac{2}{d} = \frac{1}{6} S \, . \, b \, . \, d^2$.—H. BUSBRIDGE.

[11426.]—**Met. Act.—Public Buildings.**—Schools in the City, or in any part of the County of London, must be in accordance with the London Building Act, 1894. If "J. D." wishes for an answer to any particular question, I will answer him.—H. LOVEGROVE.

[11427.]—**Concrete Floor.**—There should be some stouter T-irons about every 4ft., and the concrete should be at least 6in. thick.—H. L.

[11430.]—**Estates.**—Difficult to answer without knowing size of estate. Generally charge fair price to client for laying out, and about ½ per cent. to builders for supervision.—H. L.

◆

Among the works about to be carried out by the Great Western Railway Company within the next few months are the widening of another section of the Cornwall Railway, that between Redruth Junction and Camborne, a distance of 2¾ miles; the reconstruction in steel braced girders, and other steel work, of the Coldrennick Viaduct, in the same county; and the building of a new passenger station at Llangonayd, Glamorganshire.

The Arborfield Paper Mills, near Helpston, are being provided with a fresh supply of water, a spring having been discovered in the yard at the rear of the premises. Mr. J. Stears, of West Holme, Hessle, near Hull, was the water engineer, and the boring operations were placed in the hands of Mr. J. E. Noble, builder and contractor, of Bourne. At the depth of 69ft. the main spring was tapped, the volume of water being estimated at 8,000 gallons per hour.

Mr. J. G. Body, F.S.I., of the firm of Body and Sons, estate agents and valuers, Plymouth, acted as umpire in the case of North and North against the corporation of Launceston, in which damages were claimed for abstracting water out of the leat, loss of water to mines, and pipe easement. Mr. Davey, of Stokeclimsland, acted as arbitrator for the claimants, and Mr. F. Ward, F.S.I., of the firm of Ward and Chowen, represented the corporation. Evidence having been tendered on both sides, the works were inspected, and the umpire will forward his report in due course.

Very little business was done at the London Auction Mart last week, the total amount of the sales having been only £11,597. In the provinces, except at farming sales, things have been especially quiet; but on Wednesday and Thursday in last week, at the public sale of property and land belonging to the Corporation of Liverpool, the aggregate amount realised was only £5,560, few transactions having been effected.

Legal.

POWERS OF TENANTS FOR LIFE.

THE Settled Land Act, 1882, has done a great deal of good by freeing land for various purposes, and by enabling improvements in building and otherwise to be made, which without its aid would have been impossible. But although a tenant for life is now enabled to do many things, he must still have regard for the interests of those who are to come after him under the will or settlement. By section 53 of the Act of 1882, this is well expressed by providing that a tenant for life shall in exercising any power given him by statute have regard for the interests of all parties under the settlement, and shall in relation thereto be deemed to be in the position and to have the duties and liabilities of a trustee for those parties. By making him so far a trustee, the freedom of a tenant for life is at once considerably curtailed, and he is brought within the rules of equity applicable to trustees. The principle at the base of all these rules is that the benefit of the beneficiaries must always come first, and must guide every action of the trustee.

In the recent case of "*In re* Earl Somers, deceased" (*Times*, August 2), the point at issue was whether Lady Henry Somerset, the tenant for life, could refuse to renew the lease of a licensed house, the White Hart Hotel, Reigate, because she had conscientious objections to encouraging the liquor traffic. It was not denied that the hotel had been carried on properly for years past, nor was it disputed that if not used as a public-house the value of the premises would be greatly reduced. The only arguments of the tenant for life were really her own private opinions and convictions that there are too many licensed houses in England, and also in this locality. Mr. Justice Chitty laid it down that, although the decisions upon the Act did not compel a tenant for life to regard nothing but the pecuniary interests of those entitled under the settlement, still it had never been held that he had any right to act upon his own private views in exercising the powers given him by the Act, nor was there any ground for saying that in so doing he might have regard to the interests of the public generally. So in this case he decided that the tenant for life would be abusing her power and breaking her practical trust if she were to refuse to renew the lease of these premises as a licensed house, and so damage the value of the property of those who would come after her, and he made a declaration preventing this from being done.

FRED. WETHERFIELD, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

NOTE.—All questions for reply in this column must be headed "BUILDING NEWS," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

SMOKE.—WALL.—CHIMNEY.—ADJOINING OWNER.—1. If this were a party-wall, the usual notices should be served as to rebuilding; but if it is not, as I understand, the owner's consent to underpin should be asked. If he refuses, the building and soil must be so shored up, or underpinned if that is the only way, to prevent damage to his property. 2. It would be necessary to raise the chimney-stack beyond the new wall.

ROADWAY. — SEWERS. — PLOTS. — LIABILITY. — The making of roads upon a new estate is generally and properly provided for in the various conveyances of the land. Without such covenants from adjoining owners they would not be liable to contribute towards the cost of a road made by one private owner. The same rule would apply to the sewers. There should be a deed arranging these matters.

◆

The Hunslet board of guardians have decided to erect children's homes apart from the workhouse. The estimate of the architect is £7,970, as follows: Two houses, 20 inmates, £1,100 each, both £2,200; three houses, 14 inmates, £950 each, three £2,850; outbuildings, £500; workshops and conveniences, £220; boundary walls, £290; roads and walks, £130; laying out and planting, £115; total, with contingencies, £7,970.

In connection with the scheme of harbour improvement at Wick, the harbour trustees are negotiating with the Public Works Commissioners for a loan of £16,000 to enable them to complete the work of re-walling and deepening the inner basin of the harbour and other works. Tenders for the various works proposed to be carried out have been submitted to the loan board, who have instructed Sir A. M. Rendel to examine and report on the various proposals and tenders, and for this purpose he has visited Wick with Mr. Barry, C.E., Aberdeen, the trustees' engineer.

LEGAL INTELLIGENCE.

WHAT ARE "BONA FIDE" CONTRACTORS.—DELICATE QUESTIONS AT LANCASTER.—At Lancaster Town Council meeting on Wednesday, September 25, there came up for confirmation, or otherwise, the letting of certain contracts in connection with extensions at the sanatorium. One of the contracts, that for mason's work, amounting to £465 17s., or more than half the whole of the contracts, had been let to Mr. Thomas Kitchen, a son of Alderman Kitchen, a prominent member of the corporation, and an ex-mayor. Both father and son are engaged in the building trade under the same "style." Ald. Bell said as there was considerable talk about the matter outside, he would like to know if the whole of the contractors for the new sanatorium were men in business, paying rates, and qualified to carry out work of that sort. The town clerk said he did not know anything of the contractors beyond their names. Ald. Bell asked if the sub-committee, who considered contracts, could say whether all to whom contracts were recommended to be let were *bonâ fidè* tradespeople trading in Lancaster. Ald. Towers (chairman of the committee in question) said the question raised was present to the minds of the sub-committee. They felt themselves in some difficulty, and rather than take upon themselves the responsibility in the matter, they refused to pass the tender, and left it to the general committee. The general committee therefore made the recommendation. The general committee took some pains to assure themselves on the points raised by Ald. Bell, and they did assure themselves before making the recommendation. The matter dropped.

ANCIENT LIGHTS IN LIVERPOOL.—Before his Honour F. W. Taylor, at Liverpool, last week Mrs. Willis, mantle-maker, 40, Bold-street, applied for an injunction to restrain Messrs. Evans, Sons, and Co., wholesale druggists, Hanover-street, from erecting a warehouse in Wood-street so as to injure certain lights of the plaintiff's premises at the rear of her place of business. Evidence was given on behalf of the plaintiff to show that the erection of the present building in Wood-street had considerably diminished the light formerly obtained through the windows, thereby rendering the conduct of the business much more difficult, especially with regard to the discrimination of colours in materials. On the other side, sworn testimony was produced from Messrs. Clark and Wainwright, surveyors, and others, stating that no interference with ancient lights of a serious nature was consequent upon the erection of the new premises in question. His Honour said he was not prepared to grant the injunction, but would order the motion to stand over till the trial of the action.

◆

CHIPS.

The congregation of Free John Knox Church, Aberdeen, have decided to erect a new church on the site of the present building in Gerrard-street. The adopted plan is by Mr. G. W. Moir, and the cost will be £4,500.

A new school of science, art, and technology, which has been erected by the Dover Corporation at a cost of £10,000, was opened on Friday. It adjoins the municipal buildings, and is lighted throughout by electricity.

The big bronze bell, christened "La Savoyarde," which has been cast for the Church of the Sacred Heart at Montmartre, is completed. It weighs 18 tons, or six more than the *bourdon* of Notre Dame.

The employés of the engineers' department of the Birmingham Corporation Waterworks have just made a presentation to Mr. J. W. Gray, the late engineer of the waterworks, on his retirement after many years' service with the old waterworks company, and afterwards with the corporation.

At the last meeting of Glasgow Town Council attention was called to a proposal of the Improvement Trust to erect houses for the working classes upon a piece of ground belonging to the corporation in the Calton district. A report by the city engineer stated that the proposal was to provide accommodation for twenty-four houses of one apartment, and seventy-six houses of two apartments of various sizes—the single-apartment houses rented at £6, and the others, according to situation, at rents of £8, £9, and £10 respectively. After a long discussion the proposal was approved by 53 votes to 7.

Hawkhead Asylum, Crookston, which has been erected by Govan District Lunacy Board, was formally inspected and opened on Friday. The building, which is in the Scottish Baronial style, has been erected at a cost of over £150,000, and will accommodate about 450 patients, but future extensions will enable the number to be increased to 760. Four of the blocks of buildings have been completed and sanctioned by the Board of Lunacy. Mr. Malcolm Stark, jun., of St. Vincent-street, Glasgow, is the architect, and the contractors for masonry were Messrs. A. Muir and Son, Eglinton-street, Glasgow.

STATUES, MEMORIALS, &c.

The late Mr. Ewan Christian.—A monument of simple design and recumbent in form, has just been placed over the grave of the late Mr. Ewan Christian in Hampstead Cemetery. It is executed in red granite, by Mr. Forsyth, and bears the following inscription: "In reverent and loving memory of Ewan Christian, architect. Sept. 20, 1814; Feb. 21, 1895." "With good will doing service as to the Lord, and not to man, that I may win Christ, and be found in Him, not having mine own righteousness, but that which is through the faith of Christ."

CHIPS.

The new technical school in Broad-street, Stamford, was formally opened on Thursday in last week.

The Church of All Saints, Margaret-street, W., was reopened on Sunday, after restoration and redecoration under the direction of its architect, Mr. William Butterfield, F.S.A. The works, including improvements to the organ and the introduction of the electric light, have cost nearly £3,000.

The Bishop of Peterborough, last week, dedicated the new chancel of the parish church of Coalville, Leicestershire. Besides the new chancel, an organ, a pulpit, choir stalls, altar and fittings, new pavements, &c., have been provided, and also a memorial window of stained glass has been placed in the south aisle.

The trustees of the Borough Market are now pulling down some old houses at the west end of St. Saviour's, Southwark. In the course of the demolition there have been exposed some enormous cellars, a large portion of a massive rubble wall built of chalk, flints, and old bricks, and many beams of oak, fir, and chestnut, which must at one time have formed part of old Winchester Palace, the residence of the Bishops of Winchester. This grand old mansion was built by William Giffard in the 12th century, and was surrounded by a park of some 60 acres.

The Whitton Park Estate, near Hounslow and Twickenham, was submitted to auction in plots, on Wednesday. There was a keen competition, and 33 lots were sold, realising a total of £1,780, being at the rate of £650 per acre.

The church of St. John the Evangelist, Broad-court, Drury-lane, was reopened on Sunday, after being closed for eight months for alterations and repairs. The work was undertaken on account of the almost ruinous state of the roof and walls. An entirely new roof has been put to the church, the galleries have been removed, and arcades have been erected, dividing the interior into nave and aisles. The arcades are carried on massive stone columns. Besides these structural alterations, the decoration of the church has been thoroughly renovated. The work has cost £1,850.

The death is announced, at the age of 69, of Mr. R. F. Abrahams, for upwards of a quarter of a century Art Director at the manufactory of Messrs. W. T. Copeland and Sons, of Stoke-on-Trent.

The inquiry which has been directed by the Local Government Board respecting the deficiency of the water supply by the East London Waterworks Company will be held by Colonel Ducat, R E, and Dr. F. W. Barry, at the Town Hall, Hackney, on Tuesday next, at 11 o'clock.

Besides the public library which Mr. J. Passmore Edwards has offered to build for the parish of St. George-the-Martyr, Southwark, he is about to build a public library for Liskeard, Cornwall; and will also provide a public library for Edmonton, which will be associated with the memory of Charles Lamb, who lived and died there. Mr. Maurice B. Adams, F.R.I.B.A., has prepared the designs for this work. Mr. Passmore Edwards is also building a cottage hospital at Tilbury, Essex, for the benefit of sailors and workmen employed in the docks. Mr. Rowland Plumbe, F.R.I.B.A., is the architect.

The town council of Edinburgh adopted, on Tuesday, a recommendation by the Public Health Committee that Colinton Mains Farm, 131 acres in extent, be purchased for £20,500, as a site for a new fever hospital. During the discussion on the proposal, a member asked how it was that, after the doctors had condemned the Craiglockhart site on account of the fogs which were prevalent there, they now approved of the Colinton Mains site, which was immediately adjoining? Mr. Waterston replied, he had put the same question in the Public Health Committee, and the doctor said he had changed his mind. The committee had a hearty laugh, and passed the site. The town council, after this explanation, followed their example.

The presentation portrait of Mr. George Armitstead was unveiled in the Victoria Art Galleries on Tuesday. Mr. Armitstead was member for the city 1868-73 and 1880-83. The portrait, which is a three-quarter length life-size, has been on exhibition at the Royal Academy, and was painted by Mr. A. S. Cope.

WATER SUPPLY AND SANITARY MATTERS.

Ashton-under-Lyne. — Messrs. Kinnell and Murphy, C.E., of Manchester and Bolton, have been called in by the Ashton-under-Lyne District Council to design for them a scheme of main drainage and works for the purification of their sewage, as they have been threatened with prosecution by the Joint Rivers Committee for river pollution. The works will be of a rather extensive character, owing to the great length of sewerage works required, and also the treatment of the sewage at several outfalls.

Leicester Waterworks Extension. — The members of the town council paid an official visit of inspection recently to the works which are now in progress at Swithland and Hall Gates in connection with the water supply of the town. The party proceeded to Cropstone, where the new engine-house, engines, and filter-beds were seen. About two-thirds of the contract for all works are finished. A new service reservoir at Hall Gates is being proceeded with simultaneously with the other portion of the scheme, whilst the additional works at Cropstone are practically completed. Mr. J. B. Everard, C.E., is the engineer-in-chief, and Messrs. John Aird and Sons, of London, are the contractors. There have been constructed upon the works, used in connection with the undertaking, nine miles of tramways, 4ft. 8½in. gauge, and upon these the contractors have had running eight locomotives. There have also been seven portable engines, six steam cranes, four complete sets of stone-breaking machinery, eight steam pumps, three steam rock drills, two mortar drills, four clay pug mills, together with steam-roller and boilers, two complete sets of steam machinery for stone working, and the usual plant for carpenters, smiths, fitters, and cement testing, with waggons, carts, cranes, offices, &c. The number of men now engaged upon the Swithland reservoir alone is over a thousand. With regard to the permanent works, the diversion of the road from Swithland village, and the new bridge which carries it over the reservoir, have been completed and opened for public traffic; and the two dams for maintaining the level of the water above Brazil Island are also finished. Messrs. Aird and Sons have also carried the section of the M S. and L. Railway over this part of the reservoir. This consists of two viaducts of brick arches and girders, and two bridges for carrying the occupation road round the reservoir. The main part of the work, however, has been carried on about three-quarters of a mile below Brazil Island, at the place where the sod was cut in July last year. Here there has been sunk a trench upwards of 600 yards long, and attaining a maximum depth of 70ft., for cutting off the water-bearing strata below the surface of the ground. This trench has been filled with cement concrete, to form a level line at an average depth of about 20ft. below the original surface, and upon this concrete wall is now being erected the puddle-wall, which forms the water-tight centre of the main embankment. This main embankment, with its puddle centre, has now been raised to a height of about 18ft. above the lowest part of the valley. The foundations of the waste weir are being put in, and also those of the bridge going over the bye-wash. The permanent tunnel underneath the main bank has been completed, and the six filter-beds and the clear-water tank in the centre of them are all in progress, two of the filter-beds being nearly completed. The main chimney-shaft is completed, the engine and boiler-houses are well in hand, and the manager's house is also in progress, while the house at the entrance lodge has the roof on. The greater part of the diversion of the road from Kinchley Hill over the main embankment is also finished. The pipes, valves, girders, roofs, and other ironwork are being supplied by Messrs. J. Blakeborough and Sons, of Brighouse, Yorkshire. The engines are being constructed by Messrs. Easton, Anderson, and Goolden, of Erith, Kent, and these will pump the water to the Hall Gates reservoir, which is being constructed, and nearly the whole of the pipes for conveying the water there are laid. This reservoir is also being carried out by Messrs. J. Aird and Sons, according to Mr. Everard's designs, and is in a forward state. This reservoir, when completed, will hold two million gallons, and is at such a height that it will supply the higher district of Leicester and the Oadby reservoir by gravitation, so as to avoid the secondary pumping which now takes place at Charnwood-street. An independent main will be carried through from the Hall Gates to the Oadby reservoir, and thus avoid putting additional pressure upon the old low-level service mains, but connections will be made so that this water can be used at Gilroes or at New Parks reservoirs if necessary. Considerable additions have been made at Cropstone Pumping Station. A new triple expansion vertical marine type pumping engine has been erected here by Messrs. Easton, Anderson, and Goolden, capable of pumping a million gallons in twelve hours either to the Hall Gates reservoir or to the Gilroes or New Parks reservoirs, as may be required; and two new steel Lancashire boilers have been put in by Mr. Edwin Danks, of Oldbury, near Birmingham, for supplying the steam to the new engine. For accommodating this new machinery, an engiue-house and workshops have been erected by Messrs. J. E. Johnson and Sons, of Leicester, while four additional filter-beds have been constructed by Messrs. Bentley, of this town. Mr. F. Griffith, the waterworks engineer, has had the supervision of the new filter-beds, and Mr. Everard is responsible for the designing and construction of the whole of the rest of the undertaking. Messrs. Aird and Sons are represented at Swithland by Mr. Gilbert, their principal agent, and at the Hall Gates reservoir Mr. Pearse is in charge of the work on their behalf. Mr. Daniels is the resident engineer representing Mr. Everard, who, however, is personally superintending the carrying out of his plans.

Wolverhampton.—The General Purposes Committee of the Wolverhampton Corporation had under consideration on Monday an important report, which had been prepared by Mr. J. W. Bradley, the borough engineer and surveyor, with regard to the proposed abandonment of the present pail system, which for a long time has been pretty generally condemned, in favour of the water-carriage system of dealing with the sewage of the town. The report commences by stating that only in four or five towns where the pan system is in operation in the United Kingdom is a continuance of it advocated. Many years ago leading sanitarians had spoken strongly against the system, and the only one to be adopted in its place was by means of water carriage. Houses must be drained and streets sewered, and if those drains and sewers were well and properly constructed no additional expense need be incurred to transmit the entire volume from the houses. The movable pan and the dry conservancy systems cause a greater nuisance, as being more costly than water carriage, and, Mr. Bradley adds, the borough sewage works at the Barnhurst are well equipped and in thorough working order, and perfectly and easily capable of dealing with the whole of the material at a very small increase on the present working cost. With regard to the adoption of the slop-water closets, Mr. Bradley stated that they are for purely outdoor use, but they have the great advantage that in the greatest frost they are not liable to be rendered useless. During the severe winter of 1894-5 in 5,000 slop-water closets then under supervision in his department at Nelson, Lancashire, he never heard of a single instance where the frost had any effect. There were no plumbing repairs needed, there was less liability to get out of order, and the first cost was small, while there was much less sewage to be treated at the outfall. At present there were 13,500 pans in the borough, and if the corporation were to contribute, say, £2 per pan for their conversion to closets, the cost would be £27,000, to which would have to be added £800 for payment of additional inspectors during four years of conversion, and £1,390 for general contingencies, making a total of £29,190. If £30,000 were borrowed for this purpose at 3 per cent., repayable in 20 years, the annual payment would be £2,016, to which would have to be added £660 for extra cost of tipping ashes, inspection, and cost of treating sludge. The total cost would be £2,676, thereby effecting a saving to the town annually of £844, whilst at the end of 20 years, when the amount borrowed had been repaid, the comparison in favour of the slop-water system would be infinitely more favourable. The committee, after a long discussion, decided to recommend the town council to go to Parliament to obtain powers to borrow the money necessary to adopt the water-carriage system.

◆

The interior of Trinity Congregational Church, Peterborough, is undergoing repairs, and alterations and extensions are being made to the pulpit and choir stalls. Mr. John Thompson, of Peterborough, is carrying out the works.

The Linslade Rural District Council have called in Mr. H. Bertram Nichols, C.E., of Birmingham, to inspect the parish of Cheddington, and report upon the best means of sewerage and sewage disposal.

The Jewish Synagogue in Mary Arches-street, Exeter, has been erected just over a century and a half, and in 1844—the centenary of its erection—was restored. Seven years ago, however, the devotions ceased, owing to the paucity of members of the faith in the city. Recently a congregation was again formed, and another restoration of the building was celebrated the other day The work has been carried out by Mr. Selley, builder, of St. Thomas, under the superintendence of Mr. J. Archibald Lucas, and has cost about £120. The carved oak lectern, which served as a rostrum, was supplied by Messrs. Harry Hems and Sons.

A monument, commemorating the victory achieved by Peter the Great over Charles XII. of Sweden at Poltawa in 1709, was unveiled at that place on Monday, with great ceremony.

STAINED GLASS.

Wrexham.—On Friday last, the 41st anniversary of the Battle of the Alma, the stained-glass window which has been placed in the tower of Wrexham parish church by the officers and men of the Royal Welsh Fusiliers, at a cost of about £600, was publicly unveiled and dedicated. The window is of large proportions, and of 15th-century style. It is divided into five long lights up to the springing of its arch, above which the smaller tracery lights are in three tiers, and number ten in their sub-divisions. In the upper part of the lower lights are full-size figures of St. Deiniol of Bangor, St. Michael, St. David of Wales, Edward the Black Prince, and St. Giles. Beneath these, in relation to the figures above are subsidiary subjects illustrative of the meeting of St. Deiniol and St. Augustine; St. Michael, with his warrior angels; the preaching of St. David; the Black Prince at the Battle of Poictiers; St. Giles with the hind seeking refuge with the saint from the royal hunters. All the lights are canopied. In the tracery openings are introduced 24 smaller figures of saints especially connected with Wales—viz., SS. Joseph of Arimathæa, Aristobulus, Claudia, Beatus, Timotheus, Phagan, Emerita, Lucius, Illutus, Amphibalus, Alban, Silin, Kentigern, Helena, Germanus, Samson, Theodoric, Gildas, Beuno, Winifred, Decumanus, Ithwara, Elerius, Sidwella. At the apex of the window is represented the badge of the regiment. At the base of all, in gold mosaic, runs a dedicatory inscription.

CHIPS.

The urban district council of Tavistock have, with the approval of the Directors of Convict Prisons, adopted an amended scheme by Mr. G. Bellamy, C.E., of Plymouth, for the sewerage of Princetown. The works in connection with Dartmoor Prison will be carried out by convict labour.

Mr. C. Low Green, road surveyor to the Swindon rural district council, has been elected to a similar appointment at Croydon, at a salary of £300 a year.

William Thomas Singleton, of Manchester, described as an architect, surrendered to bail at Stockport, on Friday, upon a charge of obtaining £50 by false pretences from Richard Livesley, Stockport. The prosecutor said Singleton came to his office on April 10, saying he had been asked by a client to get a loan of £50 to complete the balance of deposit on twenty-seven houses at Denton. Livesley advanced the money, and alleges that he has since found that some of the representations the prisoner made were false. The case was remanded, and on Tuesday prisoner was committed for trial.

A destructive fire broke out early on Monday morning at 52b, Richmond-road, Shepherd's Bush, W., on the premises of Mr. F. E. Rice, builder, and resulted in the total destruction of the workshops and damage to the stock in the yard.

At Hebburn Colliery, on Saturday, a United Free Methodist chapel was opened for worship. It is built of brick, seats 300 persons, and cost under £1,000.

The foundation stone of the academy about to be built for the Dumfries School Board, was laid with Masonic honours on Saturday. The building, which will cost £12,000, is being erected in the grounds of the existing academy. Mr. Frank Carruthers, of Dumfries and Lockerbie, is the architect; Messrs. Houston and Robinson are the contractors for masonry, and Mr. M'Lachlan has taken the contract for joinery.

A new Wesleyan chapel was opened at Sidcup, Kent, on Friday. It has been built at a cost of £4,000, from designs by Mr. Charles Bell, F.R.I.B.A., of Salters' Hall-court, E.C.

The present schools used by the Tanfield School Board at Causey being inadequate to fulfil the requirements of the Education Department, the Board have decided to erect a new block of schools, and have accepted the plans of Messrs. Davidson and Bendle, architects, of Newcastle and South Shields, submitted in competition.

On Saturday a new Liberal Club was opened at Blackley, in the Prestwich division. The members of the club have purchased premises formerly occupied by the Methodist Free Church congregation in Blackley, who have now erected new buildings. The cost of the new club thus taken over will be about £1,100.

Mr. J. Lavender, the senior partner in the firm of Messrs. Lavender and Son, builders, Dawley, Salop, died last week at an advanced age.

Mr. W. M. Rossetti has offered two family portraits to the Trustees of the National Portrait Gallery, who have accepted the works. One is a portrait of Christina Georgina Rossetti, along with her mother, Frances M. L. Rossetti, head and shoulders, life-size, executed in tinted crayons by Dante G. Rossetti in 1877 at Hunter's Forestall, near Herne Bay. The other is a life-sized bust portrait of John William Polidori, M.D., brother of Mrs. Frances Rossetti; he died in 1821.

Our Office Table.

One of the most familiar landmarks in the valley which divides the New Town from the Old Town of Edinburgh is about to disappear for ever. We refer to the chimney of the gasworks, rising to a height of 329ft. from the ground, which has indeed formed for the past half-century the most conspicuous feature of the skyline when looking eastwards from Princes-street. The shaft is doomed because it is not only between 4ft. and 5ft. out of plumb, but from the fact that the masonry is disintegrating in places, so that its state is pronounced to be so dangerous that it might not stand another twelve months. In its place the engineer to the Gas Commissioners proposes to erect a chimney only 160ft. in height, on a site some little distance to the eastward, about half-way, in fact, between the present structure and Tolbooth Wynd. The Dean of Guild Court for Edinburgh, having a praiseworthy regard for the amenities of their picturesque city, have for the present referred the plans back, so that the site of the new shaft may be moved still further south, and thus be backed from most points of view by Salisbury Craigs, in lieu of cutting the skyline.

A start is apparently about to be made with the work of construction of the Central London Railway. This is the electric road which is to be run under the streets from Liverpool-street to Shepherd's Bush. The capital of the company was successfully issued two or three months ago, and plans will shortly be laid before the City Commissioners of Sewers for the construction of the Mansion House subway in connection with the Bank of England station of the Central London line. This subway will have entrances from back-ends of Princes-street, Poultry, Queen Victoria-street, Walbrook, Lombard-street, Cornhill, and Threadneedle-street. The subway will enable pedestrians to cross from one side of the space to the other, free from traffic, and will afford an entrance to the lifts which take passengers down to the railway station 50ft. or so deeper in the earth. The Waterloo and City Railway, now in course of construction, will also have access to the subway. The Central London Company are also acquiring property for their various stations along the route.

A report, illustrated by a map, as to the effect of the opening of the Tower Bridge on the City traffic has just been presented to the Streets Committee of the City Commissioners of Sewers by their engineer, Mr. David J. Ross. The Tower Bridge has now been opened more than twelve months, and the broad results, so far as traffic is concerned, is that London Bridge has been relieved of about 5,200 vehicles per diem, Eastcheap of 2,200, and Fenchurch-street of about 3,000 vehicles daily; whereas the traffic of Minories has increased by 2,200 vehicles, Liverpool-street by 900, Houndsditch by 700, and Bishopsgate-street Within by 600 vehicles daily. The traffic in the centre and western parts of the City has not apparently been affected by the opening of the bridge.

During some repairs to the choir of the cathedral at Angers, the coffins of King Réné, father of Margaret of Anjou, and his wife, Isabelle of Lorraine, have been brought to light. A vault was accidentally discovered beneath the pavement, and on being explored in the presence of M. Dussauze, the Inspector of Diocesan Edifices, the Bishop, and other officials, it was found to contain two coffins, one in lead and the other in tin. The wood that formerly encased them had been eaten into by dry rot, and had fallen away. In the leaden coffin, which was much the larger, was found a skeleton with a crown of very thin gold leaf on the skull. A sceptre—that of Naples—lay at the right side, and an orb surmounted by a cross on the breast. They were all green with rust. After the inspection, the vault was sealed, and a report of the circumstance drawn up and signed by those present. According to the archives of the cathedral, the Duke and Duchess of Anjou-Lorraine, King and Queen of Naples, were buried in the chancel of the church of Angers. In 1445, King Réné gave his daughter, Margaret, in marriage to Henry VI. of England, whereby he obtained the restoration of his territories of Anjou and Maine, then in the possession of England.

The Docks Committee of the Bristol Town Council have drawn up a report recommending the adoption of improvements, estimated to cost £124,000 in net capital expenditure. The contemplated works include a timber wharf between the Albion Dock and Underfall Yard, connecting it with the Harbour Railway, whilst a relief railway line is to be carried from the Harbour Railway, down Coronation-road, and connecting with the Portishead line by means of a swing bridge, which will also provide a roadway and accommodation for foot passengers. In addition to these works, hand coal tips are to be provided at different points, and two passenger steamer pontoons, 100ft. long by 25ft. wide, are to be added to the west of the existing pontoon, the pontoons to be covered and to be provided with waiting-rooms.

The Insanitary Property and Artisans' Dwellings Committee of the Liverpool Corporation met on Friday to consider a report of the sub-committee regarding the housing of the working classes, which was discussed at the last meeting of the City Council. The committee had, besides, before them a memorandum which has been drawn up by the Local Government Board, laying down certain regulations concerning the erection of dwellings. The committee now directed Mr. Boulnois, the city engineer, and the deputy-surveyor to reconsider their plans in view of these regulations, and to show in the amended reports all the streets widened to 30ft.

A development of King's Heath as a residential suburb of Birmingham has recently been undertaken by the Birmingham Freehold Land Society. The directors have purchased a site of 55 acres, at a total cost of between £38,000 and £40,000. The land is bounded on one side by the Alcester-road, on another by the Midland Railway, and on a third by a tramway terminus and adjoining property. The society entered into possession a few months ago, and they are engaged in laying out the estate for building purposes. The higher portions of the ground have been levelled, the gravel removed and utilised on the roads and for the purpose of raising the lower portion of the site. Provision has been made for seven roads, aggregating two miles in length, three running from the Alcester-road across the estate, and being crossed almost at right angles by four others, each thoroughfare being of the regulation width of 42ft. The number of plots to be allotted is upwards of 400, and each will be of sufficient size for the erection of two houses of varying sizes, beside which the frontages to the main road will be allotted for 100 shops. Three hundred houses are proposed to be built at a cost as low as £250 the pair, and let at rents of about 5s. per week, each of these plots for the houses covering an area of 500 or 600 square yards. There are also to be sites for about 300 houses, to cost £300 the pair, and to be let at 6s. 6d. each. The remaining houses will be of the small villa type, at rentals averaging £25 a year; the cost of building is estimated at £450 the pair. Every plot will have a frontage of 12 yards, and about 40 yards at the rear, the area being about 500 square yards. The cost of the land will average about 3s. 9d. per yard. The site will remain open during the winter, and building operations will be commenced next spring.

According to Mr. Whitaker, the president of the Geological Section of the British Association, the trial borings for coal at Stutton have reached the base of the cretaceous beds at a depth of 994ft. The palæozoic rocks are of the same series as at Harwich. They do not resemble the old Red rocks found in the London basin, and they are not true Devonian. The opinion of experts is that they form some part of the Carboniferous series. Trial borings might probably be made with advantage in many parts of the country, for as Prof. Boyd-Dawkins pointed out, the boring at Battle had led to the discovery of a useful layer of sulphate of lime, and it is obvious that if coal can be found at workable and paying depths in the south-eastern counties it will be a very important discovery indeed. Mr. Whitaker stated that the present boring at Stutton would probably be continued for as much as 150ft. or more, and the committee did not intend to stop at the one boring, but would make others if appearances and calculations promised success.

The Metropolitan Museum of Art, in New York, is rapidly adding to its resources for the study of sculpture and painting. The north hall of the new wing, which will be opened this season for the first time, is to be devoted to classical sculpture. Of the three sections into which the hall is divided, the first will be filled with casts of Parthenon sculpture. The second section will contain casts of other Greek sculpture, and the third will be filled with casts of Roman work. Many other casts are in store, waiting for space in which to display them, and another wing is soon to be added to the museum for this purpose.

THE echo organ at Westminster Abbey is nearly completed, and will be ready for use in a few weeks. It is placed in the triforium above Tennyson's bust, and the action is electrical, the wind being taken from the main bellows by a pipe let through the vaulting. The organ has now five manuals, and is, perhaps, one of the most complicated in the world, though a splendid instrument. Perhaps the most complicated organ is that at Garden City, Long Island, U.S.A., which is really several organs placed in different parts of the Cathedral of the Incarnation, but all controlled from one console.

On Saturday a new Liberal Club at Choppington, near Gateshead, was formally opened. The building consists of a reading-room, a smoke-room, and a conversation-room on the ground floor, and a lecture-hall overhead; a billiard-room is situated at the rear of the other apartments. Mr. Joseph Maughan, of Choppington, was both designer and builder of the premises, and the cost of the block was about £1,200.

At the Westminster Technical Institute in Rochester-street, on Saturday, the commencement of the winter session was marked by the unveiling of a terracotta bust of the Baroness Bardett-Coutts, to whose munificence the institute owes its existence. The bust, which is more than life size, has been executed by Mr. Owen Hale, professor of modelling and sculpture at the institute, and is placed in the vestibule.

The creditors of William Eckersley, late partner in the firm of Eckersley, Godrey, and Liddlelow, railway contractors, Westminster, who claimed £453,000 from the Greek Government in connection with the Piræus-Larissa Railway, rejected, on Friday, an offer to leave the debtor's interest in the claim with a trustee, with a view to the payment of the debts in full. The case accordingly went into bankruptcy.

Robin Hood Stone, a mass of millstone grit, around which a good deal of tradition has gathered, and which from time immemorial has stood on the rising ground overlooking the Aire Valley north of Keighley, has fallen under the hand of the destroyer. The new water conduit of the Bradford Corporation from Nidderdale passes along the hillside above the Aire Valley, and some time ago fears were entertained that the track would pass in such a direction as to cause the destruction of the stone; but these fears were allayed by a deviation of the line so as just to miss the nearest angle of this ancient landmark. On Wednesday week, however, some workmen drilled holes in the stone, and with the aid of a blast it was cloven into four parts.

Dr. J. Scott Tew, of Nottingham, has been elected medical officer of health for West Kent, an appointment in which fourteen sanitary authorities have combined.

The Act confirming the Lancaster provisional order enabling the Lancaster Corporation to borrow close upon £62,000 for the construction of a new reservoir at Bleatarn, has just received the Royal assent, the application having been made in December last. The new reservoir has been made imperative owing to the development of the town, and more particularly of Morecambe. The work will be commenced forthwith.

At the last meeting of the town council of Southampton, the Mayor presented, on behalf of the subscribers, an illuminated address to Mr. James Lemon, J.P., F.R.I.B.A., in recognition of the services he had rendered the town in connection with the recent extension of the boundaries of the borough.

At Grimsby, on Friday, the memorial stones were laid of extensions to two board schools, the Heneage Schools, where 600 scholars' places are being added, and the Welholme Schools, which will be enlarged by 480 places.

The legislature of New York has just passed an Act providing for the deepening of the canals of that State from their present depth of 7ft. to 9ft. at an expense of £1,800,000 sterling. Many engineers in the State consider, however, that the proposed measures will be made quite to cope with the requirements of the traffic.

Lord Grimthorpe, having completed the rebuilding of St. Peter's Church at St. Alban's, a work commenced immediately the works at the Abbey were finished, has now turned his attention to St. Michael's Church in that city, and has expressed his willingness to build a new vestry. Needless to say, the offer has been accepted with gladness. The church of St. Peter will be reopened on Friday in next week, the 4th October.

Trade News.

WAGES MOVEMENTS.

INVERNESS.—The journeymen plasterers in Inverness, after having been on strike for a fortnight, for an increase of 1d. per hour, resumed work on Monday. The masters offered ½d. of increase, which the men have accepted. The new rate of pay is 7½d. per hour.

NON-UNION LABOUR IN LONDON.—What threatened to become an extensive strike was begun on Friday by the withdrawal of the bricklayers, one hundred in number, from the company of Messrs. Mowlem and Co., at Oak Wharf, City-road, by the Operative Bricklayers' Society, owing to the employment of a non-union workman. Messrs. Mowlem, however succeeded in getting fresh operatives from the Free Labour Asssociation, and their works in hand are going on. It seems that the Building Trade Federation was not supporting the strike. The bricklayers in the employ of Messrs. Smith, of Upper Russell-street, Bermondsey, and also those of Messrs. Nightingale, at Bayswater, also struck for a similar reason; but in both cases outside labour has been imported.

CHIPS.

A meeting will shortly be held to inaugurate the movement to raise a memorial, in the form of a statue in Paddington, to the late Lord Randolph Churchill.

The memorial-stone of the new Wesleyan church at Felixstowe was laid on Thursday in last week. The church, which occupies the corner of Victoria Parade, is to be built of Kentish rag stone, with nave, aisles, and transept, and eventually will have a tower and spire. At present, however, the work will only include the building of the nave and aisles, to hold between 400 and 500 people, at a cost, including the site, of £2,840, the chancel and the tower being matters of subsequent addition. The edifice has been designed by Messrs. Eade and Johns, architects, Ipswich, and the contract is being carried out by Mr. T. Ward, Felixstowe.

A new woollen mill is to be erected at Kilncleuch, near Langholm, N.B. The plans have been prepared by Messrs. Thomas Aimers and Sons, factory engineers and architects, Waverley Works, Galashiels. They show a factory with engine-house, boiler-house, dynamo-house (the building is to be lit with the electric light), oil-house, weaving sheds, finishing department, offices, and warehouses.

The Caxton Convalescent Home at Limpsfield, Surrey, will be opened to-morrow (Saturday) by Mr. J. Passmore Edwards, at whose cost it has been erected. The home, which is intended for members of the printing and allied trades, has been erected on the Chartlands Farm Estate, adjoining Limpsfield-common, and was illustrated by a perspective and plan in our issue of October 5, 1894. Mr. A. Saxon Snell, F.R.I.B.A., is the architect; Mr. R. Durtnell, of Brasted, Kent, was the contractor for foundations; and Mr. A. S. Brighty the clerk of works.

A new Primitive Methodist chapel in Cardigan-road, Leeds, has just been formally opened. It has cost about £2,500, and has been erected from the designs of Messrs. Howdill and Howdill, Leeds. The style is 13th-century Gothic, and the building provides accommodation for about 650 persons.

Sanction having been given by the Local Government Board to the borrowing by the Liverpool Corporation of £35,000, a sum needed for the reconstruction of the present police buildings and the provision of a central fire-station, instructions have been issued to Mr. H. Percy Boulnois, the city surveyor, to immediately proceed with the work; £20,000 is allotted for the reconstruction of the police buildings, and the other £15,000 for the fire-brigade station.

The new military quarters at Woking, which have been provided by the adaptation for military purposes of the former convict prison, will be for the first time occupied, at the end of October, by the Second Battalion of the Queen's Royal West Surrey Regiment. Later on, a cavalry regiment will also be quartered at Woking. The new quarters are named Inkerman Barracks.

Two public halls, one seated for 1,000 persons, the other for 800, have just been built at St. George's, Bristol. They will be known as the Albert Halls. Mr. C. A. Hayes, of Bristol, was the builder.

A new alabaster reredos and oak communion table have been erected in the Church of All Saints, Pavement, York.

The town council of Edinburgh have accepted an estimate for the conversion of property belonging to the city in Advocates'-close into working-men's dwellings. When completed, the property will provide 16 separate houses of two apartments each.

The church of St. Mary, Devonport, was reopened on Sunday, after restoration, the chief work having been the reconstruction of the upper part of the spire, which was in a threatening condition. At the last Easter vestry it was resolved to take down the dangerous portion, and cement over the stump, at an estimated cost of £20. The decision of the vestry to take down, but not rebuild, the shaky part of the spire came under the notice of the Mayor of Devonport, who issued an appeal to the townspeople to raise a fund. This was so well responded to that a committee instructed Mr. C. Gould, contractor, of London, to proceed with the work, Mr. H. G. Luff, of Devonport, having offered his services as architect gratuitously. The other works include repainting and colouring, repairs to organ, and the erection by Messrs. Wippell, of Exeter, of an 18-burner gas corona in the chancel.

The Archbishop of York consecrated, on Friday, a new church in the village of Sleights, near Whitby. The edifice has been necessitated by the dangerous condition of the old structure, and by the inadequate accommodation, especially during the summer months. The style adopted is Early English. The architect was the late Mr. Ewan Christian, of Whitehall, S.W., and the builders were Messrs. Padbury and Son. The total cost is estimated at about £3,500.

The memorial-stones of new Wesleyan Sunday-schools have been laid at Scarborough in connection with Westborough Chapel. The outlay will be £2,250, and accommodation will be provided for 500 scholars.

The value of the new buildings sanctioned by Glasgow Dean of Guild Court on Friday was £28,400.

The fine parish church of St. Germans, Cornwall, has been reopened after restoration under the direction of Messrs. St. Aubyn, Wadling, and Luff, of London and Devonport. The latest addition is a life-sized statue of Our Lord as the Good Shepherd, carved in fine-grained Caen stone, by Messrs. Harry Hems and Sons, of Exeter, and placed in the vacant niche over the altar of the morning chapel at the south-east end of the building.

Mr. Paul Roads, Leeds, and Mr. Bellerby, York, have secured the contract for the erection of a timber-storing shed, 400ft. by 120ft., in connection with the railway shops at Shildon. This is the initial step towards a whole line of erections.

The new scheme for the supply of water to Launceston is so far advanced that the supply-pipe from Carn Down to the Windmill Service Reservoir was tested on Thursday in last week. Mr. R. G. Burt has been the contractor for the Windmill Reservoir, while the laying of the pipes from the intake at Carn Down to Windmill has been carried out by Mr. Fisher, of Millbrook.

The parish church of Dawlish is about to be restored in accordance with plans prepared by Mr. Dobell. The buttresses and pinnacles of the tower will be rebuilt, at an estimated cost of £1,500, and the galleries will be removed.

A conference of representatives of East-end local authorities was held on Monday night, to consider the action to be taken in reference to the forthcoming Local Government Board inquiry into the East London water supply. It was resolved to recommend the respective boards to contribute *pro rata*, according to population, to the cost of the inquiry, and also to invite the assistance of the London County Council in the matter.

Dr. Thompson, Local Government Board inspector, held an inquiry at Cardiff in reference to an application of the Town Council for leave to borrow £2,450, the cost of erecting a cholera hospital on the Flat Holm Island in the Bristol Channel. The existing farmhouse will be used as an administrative block, and the small existing ward, a shed containing six beds, will be used in case of necessity as an isolation ward. The new building, to be built from plans by Mr. Harper, the borough engineer of Cardiff, will comprise two six-bed wards and a nurse's room. The building will be erected of stone and brick, with a slated roof, and the stone will be quarried on the island. The estimate of cost has been based on the actual cost of erecting the new sanatorium at Canton, Cardiff, but 25 per cent. has been added for the cost of conveying materials to the island and providing for the men employed on the erection of the building.

An important work is now being carried on at the Indian Museum at Calcutta, under Mr. Caddy's superintendence—viz., making casts of Asoka inscriptions known to be scattered over the country, and of which Bengal has the largest number of examples. The moulds have been taken at each place by Mr. Caddy, and the casts, when ready, will be deposited in the Archæological Galleries of the Indian Museum.

A stained-glass window, containing a figure of St. Peter, has been placed in Colyford parish church, Devon. Mr. F. Drake, Cathedral-yard, Exeter, carried out the work.

CHIPS.

A drainage scheme is about to be carried out at Mold at an estimated cost of £5,250.

The district council of Milnrow, near Rochdale, have approved of plans and estimates submitted by Mr. James Diggle, C.E., for proposed sewerage works, and have made application to the Local Government Board for power to borrow £16,000 for carrying out the undertaking.

Mr. F. H. Tulloch, an inspector of the Local Government Board, held an inquiry at the Guildhall, Peterborough, on Wednesday, relative to the application of the town council of that city for powers to borrow £1,200 for the purchase of the Fitzwilliam Hall.

The sixty-third report of the Commissioners of Public Works in Ireland, issued on Friday, states that during last year the net expenditure on pubilc works, buildings, and railways in that country was £376,357, as against £469,383 in the preceding quarter.

The town council of Falmouth are taking preliminary steps towards the acquisition of the local gas and water undertakings, and have decided to consult Mr. Silverthorne, C.E., as to the cost and desirability of the transfer.

The foundation-stone of the chancel, the first section of a district church to be built at the rising watering-place of Saunton Sands, Braunton, Devon, was laid last week. Mr. E. Commins, of Exeter, is the architect, and the chancel is to accommodate 100 persons. Mr. R. Hancock is the clerk of works.

The Grammar School at Bromyard has lately undergone extensive alterations and additions from the designs of Mr. F. R. Kempson, F.R.I.B.A., of Hereford. The old school has been gutted out, and a chemical laboratory and class-room fitted up with every facility for lectures. The new wing is built of local stone, with Bath stone dressings. The old boundary walls have been taken down, new ones built, and out-offices constructed suitable for the increased number of boys. The works have been carried out by Mr. Newbold, of Bromyard.

A memorial of white Carrara marble has been placed over the grave in the General Cemetery at Shrewsbury, to the memory of the late Mr. John Cross, of Foregate House in that town, builder, and for many years one of the town council, who died 7th July, 1894, in his 70th year. The stone was erected by Messrs. Llanducci and Davies.

At the Wolverhampton Police-court on Friday, Alfred Peplow, builder, Bellfields, Compton-road, appeared to answer four charges of having contravened the by-laws as to the erection of buildings. Two charges related to the character of the material used as mortar, the amount of lime introduced being inadequate, while the composition included ashes and broken brick. Two of the charges were with regard to the thickness of the cross walls. A fine of £5 and costs was imposed in one case, and the others were withdrawn on payment of the costs.

LAVERS and WESTLAKE.
PAINTED GLASS WINDOWS.
MONUMENTAL BRASSES.
MURAL DECORATION.
ENDELL STREET, BLOOMSBURY, LONDON, W.C.

W. H. LASCELLES and Co.,
121, Bunhill Row, London, E.C.
TELEPHONE No. 270.
HIGH-CLASS JOINERY.
LASCELLES' CONCRETE.
Conservatories & Greenhouses.
WOODEN BUILDINGS.
BANK, OFFICE, & SHOP FITTINGS.
CHURCH BENCHES & PULPITS.
ESTIMATES GIVEN ON APPLICATION.

HAM HILL STONE.
The attention of Architects is specially invited to the Durability and beautiful Colour of this material.
Quarries Well Opened; Quick Despatch Guaranteed; Stonework Delivered and Fixed Complete. Samples and Estimates Free.
Address:—
THE HAM HILL STONE COMPANY,
NORTON, STOKE-UNDER-HAM, SOMERSET.
London Agent:—
Mr. E. A. WILLIAMS, 16, Craven-street, Strand, W.C.

WM. OLIVER & SONS,
MAHOGANY, WAINSCOT, WALNUT.
TEAK, VENEER, and FANCYWOOD
MERCHANTS,
120, BUNHILL ROW, LONDON, E.C.
The most extensive Stock of every kind of Wood in Planks and Boards, dry and fit for immediate use.

TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender; it adds to the value of the information.

Acton, W.—For the erection of new board-room and offices, caretakers' premises, and stores, and additional places for about 550 children, at the Priory Board Schools, Acton, for the School Board for Acton. Mr. Edward Monson, F.R.I.B.A., Acton Vale, W., architect. Quantities by Mr. F. T. W. Miller, of 10, Delahay-street, Westminster, S.W.:—

Lyford, G., Shepherd's Bush	£8,700	0	0
Wilkinson Bros., Finsbury Park	8,470	0	0
Pattinson and Sons, Whitehall	8,330	0	0
Lascelles and Co., Bunhill-row	8,205	0	0
Godson and Son, Kilburn	8,125	0	0
Nye, T., Ealing	8,100	0	0
Foord and Son, Brentford	7,855	0	0
Hooper, G., Acton*	7,600	0	0
Parsons, J., Kennington	7,350	0	0

(Architect's estimate, £7,700.)

* Accepted subject to approval of Education Department.

Ampfield, Hants.—For alterations and repairs to Vicarage House. Mr. A. R. Barker, architect:—

Wheeler, G., and Sons	£472	0	0
Moreton, W. P.	471	0	0
Targett, A.	449	0	0
Goulding and Son	375	0	0
Grace, C., and Sons	345	18	0

Barden, Kent.—For the repair of Lucifer Bridge, spanning the Medway at Barden, Tonbridge, for the Tonbridge rural sanitary authority:—

Punnett and Co., Tonbridge (accepted) ... £290

Blackwall.—For the erection of a jetty at Blackwall for the Receiver for the Metropolitan Police District. Mr. John Butler, F.R.I.B.A., surveyor. Quantities by Mr. W. H. Thurgood:—

Grover and Son	£1,250	0	0
Richardson, J. O.	1,045	0	0
Higgs and Hill	999	0	0
Holloway Bros.	996	0	0
Docwra, T., and Son	982	5	4
Chafen, S.	962	0	0

Blaengarw.—For 60 houses, Blaengarw, near Bridgend, for the Pwllcarn Building Club; Mr. E. Griffiths, secretary. Mr. C. Telford Evans, 14, Queen-street, Cardiff, architect. Quantities by the architect:—

Evans, D., Penygraig	£24,500	0	0
Hatherley and Carr, Bristol	18,500	0	0
Evans, B., Cardiff	15,260	0	0
Thomas, B., and Rees, Skewen	13,370	0	0
Morgan, T., Penygraig	12,540	0	0
Williams and Thomas, Cardiff	11,800	0	0
Davies, S., and Son, Blaengarw*	11,520	0	0

* Accepted.

Budleigh Salterton.—For the construction of the new railway to Budleigh Salterton:—

Aird and Co., London (accepted).

Bursledon, Hants.—For alterations to roof of Rectory House. Mr. A. R. Barker, architect:—

Brinton and Bone	£205	0	0
Barter, C.	197	0	0
Chapman, W. H.	183	0	0

Chalton, Hants.—For alterations and additions to rectory house. Mr. A. R. Barker, architect:—

Read, W.	£650	0	0
Hedjcock, W.	550	0	0
Croad, J.	490	0	0
Edney, J.	470	0	0

Chilbolton, Hants.—For alterations to Rectory House. Mr. A. R. Barker, architect:—

Grace, C.	£130	0	0
Spratt, A.	105	0	0
Heaven, G.	102	15	0

Child's Hill.—For alterations to Red Lion p.h. Mr. A. R. Barker, architect:—

Buck, F.	£569	0	0
Oldrey, H. B., and Sons	563	0	0
Cowley and Drake	544	10	0
Wheeler, G.	539	10	0

Cookham, Berks.—For alterations and additions to "Riverdene," for Mr. Charles Saxton. Mr. Arthur Vernon, 29, Cockspur-street, S.W., architect:—

Colls	£1,100	0	0
Silver	597	0	0
Gibson (accepted)	580	0	0

Croydon.—For alterations to No. 96, George-street, for Messrs. T. S. and C. Parry. Mr. Robert M. Chart, F.S.I., Union Bank Chambers, Croydon, and Mitcham, Surrey, architect and surveyor:—

Smith and Sons	£237	0	0
Goulder, E.	216	0	0
Umlandt and Nicholl	198	10	0
Waller, D., Jun.	191	10	0

(All of Croydon.)

Dover.—For the erection of three shops and premises in Biggin-street, for Mr. Geo. C. Rubie. Messrs. Fry and Gardener, Cannon-street, Dover, architects:—

Wise, Deal	£2,440	0	0
Bromley, Dover	2,350	0	0
Denne, G. H., and Son, Deal	2,306	0	0
Austen and Lewis, Dover	2,180	0	0
Denne, W. and T., Deal	2,180	0	0
Richardson, Dover	2,175	0	0
Hall, Dover	2,150	0	0
Stiff, Dover	2,150	0	0
Hayward and Paramor, Dover	1,990	0	0
Lewis, G., & Sons, Dover (accepted)	1,988	0	0

Dover.—For the erection of two shops and premises in Biggin-street and Worthington's-lane, for Mr. Geo. C. Rubie. Messrs. Fry and Gardener, Cannon-street, Dover, architects:—

Bromley, Dover	£3,100	0	0
Hall, Dover	3,005	0	0
Lewis, G., and Sons, Dover	2,980	0	0
Stiff, Dover	2,885	0	0
Wise, Deal	2,785	0	0
Austen and Lewis, Dover	2,725	0	0
Richardson, Dover	2,700	0	0
Denne, G. H., and Son, Deal	2,688	0	0
Hayward and Paramor	2,634	0	0
Denne, W. and T., Deal (accepted)	2,555	0	0

Dover.—For the pulling-down and rebuilding shop and premises in Biggin-street, for Mr. Geo. Hatton. Messrs. Fry and Gardener, Dover, architects:—

Stiff, H., Dover	£3,585	0	0
Hayward and Paramor, Dover	3,491	0	0
Bromley, W., Dover	3,299	0	0
Austen and Lewis, Dover	3,285	0	0
Lewis, G., & Sons, Dover (accepted)	3,045	0	0

Eardisley, Herefordshire.—For the erection of new cloakrooms, offices, and other alterations at the British School, Eardisley, for the managers. Mr. Ernest G. Davies, M.S.A., St. John-street, Hereford, architect:—

Lewis, W. (accepted).

East Finchley.—For rebuilding the George Hotel. Mr. A. R. Barker, architect:—

Wheeler and Peake	£3,700	0	0
Godson, G., and Sons	3,630	0	0
Wheeler, W.	3,589	0	0
Macfarlane Bros.	3,587	0	0
Voller, F.	3,558	0	0
Brown and Sweetland	3,467	0	0
Mattock Bros.	3,430	0	0

Exmouth.—For laying-out the Manor House Grounds, for the district council. Mr. Johnson, architect:—

Hooper, H. H.	£1,164	0	0
Hayman, A.	997	0	0
Cooper, W. S., and Son	843	0	0

Felixstowe.—For carrying out Contract No. 3 of the sewerage works, for the district council:—

Double, G., Ipswich (accepted) ... £4,180 11 10

(Lowest of eight tenders received.)

Folkestone.—For new chancel and north aisle at St. John's Church. Mr. A. R. Barker, architect:—

Webster, R.	£4,000	0	0
Dove Bros.	3,695	0	0
Petts, J. L., and Son	3,621	0	0
Roberts, L. H. and R.	3,589	0	0
Johnson, W., and Co.	3,573	0	0
Wallis, G. E., and Sons	3,432	0	0
Padget, E.	3,355	4	0
Fearon, T. L.	3,276	0	0
Hayward and Paramor	3,236	10	0

East Greenwich.—For Baptist church, Woolwich Lower-road, S.E. Mr. George Baines, F.R.I.B.A., 4, Great Winchester-street, E.C., architect:—

	Estimate A.	Estimate B.	Estimate C.	Total.	D.	
Scotney and Wootten	£4,209 0 0	£648 0 0	£264 0 0	£5,209 0 0	£85 0 0	deduct
Gorham, F. J.	3,901 1 7	754 2 2	254 4 1	4,909 7 10	20 0 0	,,
Balaam Bros.	3,664 0 0	660 0 0	251 0 0	4,575 0 0	75 0 0	,,
Shurmur, W.	3,545 0 0	598 0 0	240 0 0	4,383 0 0	123 0 0	,,
Leng, T. D.	3,495 0 0	642 0 0	234 0 0	4,371 0 0	20 0 0	,,
Bowyer, J., and C.	3,535 0 0	599 0 0	236 0 0	4,370 0 0	280 0 0	,,
Lowe, R. A.	3,473 0 0	613 0 0	242 0 0	4,328 0 0	45 0 0	,,
Holloway, H. L.	3,424 0 0	620 0 0	250 0 0	4,294 0 0	75 0 0	,,
White, T., and Sons	3,400 0 0	551 12 7	278 14 2	4,230 6 9	113 0 0	,,
Slow, C.	3,436 0 0	525 0 0	233 10 0	4,194 10 0	75 0 0	,,
Nightingale, B. E.	3,378 0 0	567 0 0	249 0 0	4,194 0 0	50 0 0	add
Scott, S. J.	3,320 0 0	613 0 0	241 0 0	4,174 0 0	50 0 0	,,
Jerrard and Sons	3,299 0 0	567 0 0	227 0 0	4,093 0 0	38 0 0	deduct
Proctor, E.	3,320 19 10	498 0 2	233 0 0	4,081 2 6	25 0 0	,,
Battley, Sons, and Holness	3,247 0 0	547 0 0	230 0 0	4,024 0 0	30 0 0	,,
Lilly and Lilly, Ltd.	3,232 0 0	538 0 0	227 0 0	3,997 0 0	50 0 0	,,
West Bros.	3,150 0 0	566 0 0	240 0 0	3,956 0 0	40 0 0	,,
Barden, T., Maidstone*	3,170 0 0	550 0 0	214 0 0	3,955 7 0	41 0 0	,,

Estimate A.—Church and vestries. Estimate B.—Galleries and staircases. Estimate C.—Boundary walls, gates, and railings. Estimate D.—Difference for Bath stone dressings in lieu of terracotta. * Accepted.

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXIX.—No. 2126.

FRIDAY, OCTOBER 4, 1895.

POWER RUNNING TO WASTE.

"THE committee have to be congratulated on having evoked so much talent." So ends the West Ham Technical Institute and Free Library Competition, as far as the 70 out of the 73 competitors are concerned. Of the others, two receive a payment which, though not illiberal as such matters go, is hardly likely to compensate them for time wasted and money spent; and one, or, at least, one firm, has a design recommended for adoption. Plenty of able schemes have been submitted besides these. It might not be difficult to pick out ten or twenty other sets of plans, any one of which would have fulfilled the requirements in a satisfactory way. But, of course, they could not all be chosen—they could not all be rewarded—and in any conceivable selection the great majority of them were predestined to be labour lost. So it is in a multitude of competitions. It is not always the best design which gains the first place. Often, of late years, it has been a very bad design which gained it; but not because no better ones were sent in. There is seldom any scarcity of good work in competitions, and it is sad to think that most of this good work brings no return to its authors, and confers no benefit on anybody else. The ability which produces it is simply ability running to waste.

That is what the architectural observer sees in one direction: a superfluity of the power to reach a certain veritable level in planning, construction, and design. Too many men can do what is tolerably meritorious in these departments, though few can accomplish anything really notable. Now look in some other quarters. The catalogue-laden postman staggers up the stairs and deposits at the architect's door his folios and quartos—his pamphlets and his leaflets. From north and south, from east and west, manufacturers of everything which by any possibility can be used about a building are sending illustrations of their wares. Do these, too, show the same superabundance of talent for design? Why, to look at them one might think there was not a capable designer in the Kingdom. Here, for instance, is an expensively-printed pricebook of several hundred pages, with views, plain and coloured, of everything from mantelpieces to saucepans. Out of the whole lot the saucepans are the only things one can look at without repugnance. Did any human being, in any previous age of the world, ever produce anything as bad as "our Sicilian marble mantelpiece with rouge ornaments"? The boxed-out slabs of this execrable composition have been familiar to us from our youth. We have been inured to them by prolonged suffering, but was there any need to add an unaccustomed torment, in the shape of two little red cylinders, about as big as cigars, stuck on with plaster, and pretending to carry the shelf? Why should anyone purchase this aggravated infliction at the rate of £4 17s. 6d., when he can have the milder sort, without the red cigars, for 40 shillings? And what can be expected of him if he does, except that he will some day buy the "Complete set, price 13 guineas," with scarlet and ultramarine hearth-tiles, pink and green jamb-tiles, red and yellow chimneypiece, and cast-iron "Gothic" stove, with the maker's name in inch-long letters on its fireclay back? Could the manufacturers find nobody to suggest better things than this, or are they still below the intellectual level at which ignorance discovers that it has something to learn? The smallest fraction of the ability which wastes itself in hopeless competitions would be the making of them; but either they do not care to have it, or do not know where to look for it.

Here is another production of the same tribe. It contains nearly 1,000 pages. It begins with register stoves, from half-a crown each—the sort which our friend the "cutting" contractor naturally puts in when the selection is left to him. Well, one cannot expect much for half-a-crown, and we can hardly complain of bad castings, thin metal, ugly shape, and mouldings set thickly with what ironfounders imagine to be ornament. Let us go on to a price at which satisfactory work might reasonably be looked for. Here we find Queen Anne balusters instead of bars; Greek trusses or consoles to stop the ends of them; a stove-back of characteristically Saracenic form; and a diaper from Westminster Abbey on the square margin which frames in the whole. The tiles suggested represent a Welsh waterfall and two sets of imitation fern-leaves; but the use of these is optional, and if a purchaser takes them the disgrace will be on his own head. Moreover, there are good tiles to be had, for the tile-maker has found out, though the ironfounder has not, that good taste has a market value. But the goodness of the tiles, when they are good, only makes the badness of the ironwork more conspicuous. There is neither science, nor art, nor common sense in it. It is full of sharp angles instead of rounded surfaces; its maker has forgotten the very nature of the material he was using; and instead of being 200 years in advance of, he is far more than 200 years behind, what the old Sussex and Hampshire founders did a couple of centuries ago.

We need not mention his "villa railings and gates," except to say that in these he almost excels himself. They are fireworks in metal, with bars and points and spikes darting here and there and everywhere. For more money you can have cast quatrefoils as well, and as many degenerate fleurs-de-lis as heart can wish. But the buyer who really likes quatrefoils should see "our ornamental grating." It is warranted, when 10in. wide, to contain 12in. to the square foot, and the person would be very hard to please who wished for more. Yet some people are never satisfied, and cannot eat honey unless you give them sugar to put on it. Behold, then, for only an additional sixpence, "our extra-superior grating," where every quatrefoil has a square of "our Westminster Abbey diaper" in the centre of it! Was ever such richness seen before? It outshines the Alhambra; it makes the Palatine Chapel at Palermo seem bald and bare, and yet it is all to be had for eighteenpence. What times we live in! But we will take leave of the ironfounder, as we are all glad to do whenever duty has forced us into his dismal den. Let us turn to the brickmaker.

Here is the catalogue of a company who supply an excellent material—excellent, that is, if true, sharp arrises, smooth surfaces, and uniform colour are really the things in which brickwork should glory. Their bricks are hard, and not meant for cutting. All the ornamental features are moulded before being burnt, and to get fresh moulds made takes time and money. Still, with a few dozen well-proportioned, simple sections kept in stock, the architect can do a lot of satisfactory designing in an unassuming way. The catalogue contains 700 or 800 sections, and out of them all not more than four or five are of any service. If the rest were designed by an architect, it must have been by a very young one. Half his profiles look like reminiscences of Paley or Chambers, by a pupil who had casually looked through their books, but had never drawn a moulding before. Here there is a quarter-roll between two fillets—the roll so small and the fillets so large that they completely hide it. Here, again, is a round roll with narrow quirks, such as the joiner loves to make, invisible 10ft. off when new, and sure to choke with dust in a month. Then comes a string-course with a thin, pinched-up nosing, like the edge of a hollow-ground razor. It wants wrapping in cotton-wool to get it safely to your building, and when it is there, the first pigeon that alights on it may peck it off. A little further on there are blocks, with groups of mouldings, a foot or two across, for people who do not like to see mortar joints. And yet "group" is not the right word, for grouping implies some sort of arrangement and connection among the things grouped, while the mouldings here brought together are such as we never met before, and will never, we hope, be unlucky enough to meet again. Perhaps some such thought struck the designer as he drew them; some inner monition that all was not well reached him as he turned over the page. We know what the modern English draughtsman—unless he is a very superior one—does when this happens. He falls back on his acanthus leaves and scrolls, his modillions and his dentils, and his eggs and tongues, feeling that if these will not save him, nothing can. Our brick-book draughtsman does the same, though even more indiscriminately, for amongst his Classic enrichments our old friend, the Westminster Abbey diaper, meets us once more. The 13th-century workmen who first invented it little thought what they were inflicting on us.

The same grievous want of brains shows itself in almost every page which the modern manufacturer sends out. The maker of church and school furniture, though, if judged by his illustrations and not by his goods, he sometimes rises almost to mediocrity, is capable of descending to the depths in which the ironfounder habitually dwells. His pulpits and lecterns and stalls are familiar as household words, and his name is the first that rises to our lips if we have the misfortune to enter a church where his "fittings" are displayed. Still, these things were originally designed by some architect of the past generation who was not quite unworthy of the name. There was some sort of general design about them which can still be traced, though the details have been starved and scamped, and thinned down for commercial reasons. In other examples, commercialism has gone further. The very semblance of design has departed, and there has evidently been no architect in the case. Such bench-ends and seat-backs, as some we have been invited to buy, must surely have been the invention of the firm's office-boy in his leisure hours; while the school-forms might have been shaped, except as far as comfort goes, by the very pupils who are to sit on them. We need not say much of the advertising glazier. There are firms who can do excellent work, and firms who make us "sup full of horrors"; but the prevailing character of modern stained glass is its wearisome insipidity. The ideas are trite, the drawing is tame, the colouring inharmonious, and, above all, the quality of the glass is bad. Now, it is on the quality of the glass that the cost very largely depends, and quality is a matter which committees know nothing of, and care nothing about. They select their proposed window by means of half-a-dozen alternative sketches on paper. It must be "pretty," and it must be cheap. Penny wise and pound foolish, they will not allow their architect to superintend its making, and the result is that they often spend hundreds of pounds on a production only fit to adorn an illuminated "grotto." Amongst all our clever, though unsuccessful, competitors, there must surely be some with an eye for colour, and a talent for freehand drawing. If they could install themselves in place of the commercial stained-glass maker and the commercial church-fitter, some of us, at any rate, would welcome them in their new position.

It is true, no doubt, that the reformer in art, as in other things, needs not only a path in front of him, but a force behind him; and this force it depends on the public to supply. But this only suggests another field in which the able competitor might work. To teach the world at large, by all possible means, to know good art from bad, good materials from bad, good workmanship from bad, is one of the most useful things which the trained architect, in these times, can do. He will be creating possibilities for other capable artists, as well as for himself. He need not confine himself to the details of his own profession. Nothing that men make need be quite alien to him; for the underlying principles of all good design are the same. He may take up any kind of human work—from railway bridges to hairpins, or from crowns and sceptres down to boots and shoes—may study their uses and construction, and show where they fail, and how they might be improved. Nothing is too great or too small for art, since art is only mind transfusing and transforming matter. In civilised periods it permeates everything, and even a few fragments of Roman pottery, or even a few old sandals from ancient London, are quite enough to put modern London to the blush.

CROOKED *VERSUS* SHAPELY PLANS.

THE angle plays a remarkable part in architecture. A building is made up entirely of lines and angles, and the relation of these simple elements with one another is more potent for good or evil than most people imagine. In the hands of unthinking designers they are often a cause of discord and positive ugliness—when, for instance, they are made to do all kinds of feats for the want of a little conciliatory management in joining parts of the design together, or in making agreeable arrangements. We may look at the subject of angles in many ways. The *rôle* the angle plays in plan is, of all others, the most important and conspicuous. It forces itself upon the attention every time we turn a corner of a building and every time we view a building. Crookedness is always a source of disappointment and distrust. It pains the eye to see a crooked wall or a twisted corridor, and no architect has ever succeeded in making a crooked room or corridor agreeable except by disguises or by expedients. And why is the crooked or bent line so naturally displeasing? Is it not because a want of purpose is manifested? There is something indeterminate in a crooked wall or crooked room which shocks the vision. A straight line and a right angle suggest, on the contrary, to the mind's eye, straightforwardness of purpose and honesty. We at once perceive their meaning in the plan of a building: the straight line is direct, the right angle expressive of cubical capacity; and they are also restful. Yet, notwithstanding these self-evident facts, some architects do not hesitate to use crooked or oblique lines and acute or obtuse angles whenever they can do so to save trouble. If the boundary of a site runs at an angle or obliquely, they follow it in the plan, regardless of the awkward appearances produced by them both internally and externally. A little thought would have prevented the irregularity. By setting back the building a little more at one end, a square line could be preserved throughout the front, and all the awkwardness of crooked rooms and roofs avoided. But no; this is thought to waste space, so the design is sacrificed for a few feet of ground. The whole plan and internal arrangement is spoiled if the rooms are preserved of the same width throughout, the corridor is made to rake with the external wall, producing at one end an obtuse, and the other end an acute, angle with the return corridors. It is well if the irregularity can be made to spend itself in an open area, closets, stores, or lavatories, so as to preserve squareness through the other portion of the building.

The competing architect is a great sinner in this respect. If the site is crooked or has irregular angles, he cannot avoid the temptation to follow the boundaries. He thinks it looks saving not to waste space by area room, the plan appears to fit the ground better; but, after all, he gains very little by the process, and he makes it exceedingly difficult to arrange a decent plan. As for the elevations, he does not trouble to show the acute angle, and the perspective is drawn as if it did not exist. Exceedingly clever on paper, but in execution the mistake is soon apparent, and disappointment ensues. Yet, for some unaccountable reason, the crooked angle revels in competition drawings, as if there was some charm in it. We are not thinking of designs like those in the Durham County Council Buildings competition or the Sheffield, in which cases the sites were of triangular or trapezoidal shape, and demanded buildings with irregular angles. In the selected design for the former, lately illustrated by us, the authors have, with masterly skill, made tolerable their acute angle by placing a tower at the corner, and have managed to disguise the obtuse angle of the opposite fronts by planning the council-chamber of horseshoe form and projecting the staircase walls. Also, by an ingenious arrangement of a hexagonal staircase, anterooms, and halls, the centre area has been divided into shapely courts, making quite an ornamental arrangement in connection with the inner corridors of the building. Here, as in Mr. Waterhouse's Manchester Town Hall and his National Liberal Club, a crooked or irregular site has been turned to good account, and the intractable angles have given birth to invention and architectural arrangements. But we are not now thinking of these exceptional sites, but of those in which an oblique boundary occurs on one side or two only. The site selected for the West Ham Technical School and Library in Barking-road affords an instance of how the competing architect, when he is not ingenious enough to turn an accident into a feature of interest, can make a crooked boundary ungainly and unsightly. Out of a large number of designs, many of them of exceptional merit, quite half adopted the crooked to the shapely angle; in other words, made one side of their building parallel to the oblique boundary of the road. To some designers it seems natural to follow boundaries instead of boldly setting their angles square; it is almost a kind of perverseness. In the particular designs to which we allude one block of building was placed at an acute angle with the one to the main road. Many of the authors have adopted certain artifices to disguise the angle—a tower, a rounded corner, breaks—but others have not even done this. A few of the designs show a clever mode of preserving the squareness of the interior by confining the irregularity of the angle to a corner room or a lobby. Of course, this is a much more sensible way than making the awkwardness appear in all the rooms or spoiling a corridor. But, we ask again the question, Is the acceptance of an oblique angle or frontage worth the candle? To say nothing about the external derangement caused by irregular angle, to cornices, to roofing, and other details, is it worth while to spoil corner rooms by making them out of the square?

The internal oblique angle is always an eyesore. Can we look at the oblique-sided room without a shudder of what the occupant or tenant will do to make his carpets fit, or to plan his furniture to the best advantage? But its unsightliness makes itself evident when we cast our eyes up to the ceiling. The very surface above us looks awry, as if one end was higher than the other. We enter a large hotel coffee-room, or restaurant, or City bank, and we see the ceiling beams running at an acute angle with the side of the room, making everything else look distorted. The ribs and panels make matters worse, by showing up more conspicuously the crookedness. An elaborate panelled design is cut askew right across the pattern. What is more offensive? Or one of the architrave beams enters the cornice at an acute angle, which seems to defy all the resources of architect and decorator. Is it not better to lessen the evil as far as can be done by omitting all beams and panelling, and to try and cut off and conceal the obliquity by arching the triangular space and throwing a beam over this portion? Any approach to good architecture is impossible without. It is interesting to see what some of our best architects have done, and to study their methods. Mr. Waterhouse has given us some clever adaptations in his Manchester Town Hall and his Liberal Club, which are worth attention, especially at the intersection of corridors and the meeting of external fronts at acute angles. Other architects have succeeded of turning a necessity into an invention, of creating a *coup de maître* out of an awkward-shaped site. One or two of the Sheffield municipal buildings designs showed ingenious arrangements, such as that we published of Messrs. Flockton and Gibbs; Mr. Mountford's selected design was an example of preserving squareness by recessing the return front of the acute angle by successive steps. The design selected for the Southampton Free Library is another instance of a crooked site having been turned by one competitor into a geometrical solution. We do not recommend the architect to turn his plan in all such cases into geometrical forms—these may be more ingenious than convenient; it may be wiser for him to confine his skill to a hall or vestibule by making a feature of it, or by throwing the irregularity into it, so as to keep the other portions of the plan square. The Passmore Ewdards Settlement Building design, and the plans we published of the Chelsea Embankment Court, are examples of these methods. When there is only one side oblique, the remedy is easily found, and it savours of a want of care and skill to make corridors and rooms crooked or awkward throughout the plan, instead of localising the irregularity in the least offensive way. The whole question of corners and angle-towers turns on this subject of an acute angle, which is truly the *bête noir* of design. There are architects, too, who are defiant in the display of the angles in bay windows, dormer gables, and all kinds of nooks and corners, and who seem to enjoy the whimsical and bizarre variety of them. A sense of confusion and unrest is the consequence. One form jars discordantly on the other, and a distressful want of repose is felt in the design. The love of angularity is often found also in designs which seek to be picturesque; but it is as well to note how few old buildings, those taken as models of picturesque grouping, have a redundance of angles. The acute and obtuse forms are exceptional; the latter appears in all octagonal features, and it is the only other angle besides the square which lends itself to construction and architectural design.

ANCIENT LIGHTS.

QUESTIONS of ancient lights are constantly cropping up both in the Metropolis and elsewhere, and we frequently report cases of injury to old lights by the erection of new premises in the front or in the rear. The injunction to restrain builders is often applied for by persons after the new building or erection is completed or considerably advanced, the consequence of which is that the plaintiff is unable to obtain the redress he seeks, and the defendant is prevented from arranging his building so as not to interfere unnecessarily with the light. In such circumstances as these the defendant, in fact, can plead acquiescence on the part of plaintiff, which the Court is compelled to consider. In fact, it has been ruled in several cases, that if the party having the right to light makes no objection during the progress of the building, he cannot afterwards complain. There is, unfortunately, an idea that by objecting to any erection during the progress, the plaintiff has less chance of obtaining compensation than if he allowed it to be completed. The legal adviser sometimes has suggested this policy, which is done in the spirit of allowing the defending party to be caught in his own trap. But the Courts regard the matter in a more reasonable way. It is very important that an ancient light should be protected and made apparent, and that any infringement should be at once objected to. In many dominant tenements this measure has not been taken. The building owner adjoining has not the slightest idea that certain windows next door are "ancient," and plans are prepared for him for new buildings, or extensive additions, without the faintest suspicion that he is doing anything illegal. His professional adviser, too, often neglects to make inquiries about the easements of neighbouring owners' premises. Drawings are prepared, the contract is signed, and the building is actually put into execution before the dominant owner is made aware of his rights. His light is perceptibly diminished, and then, for the first time, he consults his solicitor. The inattention to the right of light on the part of the plaintiff may be excusable, for he does not know probably anything of the intention of the building-owner; but the case is different with the latter—his architect is supposed to make himself acquainted with the rights of the adjoining owner.

Only the other day a question apparently of this sort came before a judge in Liverpool, where a mantle-maker applied for an injunction to restrain some wholesale druggists from erecting a warehouse in the rear of his (the plaintiff's) premises, which injured certain lights. The erection of the warehouse had actually proceeded till it had considerably diminished the light formerly obtained through the windows, thereby rendering it difficult to conduct the business with regard especially to the discrimination of the colours in materials. On the defendants' side it was argued, and sustained by sworn testimony of surveyors and others, that no interference with ancient lights of a serious nature was caused. His Honour did not grant the injunction, but ordered the motion to stand over till the trial of action.

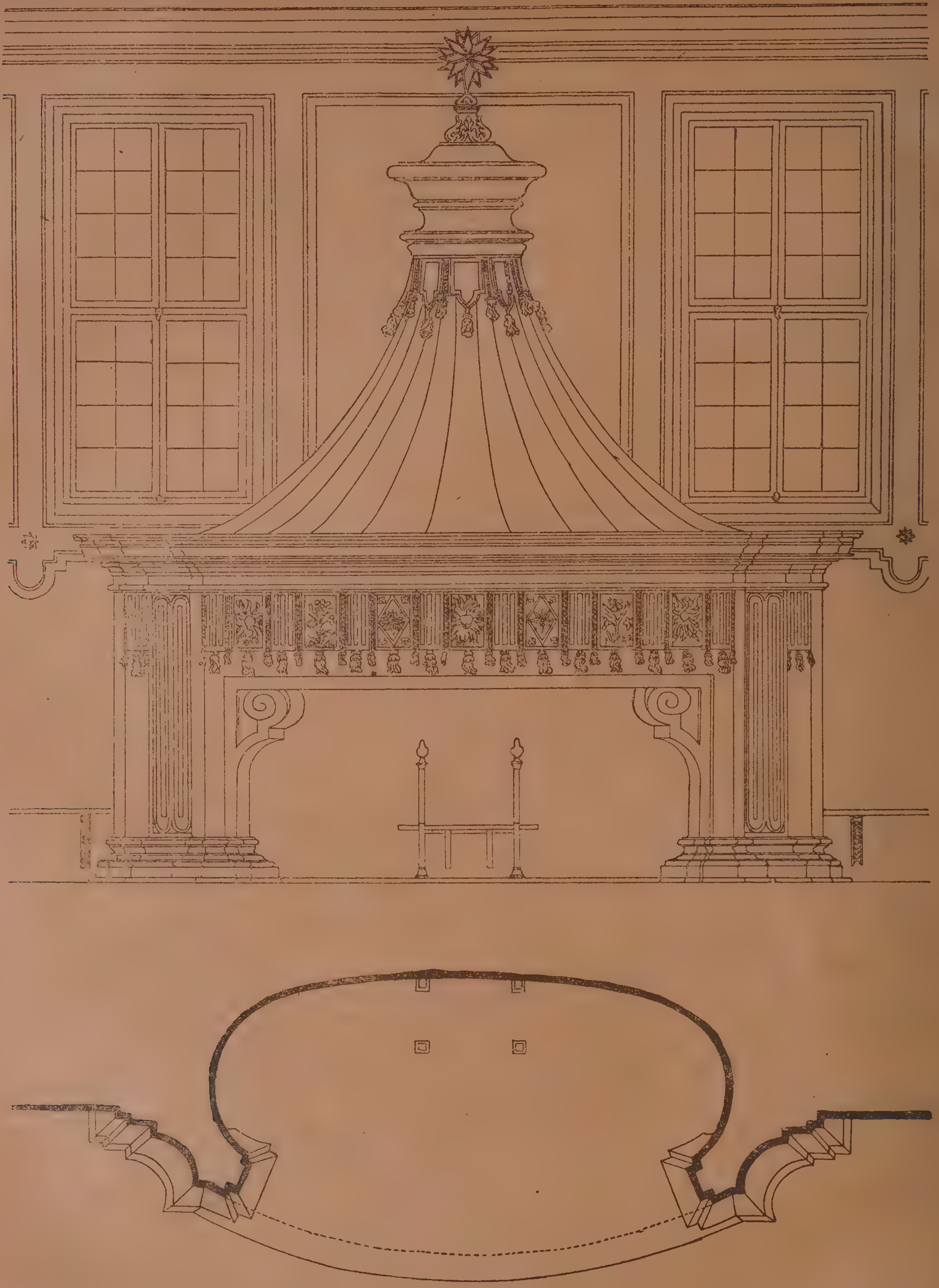
There are particular circumstances which render it exceedingly difficult for an owner of a servient tenement to protect himself or his right of building. Let us suppose A, the owner of certain premises, has a small window about 2ft. or 3ft. superficial in a part of his premises a little distance back from the boundary between the properties; it may be the window of a lavatory or closet. He makes certain alterations, pulls down the inside wall of closet, and throws the space into a large room, and increases the size of his window considerably. His neighbour B cannot interfere, for he cannot obstruct the new window by placing a screen before it without interfering with the ancient light, and this he must not do. He is therefore powerless to do anything but to allow the enlarged opening to remain and acquire the right of the old window. Some time afterwards B may desire to build, but the enlarged window in A's house prevents him from doing so. Again, it is quite true that the original little window of closet was not a nuisance; but the large room, if used, say, as a school or workroom, would be highly objectionable. All this follows the dictum which was laid down by Lord Westbury in his judgment in the well-known case of "Tapling v. Jones." The position and size of the old window must be accurately proved if the owner of a dominant tenement is to obtain advantage by any enlargement of it. If an old building having ancient lights is pulled or burnt down and rebuilt with new windows overlooking the neighbour's land, it is often a difficult question to find out whether the new windows occupy the same positions they did before, or whether they would impose on the servient tenement an additional servitude. It has been ruled that to deprive the new windows of the character of ancient lights, the change must be material. The architect intrusted with rebuilding dominant tenements ought to make a careful survey before pulling down the old premises, so as to be sure of the position of the old windows, for, if there is no evidence as to their position, it has been decided the easement as to the new building cannot be maintained. So, also, the servient tenement owner should ascertain the position of the ancient lights of his neighbour. If these surveys were made, much litigation might be averted; but the fact is, they are seldom undertaken by either party. Sometimes an arrangement between the parties of the respective properties is entered into, to the effect that neither of the contracting parties would object to the other of them raising his building. The plans of the proposed building ought to be submitted to the other party, and if approved, the building owner might be able to proceed. Much litigation might be thus saved. The evidence produced in cases of this kind must be clear and accurate. No doubtful inferences are permissible. One of the modes by which accurate representations of old buildings with ancient lights can be obtained is by the aid of photography. Before taking down an old building a photograph of it on the sides having the ancient lights should be taken; also dimensions of all the windows and their position. The plaintiff ought to be particularly careful to obtain these facts. He ought to have photographs taken from his own windows of the defendant's premises before it is taken down, by which means he can prove to the satisfaction of any Court how far the windows of the rebuilt premises have been changed in position or enlarged. To wait till the interference with his light has taken place is to allow the defendant to go to a large expense, and to permit him to build in ignorance of the rights of plaintiff, which the Court would interpret in favour of the former. In all cases the plaintiff is a gainer by taking immediate action, providing he has clear and unmistakable evidence of substantial interference with light.

PHOTOGRAPHS IN PALL MALL.

THIS week the fortieth annual gathering of photographs forming the exhibition of the Royal Photographic Society has been opened at the gallery of the Royal Society of Painters in Water Colours, and although the vast number of photographs produced on every hand all over the world has greatly increased of late, we do not find that the interest in this exhibition of photographic prints in Pall Mall has very materially diminished. The undoubted popularity of the art developed the fashion for amateur photography so immensely that something like a reaction might have been reasonably anticipated, had not severe competition with a compensating influence inspired greater efforts towards perfection. Whether much advance has been recognised during the past year or not remains a subject for individual opinion; but without professing to discover any material improvement, we certainly find many old masters of the camera quite equal to some of their best previous productions. Not a few familiar exhibitors have been removed by death, but younger men seem coming to the front with admirable work. A most decided improvement has been made by the Photographic Society in the shape and character of their exhibition catalogue, which for the first time contains a number of process-block reproductions from works exhibited besides a few marginal sketches in black and white. The exhibition does not include this time many large photographs of architectural interest, but we may mention a few of very excellent quality, such as the "Gallery of Hardwick Hall," by Richard Keene, Limited, or the "Chapel of the Castle of St. Honorat, Provence," one of the most interesting buildings on the Riviera, here represented by Mr. J. C. Warburg, whose bromide print is thoroughly artistic, and good in colour. Those who wish to supplement their knowledge of the castle and its chapels will find them well illustrated in our pages for December 14th, 1888. Mr. Edgar G. Lee wins deservedly a medal for his carbon picture of the "Gateway to the Castle Garth, Newcastle," with a woman of very ordinary type skilfully introduced in a very natural and unassuming way, giving scale to the forefront of the view. The "Nursery Stairs," another peep from Hardwick, by R. Keene, Limited, hangs near, and is quite worthy of notice. So, too, are Mr. Harold Baker's exquisite studies from Warwick and Tewkesbury, while Mr. W. T. Greatbatch shows a small view of "Watergate-row, Chester," with its quaint, overhanging galleries. Mr. Henry Little brings home some grand photographs from Italy, such as the "Courtyard of the Bargello, Florence," and the Autotype Company exhibit a capital picture from a fresh point of view of "Sta. Maria della Salute, Venice," from a negative by Col. Stewart. Messrs. S. B. Bolas and Co. take a medal for a platinum view of the "S.E. Processional Aisle at Winchester Cathedral," from which building the same firm exhibits some more almost equally good pictures. From Ely Cathedral also they show other prints of great beauty. Among the novelties of the collection are Mr. Lodge's telephotos rendering inaccessible studies of bird life, such as groups of kittiwakes or swarms of puffins disporting themselves upon their island homes, undisturbed by the approach of man, and therefore in an entirely natural enjoyment of their native habits and interior life. Messrs. West and Sons show a fine popular print of "*Valkyrie III.* Racing on the Clyde," and several other nautical studies of similar subjects just now invested with unusual interest, while the many winter scenes exhibited—for example, Mr. W. Martin's "Break-up of the Frost last February on the Thames at Putney," recall an icy cold which, in the present spell of Tropical weather, seems almost welcome and bracing to the jaded sightseer. Mr. Henry Sandland runs a tilt with Mr. Gambier Bolton, whose famous "Zoo" portraits have so long delighted the student of natural history. The pictures shown by Mr. Sandland include zebras, gnus, llamas, and deer, photographed in their pens at Regent's Park with admirable care and knowledge. Landseer's lion, too, is very capitally rendered by another camera.

SCHOOL BOARD ARCHITECTS AND THEIR REMUNERATION.

WHEN the West Ham School Board was elected in the early part of the present year, many of the candidates expressed themselves in favour of the board having an architect at a fixed salary. In due course the matter was referred to a special committee, which, after about six months' inquiries, submitted, at the last meeting, an exhaustive report upon the subject. It may be mentioned that all members who were opposed to the present system of payment to the architect were elected upon the committee. Inquiries were made as to the procedure of other boards, and it was found that the following boards paid a commission of 5 per cent. for all work undertaken by the architect, who provided his own staff and office accommodation:—(*a*) Barking, Blackburn, (*b*) Brighton, Bolton, Cardiff, (*a*) East Ham, Huddersfield, Ilford, Leyton, Newcastle, Norwich, (*a*) Plymouth, (*b*) Portsmouth, Salford, Sunderland, Walthamstow, (*b*) Wanstead, and Wolverhampton. In the cases marked (*a*) the boards provide the clerks of the works, and in those marked (*b*) the architect is specially remunerated for negotiations in connection with the purchase of sites. The following boards had special arrangements with their architects; but the total payment, in every case, was equal to, or in excesss of, 5 per cent. on all

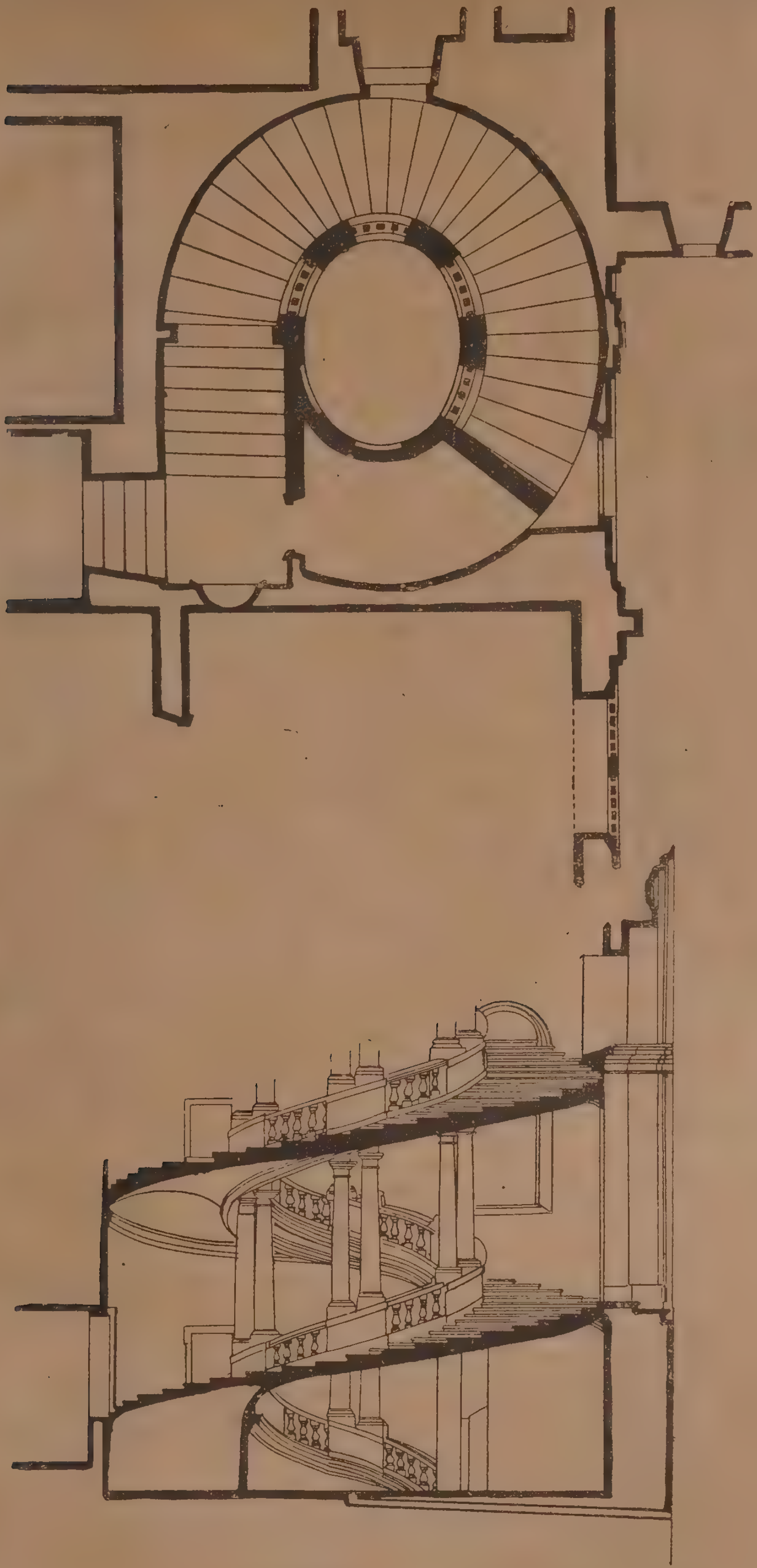


FIREPLACE IN THE RECREATION ROOM OF THE ORATORY OF S. FILIPPO NERI, ROME.—By Borromini.

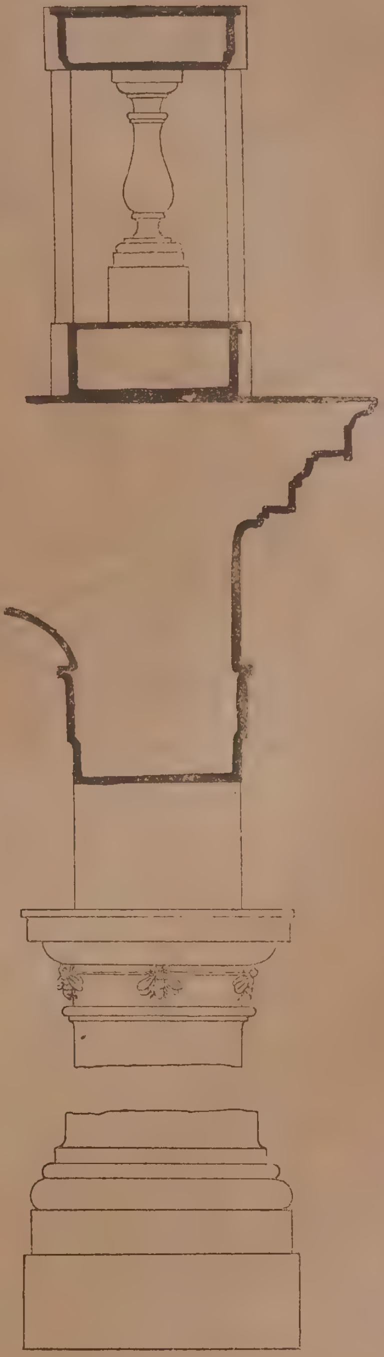
work:—Birmingham, Bradford, Hull, Leeds, Leicester, Liverpool, Nottingham, Sheffield, and Tottenham. In the case of the London School Board, the expense of the architect's department for salaries alone amounted to £38,064, against £4,133 paid by the West Ham School Board. During 1894 the London Board provided 20,914 school places, at a cost for supervision, exclusive of office, rent, stationery, and postage, of £27,105. The West Ham School Board, the same year, provided 6,532 school places, and the expenditure, if proportionate to that of the London School Board, would have been £8,465, exclusive of office, rent, stationery, and postage; whereas the actual cost, including office, rent, remuneration of the various officials, stationery, and postage, was only £4,133, showing a balance in favour of the existing arrangement of £4,332. The general feeling of the committee was that the present arrangement was an economical one, as, although the architect was paid 5 per cent. on all new work, and 2½ per cent on all new furniture, he superintended, without remuneration, the repairs executed at the schools, the accounts of the various builders being also checked by him, and conducted all negotiations in connection with the acquisition of sites. The repair account for the past twelve years amounts to £21,860, and the cost of the sites to £128,099. The committee directed the clerk to furnish a return showing the probable requirements of the board for the ensuing six years, which showed that in all probability an average of three new schools per annum would be required to keep pace with the growth of the borough. The committee decided to report to the board that, in their judgment, the present arrangement is the most economical that can be made, and therefore the most advantageous, in the interests of the ratepayers. This report has been unanimously adopted without further discussion by the West Ham School Board.

* * *

The restoration of St. John Baptist's church, Wakerley, has been commenced, and Mr. A. S. Roberts has been intrusted with the work. The lead on the nave roof has been in a bad condition for many years, while the stones of the parapet, tower, and the base of the walls have perished. On March 24 the destructive gale seriously damaged the roof, the nave, aisle, and porch, besides breaking the windows.



STAIRCASE OF THE BERBERINI PALACE, ROME.—By Borromini.



CLASSIC DETAILS AND THEIR APPLICATION.*

By G. A. T. Middleton.

XIII.—ITALIAN RENAISSANCE: MINOR INTERNAL FEATURES.

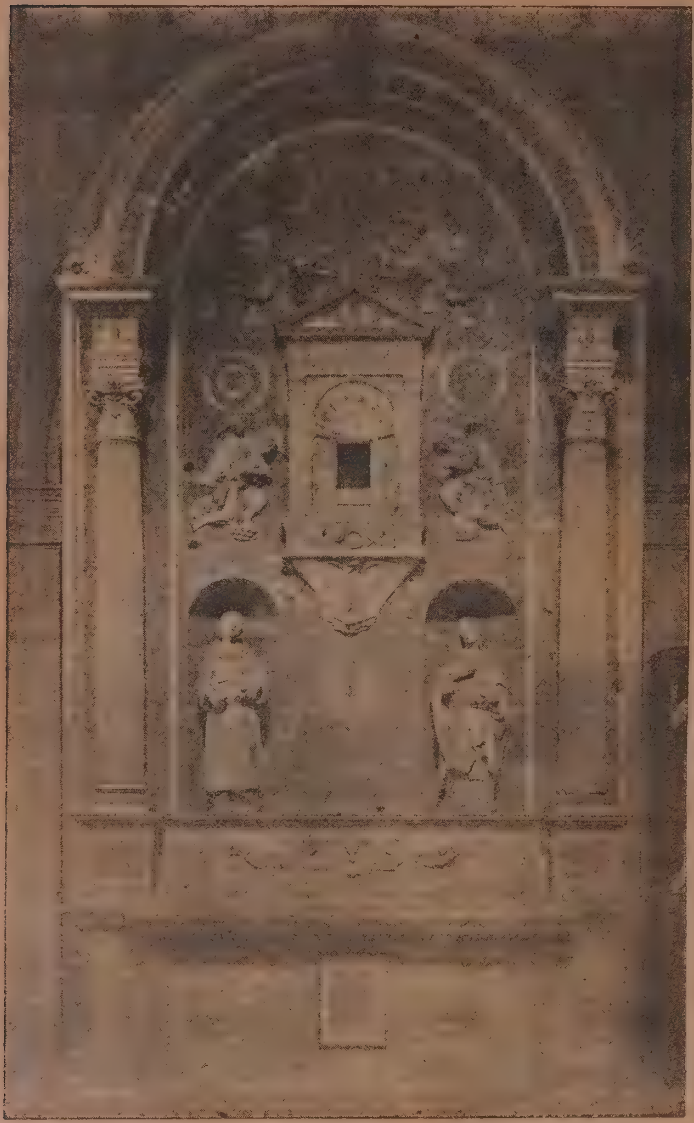
WHILE partaking largely of the characteristics of the exteriors, the internal features of the Italian Renaissance buildings all possess a lightness of treatment and delicacy of detail such as is suitable to small objects, close to the eye, presented for inspection in a confined space, and they thus illustrate as perfectly as do the general external designs the good taste of most of the Italian architects.

Take, for example, the doorways from the Palaces at Gubbio and Genoa, illustrated herewith, and now in South Kensington Museum, the former instinct with the Florentine and the latter with the more free Venetian spirit. Both are extremely sumptuous; both are full of rich, yet delicate, detail, and both are well designed. Yet the outline of the Gubbio door is simple to severity, while that from Genoa is broken in a fantastic, yet wholly artistic, manner. In the latter, also, considerably higher relief is indulged in than at Gubbio, and the human figure is largely introduced, yet in a sufficiently restrained sense for even the technical fault of the breaking of the pediment to allow of the insertion of Virgin and Child to be readily condoned, as sufficiently heavily also for the somewhat similar error (as some would call it) of employing strong columns for the purpose of supporting cupids, to be pardoned, and even admired for the beauty of the result. In fact, the architects of the Venetian school, while commonly taking liberties of this description, did so with so high an artistic appreciation that the result is rarely objectionable; but this is no reason why men of lower artistic power should succeed by the adoption of similar eccentricities.

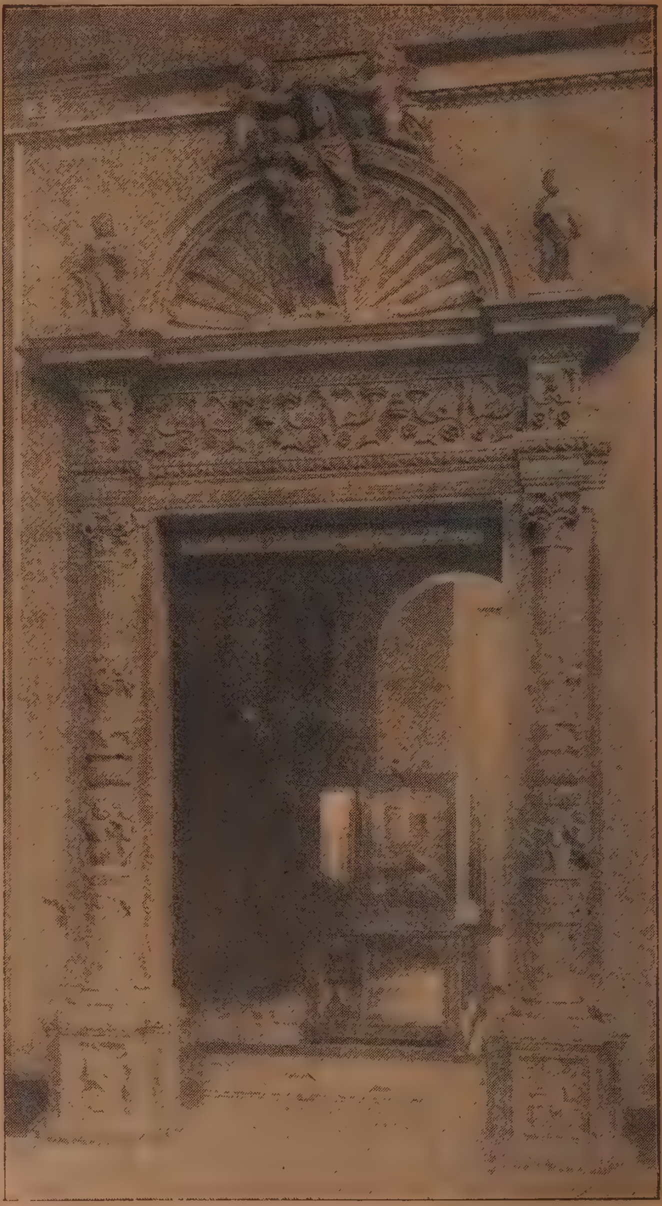
The high altar of Sta. Chiara is another typical example of Florentine treatment, with columns which have here a definite function to perform, for there is the arch to carry which forms the hood. The colouring is brilliant to gaudiness, but that is a fault common to Continental churches, and is not in such glaringly bad taste in

---

* All rights reserved.



HIGH ALTAR, CHURCH OF STA. CHIARA, FLORENCE.
(Now in South Kensington Museum.)
By Simone Pallaniolo, A.D. 1493. From a Photo. by Mr. W. Allport.



DOORWAY OF A PALACE AT GENOA.
(Now in South Kensington Museum.)
By Romanio da Campan, A.D. 1519. From a Photo. by Mr. W. Allport.

the brilliantly-lighted South as it is in the North of Europe.

In Rome the interiors were more forcible, and approximated more closely in treatment with the exteriors. The two examples illustrated are both Late, and both by Borromini, but are very different in conception. The elliptical staircase of the Berberini Palace is simple, severe, and yet very beautiful, with its open well-hole, its coupled Doric columns (bearing the bee upon the necking as their only ornament) and the balustrade. The mouldings of the cornice are peculiar, there being two coronæ and two bed-moulds, the lower of quite unusual section, the cyma reversa having no fillet beneath it, but being continued down as the face of the frieze.

The fireplace in the recreation room of the oratory of S. Filippo Neri exhibits none of the breadth and simplicity of treatment of this staircase; but, on the other hand, there is a fussy example of misapplied ornament, the representation in stone of a tesselated silken hood or canopy being in itself utterly false, especially as a silken canopy, if used above a fire, would soon be destroyed. The liberties, too, which are taken with the Doric triglyphs and metopes are beyond the bounds of the permissible, and the coarse mouldings of the finial, drawing attention to a minor feature, are entirely out of place.

* * *

The Bishop of Salisbury opened on Friday a new Church Institute which has been erected at Dorchester in the parish of St. Peter's. The contractor was Mr. Merrick, of Glastonbury, and the cost of the building £800.

THE MANCHESTER SOCIETY OF ARCHITECTS (INCORPORATED).

THE following is the address of the president, John Holden, delivered at a meeting of the society held October 1st, 1895:—

I have to express my thanks to you for again placing me in the presidential chair, a position which, I need hardly say, I greatly appreciate. Let me first say that the early part of this year has been, perhaps, one of the most painful in the history of the society, now 30 years old, on account of the passing away of one (especially) of our oldest members. The death of James Murgatroyd, on the 26th December last, was one of the greatest losses that this society has sustained, as he was, and had been from its formation, perhaps its best friend, and certainly one of its most energetic workers. The obituary notice in the *Journal* of the Royal Institute of British Architects, a copy of which was also given in the annual report of this society, says no more than what was due to his memory. Though nominally written by myself, it was really compiled by his partner, Alexander W. Mills, from whom I received the information as to his career which no one but himself could give. Mr. Murgatroyd was intimately connected with every movement of this society from its commencement, and no labour was too great for him to undertake if the welfare of the society seemed to demand it. A just and fair-dealing man, of kindly disposition, but with a great contempt for meanness of any description, his memory will long remain with the members of this society, especially those older ones who were intimately connected with him in business operations. Another member who has left us is Thomas Bridgen, a man of undoubted power in his works, and one of the authorities on hospital construction. Like many others connected with this profession, he was overworked, and for some time before his death was incapacitated from the active carrying on of his business, although up to the last his mind was clear. Although well known as an architect, he had very little to do with this society, hence, no doubt, he would be unknown to many of the members, excepting by name. Mr. Lawrence Booth has also passed from amongst us. His name is most intimately associated with the Architectural Association, the members of which joined this society in 1891. He was a past president of that body, and was one of its best friends. Now, gentlemen, having paid this well-deserved tribute to the memory of those friends whom we shall never see again, let us look at the brighter side. Several new members have joined us, men having youth and energy in their favour, men who will, I hope, prove worthy successors to those who have left us. In a society such as ours there is *no ending*—as one passes across the scene, and disappears, another takes his place, and so on. *New men* are constantly coming to the front, as occasion requires, and there are always good men in the background to take the place of those who, for one reason or other, retire from the scene. And let me remind you that there are still many good men outside this Society who ought to belong to it. Many persons drift through life without seeming to think that they

DOORWAY FROM THE OLD DUCAL PALACE AT GUBBIO (ABOUT 1475-80).
(Now in the South Kensington Museum.)
From a Photo. by Mr. W. Allport.

have any duties to perform to thir fellow workers, and this is, I believe, in many cases simply from a want of thought, and the least hint would bring them to us. I rely upon you, as opportunity serves, to see that persons are directed into the proper channel. When I last had the pleasure of addressing you it was at 36, George-street, a premises singularly adapted to the requirements of the Society, and in which I hoped we had found a permanent home. How little we know what even a short year brings forth. Twelve months only have passed since that time, and we are assembled here in an entirely different place, and our connection with George-street is at an end. As many of you are no doubt unaware of the circumstances which have caused this change, I will shortly state how it came to pass. First, however, I may say that no one is to blame. The Literary and Philosophical Society, like most learned societies, not being in affluent circumstances, and having all the machinery at its disposal for the accommodation of such bodies as ours, arranged with us (and with others) for the use of its rooms, thus gaining a substantial increase in its income practically without expense to itself, and there seemed to be no reason for any change in the arrangements. The present president of the Society happens, however, to be a wealthy man, and having the interests of his society at heart, came forward with a most handsome offer of assistance in the form of an endowment, of course, with certain conditions attached. One of the conditions was, I understand, that the Society should have the premises to itself, at least, so far as library space was concerned. As this endowment was, I am informed, of the value of at least £8,000 his proposals have naturally been accepted, and the Geological Society, who had been located in the building for something like 30 years, and our more recently connected Society received *notice to quit.* I need hardly say that I regret this enforced change very much, as it is difficult for a society such as ours to obtain the accommodation required elsewhere. As you all know, premises in the City of Manchester are difficult to get, and the rents are very high. A committee was appointed to deal with the question; but up to the present time it has not succeed in finding a permanent place. Accommodation for meetings can be found, but the library is another matter entirely, and for the present the books have been placed in the Hon. Sec.'s office, No. 60, King-street, while the meetings for the next twelve months will be held in another room. The committee entered into negotiations in respect of a room in 60, King-street, close to the Hon. Sec's offices, but this fell through. Afterwards a proposition was entertained to occupy rooms in the Queen's Chambers, John Dalton-street, which had been taken by the Geological Society, but this also fell through, at least for the present, in consequence of differences of opinion between the two Honorary Secretaries of that society. Our committee still have the matter in hand and during the present session will, I hope, succeed in making such arrangements as will enable us to consider ourselves permanently settled. The classes in Architecture, which were specially arranged between the committee of the Technical School and the council of this society, have not, I find, been attended as satisfactorily as I could wish. These classes cannot fail to be of great use to the students, especially to those who desire to take any position in the profession and to pass the examination necessary for that purpose, and while I do not advocate the system of cramming, which is bad in principle, still, it is greatly to the advantage of the student that his energies should be directed into a proper channel instead of being wasted on matters of comparatively little importance. It would, I am sure, be a matter of regret to most of us if, from a want of proper support, these classes should be discontinued, and we must remember that there are so many subjects now thoroughly taught in the technical school and its branches, and the classes are so largely attended as a rule, that it is hardly likely the committee of management will continue to deal with a subject specially for a few students only. As to the value of the instruction to be obtained at these schools, I think there can hardly be a doubt; we must remember that teaching is as much an art as architecture itself, and a person requires to be trained to it just as much as to any other profession. It is not every professional or business man who can satisfactorily impart a knowledge of his particular branch to a student, although he may be a master of his craft. This I have particularly noticed for many years, and I think you yourselves, if you will consider the subject, will agree with me. At the same time, I wish you not to misunderstand me, and to suppose that the technical schools or any other similar establishment can by themselves make either an architect or any other business man: this would be a mistake. These schools are a most valuable adjunct to all businesses which are taught in them. And the student will receive instruction in the theoretical and practical branches of his own particular craft which he cannot obtain at his employer's office of works. And it is in the interest of the teachers to impart this knowledge to him. The principals or employers nowadays are busy men, and have neither the time nor (in many cases) the inclination to sit down alongside a student and instruct him. Generally the youth is passed into the office or works, introduced to the notice of the chief clerk or foreman, and left in his charge, and expected to make himself useful. He must then depend upon himself. If he pushes his way, he may get instruction and assistance; if not, he simply works out his time. In any event, he obtains simply a knowledge of the business as carried out in that particular office or establishment, and we all know that no two offices are alike. All professions and businesses are divided into specialities and none more so than our profession. It is therefore important that the student should, in addition to his ordinary office routine, pass part of his time in another place where he will receive that instruction which he cannot obtain amidst the worry and bustle of a business establishment. I speak strongly on this subject, as I wish not only the students, but the older members, to remember it, and to allow to their pupils the time to enable them to attend these classes. I know that in a busy establishment there are times when all hands are required; but I ask you, the seniors, to discriminate between your pupils and your employés. Remember that the pupil comes to you for a certain purpose and often -in fact, generally—pays a large premium, and is, therefore, entitled to consideration. In fact, you are under moral, and generally also legal, covenants to teach him his business as such is carried on in your establishment, and you are to a certain extent responsible for his future. This is an entirely different position to your relations with your employés or clerks who are engaged to do your work and to whom you are under no obligation as to teaching. I ask you, therefore, not only to allow your pupils the necessary time to attend the classes provided for them, but also use your influence and to see that they do attend—to, in fact, exercise that control and supervision over them which you would do over your own son. I confess that I should like to see more of our Manchester students entering themselves for the Royal Institute examinations. There must be a very large number of pupils in the different offices in the city and suburbs, even those represented by this society, yet very few put in an appearance. The examinations have been brought to Manchester now many times, not without trouble, and have been conducted here at a very considerable expenditure of time on the part of comparatively few members, yet I notice that very few of our Manchester students take advantage of them. If you examine the attendances at the preliminary examination one in each year, you will find that in 1893, November, nine students attended, none from Manchester; 1894, March, 16 students attended, three from Manchester (all passed); 1895, March, 25 students attended, two from Manchester (none passed). So that out of 50 students attending these examinations but five were from the principal city, and but three passed; and I particularly notice that many of the smaller towns send up two or three students to each examination, while a large and important city like Manchester, with its several hundred practising architects, can only provide three candidates at the most. There is surely something wrong here, and it is for us to find out the reason, and rectify it. In the qualifying examinations I find the same conditions existing, the proportion rather better, but the numbers small, and the result poor. Taking the same three years, the result is as follows:—Eight candidates attended, four from Manchester, one passed; eight candidates attended, two from Manchester, one passed; five candidates attended (relegated), one from Manchester, one passed. These results cannot be satisfactory, and I must confess I do not understand it. On the roll of this society, which, as you are aware, does not include the whole of the practising architects in the city, were 24, 30, and 36 students. Another matter which has exercised my mind has been the use of the library. The library is not, of course, as yet a very large one, although it is increasing. Still, it even now contains a considerable number of the best standard works. Practically, it contains all that is required for an ordinary student in architecture who wishes to pass the examinations. The register shows, however, that nothing like the use is made of it that the character of the books deserves. Now, a word or two about the prizes given by the society. I note that the small 10s. and 5s. prizes, which entail comparatively little labour or study on the part of the student, are taken up; but the larger prizes are either not competed for, or the responses are poor and unworthy of the sum to be awarded. One prize of £5 5s. has not been awarded since 1891. The larger prizes, which are given on the recommendation of the technical school committee, I am pleased to say remain this year in Manchester, and, I have every reason to believe, have been well earned. The question of education is a serious one as affecting the society, and I confess that I cannot understand it. I should be glad of any information which would assist the council in dealing with it, and I invite communications from the students and others on the subject which may explain in any way the great lassitude and indifference which seems to run through the body of students. I am sure that the council will carefully consider any such communications, and, if possible, meet the difficulty and remedy the defects. For some years past I have noticed the gradual decadence, I may say, of the study of Classic architecture amongst the students; the more catching and sensational styles have been adopted and brought to the front. This is, I venture to think, a mistake on the students' part, as a thorough grounding in the principles of Classic work is of the greatest use, and enables the student more easily to adopt other styles which come up for a short time, and then, as it were, pass away. Understand, I do not complain of the use of these sensational productions; but I consider that they are not suitable as a basis for the education of the student. No doubt they suit the present taste of the public, but the impression is not lasting, and, to my mind, there is a want of boldness which detracts from the dignity of the building. The use of large quantities of surface ornament in low relief, and small and thin mouldings, attract attention to parts of the building, but not to the building as a whole. This society has for many years offered a prize for some subject in connection with Classic architecture; but of late years the response has not been at all satisfactory, and for the last three years the prize has not been awarded. I hope that it will be responded to this year in a more satisfactory manner. I feel bound, however, to say here that I do not personally agree with the withholding of a prize when there is any response to it. When it is once offered I consider that it belongs to the students, and that it should be awarded, unless, of course, the response is a burlesque. The work of a student should not be criticised in the same manner, or with the same strictness, as that of a body of experts in a competition for a building. The object of giving prizes in competition by students is to encourage them to read and work in their own time, and to obtain information which will be useful to them afterwards, and to withhold the prize afterwards disheartens the student, and possibly prevents him from trying a second time. I don't know of anything which would sooner dishearten a youth who has done his *best* in tackling a subject which others have fought shy of, than to be simply told that his production was not of sufficient merit. Strictly speaking, I am well aware that the work produced by most of the students is not, in a commercial sense, worth the amount of the prize; but that is not, in my opinion, the question. The prizes are offered for the purpose of encouraging the youths to study and to work in their own time, by which means they will gain knowledge and experience, and will also, by contact with others, gauge their own abilities; and, personally, if I can induce the student to read and think, and to place his thoughts on paper, I should feel that the money had not been wasted. Every care should be taken not to discourage a student at the commencement of his career, and I hope that those who have to examine the productions of the students during the coming session will bear this in mind. There is one other matter to which I wish to refer shortly—the question of competitions. Unfortunately, this seems to be a standing complaint which comes before us each year, with its record of improper conditions imposed by committees, unjust decisions, and consequently time and money wasted in preparing drawings—and the remedy seems to be as far off as ever. Certainly, when I read some of the conditions now imposed, it is a matter of surprise to me that architects will compete. Amongst the conditions we find:—That the committee does not bind itself to employ any of the competing architects to carry out the work; that the whole of the drawings (however small the premises may be) shall become the absolute property of the committee. Then the accommodation required is given (generally much in excess of what may reasonably be expected for the amount proposed to be expended), and the amount to be expended also fixed. The result of the last condition very often is that the architect is landed in a difficulty when he endeavours to obtain tenders, and the work passes into the hands of some other person at the option of the committee. So far as the work is concerned, the professional assessors are at times ignored, the committee not being under any obligation to carry out his selection. The premium may be paid in accordance with his award, but the work goes to someone else who may have friends on the board. This course acts very hardly on the striving architect who may have endeavoured faithfully to conform with the instructions. The carrying out of the work is, of course, the real object of the competitor so far as he is concerned, as the premium in all probability will but about pay costs out of pocket, and sometimes not even that. The question is a very difficult one to deal with, especially so long as architects of position can be found ready and willing to enter into competitions on almost any terms. If leading architects would refuse to compete excepting on fair and proper conditions, there might be some chance of obtaining better conditions; but until this is done I really cannot see my way out of the difficulty.

THE NEW STREET FROM HOLBORN TO THE STRAND.

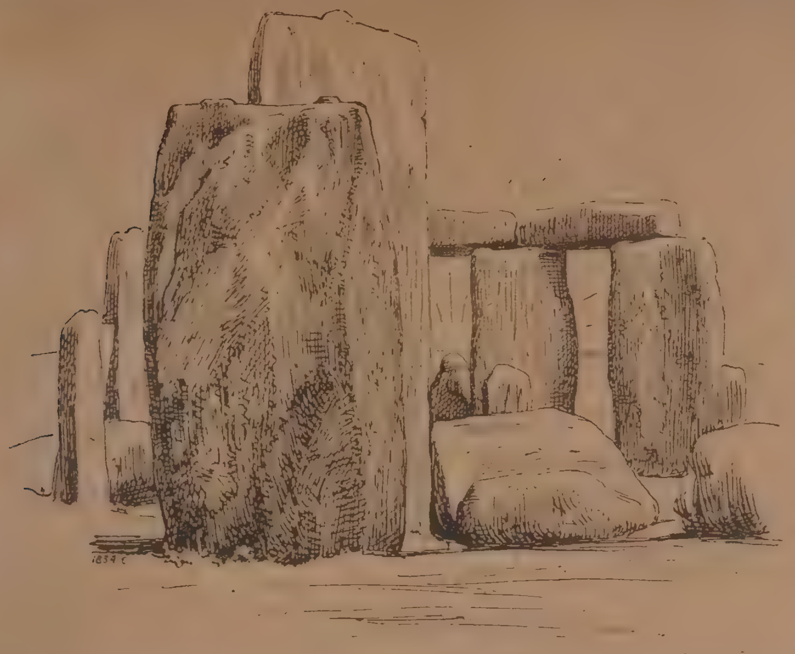
THE London County Council on Tuesday postponed for a week the consideration of the amended scheme for the construction of a new thoroughfare from Holborn to the Strand. In its main lines the new project follows, with some modifications, those of the one adopted by the Council three years ago, and which failed to obtain Parliamentary sanction owing to the objections raised to the betterment clauses. The leading features of the new scheme are:—(1) To combine the Holborn and Strand thoroughfare and the widening of the Strand in a single plan, instead of dividing them in two plans; (2) to obtain a direct and effective avenue from Holborn to the Strand; (3) to provide for the traffic to go eastwards to the City or on to the Embankment, instead of directing it solely towards Charing Cross and Waterloo Bridge. Those objects are proposed to be effected by driving a new avenue 90ft. in breadth from Southampton-row at Theobald's-road, and across Holborn at Little Queen-street straight southwards to the church of St. Mary-le-Strand, setting back the Strand at the junction, and opening out the southern end of the avenue east as well as west into the Strand. This would include the removal of the block of houses south of Holywell-street, and the dealing with the inclosed spaces adjoining the two churches. The proposed street would intersect Great Queen-street, Sardinia-street, Vere-street, Stanhope-street, Wych-street, and Drury-court, and would pass close beside the crowded and insanitary area of Clare-market and contiguous streets lying between Sardinia-street and King's College Hospital. At the same time it is proposed to widen Blackmoor-street and White Hart-street to 60ft. by setting back their south-eastern or City sides, and also to widen Exeter-street to 60ft. by setting back its northern side, so as to afford a direct communication into Catherine-street and Wellington-street, and thence to Waterloo Bridge. It is further proposed to form a spur street, 60ft. wide, from the junction of the new street with Stanhope-street to St. Clement Danes Church, in order to assist the large amount of traffic passing eastwards, and it is proposed to close Wych-street. The scheme, if adopted, will involve the removal of Holywell-street "island," the north side of the Strand from Newcastle-street to opposite the entrance to Somerset House (including the offices of the Strand Newspaper Company, Limited), and also New Inn, the Olympic Theatre, and the Sardinia Electric Lighting Station. The formation of the new thoroughfare and the subsidiary streets now proposed would displace about 3,953 persons. A large part of the district in the line of the new street consists of insanitary courts and alleys—in fact, some of the worst in London, with houses only fit to be pulled down. The gradient of the proposed street will at no part exceed 1 in 50, and will be that for 250 yards only, whereas the gradient of several streets descending into the Strand is at present steeper than 1 in 30. For the 300 yards from Denzell-street to Great Queen-street, the gradient will be only 1 in 89, and thence to Holborn, a distance of 150 yards, the gradient will not be steeper than 1 in 100, giving an average gradient of about 1 in 80. It has been suggested that the scheme, to be complete, should provide for an extension of the proposed new street by means of a bridge across the Thames between Waterloo Bridge and Blackfriars Bridge. But this question has not at present been considered by the improvements committee, who suggest that at the south-eastern and south-western ends of the new street, and with magnificent frontages to the new street, the spur street, and the Strand, would be two large and valuable sites, either of which would be a really good site for the county hall, if the council should decide to build one. In arriving at the estimated cost of the improvement, the committee have endeavoured to ascertain the amount likely to accrue under the betterment clauses; but, owing to recent modifications of the principle of betterment and to want of time, the valuer will not be able to submit a reliable estimate for five or six weeks hence. The total estimated net cost of the improvement would be £2,093,200, which represents about two-thirds of a penny in the pound on the rates for the first year. This estimate does not include the cost of accommodating persons of the labouring class to be displaced.

STONEHENGE AND ITS EARTHWORKS.*

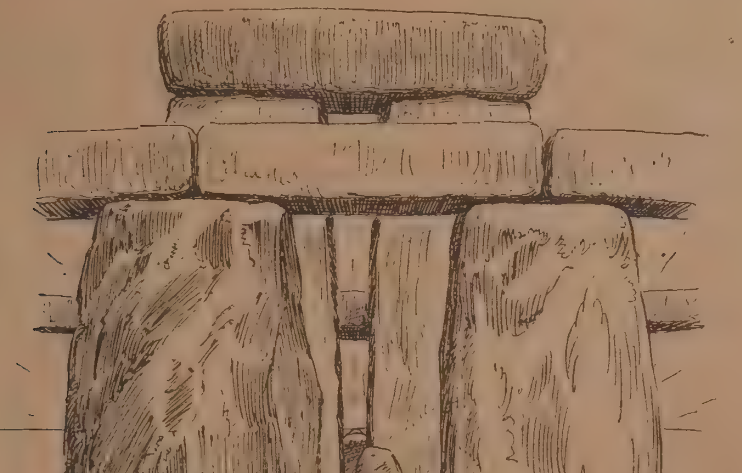
THE varied literature on this subject is unquestionably extensive, and yet, till now, beyond the numerous small handbooks, there was no sufficiently comprehensive work of reference concerning Stonehenge made popular and accessible enough to the general public. The standard books by Inigo Jones, Sir R. Colt Hoare, and Stukeley are, of course, out of print and expensive, while for the greater part more recent contributions to our knowledge of the matter must be sought for among the scattered publications of various archæological and other learned societies. Mr. Edgar Barclay, the enthusiastic author of the volume just published by Mr. David Nutt, has gathered together the salient points thus furnished by various authorities chronologically arranging their writings with their chief recorded opinions in regard to the nature and approximate date of the antiquity of this great world-famed monument. The remarkable divergence of opinion which has always existed, of course, remains one of the most conspicuous and interesting characteristics presented by the much discussed and still unsettled problem as to the origin and history of Stonehenge. That it continues of undoubted interest to a very large number of cultivated persons, of course, goes

---

* Stonehenge and Its Earthworks. With Plans and Illustrations. By Edgar Barclay, R.P.E. London: D. Nutt, 270-271, Strand.



View showing how the Axis of the Temple is given by the Sun-Stone and the Central Trilithon.



Restoration showing Axis, the Tip of the Sun-Stone appearing above the Large Blue Stone, 67.

without saying; and no one who has visited the ruins can fail to have been struck by the continued arrival of visitors in small parties through the greater part of the year. The author says that he has witnessed over two hundred persons assembled to see the midsummer sunrise, and 3 a.m. is not the most convenient of hours for visiting a spot so remote from the comforts of home. Mr. Barclay's plans and photographs, taken after an extended series of visits to Amesbury, were exhibited at 9, Conduit-street, some three years ago, when we drew attention to their exhaustive and technical thoroughness. The material thus got together forms the basis of the present small folio, to which we may confidently direct the study of our readers, though limitations of space preclude our following the author through his tersely written and cleverly argued description, which enhances the value of his copious series of drawings and illustrative details. The first plan, prefacing his account, shows the present disordered and fortunately unimproved and unrestored condition of the ruin, and this plate is followed by a conjectural reinstatement based upon the personal studies of the author, aided, of course, by previous authorities. Elevations accompany the plans, and the numerals attached to individual stones show their relative positions as seen from various points. The striking fact that these monoliths are foreign to the neighbourhood, and belong to geological formations widely different, makes it evident that the construction was a far greater undertaking than present appearances suggest; while the founders' ability in organising labour must have been very extensive indeed. The blue stones, for example, are reckoned by experts to have been brought from some foreign sea-washed shore, possibly by a prodigal expenditure of labour from Brittany, and here located with exact precision as religious symbols on a most elaborated scheme in dedication to the worship of the Sun. Mr. Barclay concludes "that Stonehenge belongs to a brief transitional period, and was raised by British chieftains subject to Roman influence; that the policy Agricola pursued towards the chieftains accounts for the presence of this strange structure on the Wiltshire Downs, whilst the social conditions which rendered its construction possible can have endured but for a few years."

We illustrate two drawings of interest in connection with the fundamental question as to the axis of the building, which is fixed by the position of the sun-stone, as viewed from the centre of the altar-stone, and located between the opening formed by piers No. 1 and No. 30. This line marked the direction of the sun's rays when first seen at the midsummer rising, through this opening; the line passing through it to the tip of the Index-rock is the axis, and the centre of the temple is thus determined. A good many reproductions of older plans show their relative characteristics and ideals, and some old engravings add interest to the work, which is further illustrated by collotypes reproduced from photographs of the ruin from various points of view. The printing and get-up of the volume leave nothing to be desired, and the aim of the author and publisher has been well realised.

PROPOSED WELSH WATER SUPPLY FOR LONDON.

THE London County Council have received from their engineer, Mr. Alexander R. Binnie, a report on the site and yield of certain suggested sources of water supply, and as to the method which might be adopted for storing and conveying water to London, with estimates of cost. Under any circumstances, the consideration of some enlarged scheme of water supply must be taken within the next 20 years, as the valleys of the Thames and Lea become more thickly populated, and the sources already drawn upon become exhausted. By resorting to a district of greater rainfall than the Thames basin down to the intakes of the water companies, which comprises about 3,542½ square miles, a much smaller area than that would suffice for the purposes of Metropolitan supply, and the works can be constructed at such an altitude as to entirely avoid pumping, except for the small areas on the summits of Hampstead, Highgate, Shooter's-hill, and the Sydenham Hills. A concurrence of testimony exists that the area drained by the Wye, the Ithon, the Usk, and the Towy affords a most suitable district from which a supply of water can be derived. As regards quality of water, there can be no doubt that, from its sparsely populated areas and steep mountain slopes, a quality of water can be obtained in every way desirable for the supply of a large population. The vast bulk of the water available will be soft water. Mr. W. J. Dibdin, the chemist to the council, visited the proposed sources of supply in Wales, collected samples, and made the necessary analyses. The general result of his investigations is that the waters examined are all of greater purity than the water supplied to London after filtration. In this district the geological character of the ground and the contour of the valleys lend themselves to the creation of large storage reservoirs. And these reservoirs can be constructed at such an altitude as to enable the water to flow naturally into them, and by gravitation through masonry conduits and iron pipes, so as to be delivered on the northern and southern outskirts of London at such an altitude as to secure at all times a gravitation supply under constant pressure. In the construction of the aqueduct from Wales, about 150 to 170 miles in length, economy in the fall of water is a prime necessity. Consequently, in laying out a line of aqueduct from Wales, it is desirable to design the works so as to introduce as great a length of masonry aqueduct as possible, for the purpose of economising not only the head, but the cost of construction generally, as the necessary masonry of the aqueduct can easily be constructed at less expense than pipes of the required diameter conveying the same quantity of water. The engineer has so designed the works that the total quantity of 415 million gallons a day can be conveyed to London in two separate and distinct aqueducts, which can be carried near to and parallel to each other, or, if thought more desirable for safety, can be so located as to be many miles apart. The most economical arrangement, having regard to the importance of preserving in the future two independent lines of communication, seems to be to divide the sources into two portions of approximately 200 million gallons a day each. One of these portions would include the Llangorse and Usk with the Edw supplies. These yield respectively 182 and 18 million, or a total of 200 million gallons per day. The second division would include the Yrfon and Towy supplies, 135 millions; the Ithon, 37 millions; and the Upper Wye 43 millions, or a total of 215 million gallons per day. In carrying out the earlier portion of the scheme it might be sufficient to take in as a first instalment the Upper Usk and Langorse, leaving the Edw to be added when time required it. In the same way, in constructing the second portion of the scheme embracing the Yrfon, Towy, Ithon, and Upper Wye areas, the Yrfon reservoir could first be constructed, with which the supply from the Towy could be brought in. This, when exhausted, could be supplemented from the Ithon, and ultimately the Upper Wye source would be rendered available. The first section of the main conduit to London would start from Llangorse; the main conduit for the second section would start from the reservoir on the Yrfon. Mr. Binnie proposes to construct at the termination of the aqueducts, both on the north and the south sides of the river, service reservoirs to contain about 16 days' supply, that is to say, of a capacity of 3,200 million gallons each. The water should be filtered before delivery, when the advantage of a pure, clean water, free from every particle of suspended matter, would be secured. For a gross supply of 415 millions gallons a day to provide for all contingencies for a period of 50 or 60 years hence. Mr. Binnie's estimate is £38,800,000, or at the rate of £93,494 per million gallons. It will, however, be sufficient if, in the first instance, the supply afforded by the Usk from the Llangorse reservoir of 182 million gallons a day be brought in the Elstree reservoir. This would cost, say, £17,500,000, or at a rate of £96,000 per million gallons per day.

Following this an additional supply of 18 million gallons a day could be obtained from the Edw at a further cost of £625,500, which would bring the total volume up to 200 millions gallons a day, at a total cost of £18,095,250, or at a rate of £90,476 per million gallons delivered.

The remaining supplies which can be derived from the Yrfon, the Towy, the Ithon, and the Upper Wye, can be brought in one by one at a future date, but they would involve the construction of the second line of aqueduct from the Yrfon to Banstead. Mr. Binnie is confident that this scheme of works is the best for the supply of London, and he believes it to be the cheapest that could be introduced.

THE LONDON FIRE STATION.*

THE Fire Brigade under the London County Council has 57 land fire stations, besides four floating stations upon the river Thames. The land stations accommodate more than 900 men, who are exclusively employed in the service of the Fire Brigade. There are also 10 small portable stations in the streets, which accommodate two or three firemen; and 200 fire-escape stations. The fire stations vary greatly in their arrangements, some being more than 30 years old. These are likely to be superseded within a few years. In this paper I shall describe the more recent kind of fire station now being erected in London at the rate of about four new stations per annum. In the design of a fire station it is essential that the architect should be in close touch with the chief officer of the Fire Brigade. During many years past all stations have been designed after the most careful consultation with the late chief officer, Sir Eyre M. Shaw, K.C.B., and the present chief officer, Mr. J. Sexton Simonds, and their advice has always been placed at the service of the Fire Brigade Committee. The main objects in the design of a fire station are the proper accommodation of the firemen and fire appliances, and to insure that upon the receipt of an alarm of fire the engine and other appliances, with their complement of firemen and horses, can be despatched in the shortest possible time. All the arrangements, the details of which I will now give, are directed towards this end. A satisfactory fire station of the ordinary kind can be built upon a site which is 50ft. wide and 100ft. from front to rear. Stations have been built of less dimensions than these; but the sites of some of the larger stations measure considerably more. Brompton station, of which I exhibit drawings, measures 52ft. across, and only 58ft. from front to rear. The New Cross station, of which I exhibit drawings, measures 120ft. in width and 170ft. from front to rear. This last is the main station in one of the five districts into which London is divided. It is desirable the station should be placed on a corner site, so that it may have two faces fronting the streets. It is sometimes possible to find a site with three faces to the streets; but there are stations, of which Brompton is an example, where the front and rear only face streets. The chief part of a fire station is the engine-room, which should be about 27ft. wide, and 34ft. from front to rear. This will accommodate two fire-engines, standing side by side, and leave sufficient room for passing between. Wherever it is possible, the stable is placed immediately behind the engine-room, into which the doors of the stable open. The horses which it is thought necessary to keep ready for duty stand with their heads facing the engine-room; but there are generally one or two spare stalls of the ordinary kind where the horses may rest. The watch-room is a front room adjoining the engine-room, and is in telephonic communication with the chief stations, and with many of the larger public and private buildings, as well as with many fire-alarm posts placed in the streets. In the larger fire stations the engine-room contains one steam fire-engine and one manual fire-engine; but as fire-hydrants are now being placed at short intervals all over the Metropolis (nearly 20,000 having already been fixed), it is not necessary to use so many fire-engines; and in the smaller stations the place of the manual engine is now occupied by a truck with escape-ladder and other fire appliances. Upon the receipt of an alarm of fire, the fireman on duty in the watch-room rings simultaneously the call-bells of all the officers and men on duty who will have to go out with the engine and ladder truck. The engine-room doors are opened by pulling a cord as soon as the coachman is ready to drive out. There are numerous details of management, the object of which is to expedite the operations of the fireman. With these I do not think it necessary to deal. With regard to the accommodation of the officers and men, it is now the practice to provide in each station a recreation room, where the men can spend their time when waiting their turn on duty. The single men, if any are accommodated, have their own mess-room and dormitory. Each of the married men is provided with a kitchen, a bedroom, and a scullery. The engineer in charge of a small station has one additional room, and the superintendent in charge of a district has two additional rooms, besides an office and a bathroom. The London County Council has increased the accommodation of the firemen by adding the recreation rooms and the sculleries. It has been the practice to provide the entrances to the quarters of each married fireman from a passage in the main building; but recently these entrances have been made as far as possible from open galleries, so that each man has practically a separate house to which access is gained directly from the open air. The stations are usually built four or five stories above the ground level, according to the situation and the accommodation required. There is only one entrance to the station, and that is through the engine-room, so that when a man enters or leaves the building he can leave notice at the watch-room. A shaft for drying fire-hose is inclosed in the staircase, and is about 56ft. high. Over the staircase is a look-out tower, which is generally about 80ft. high. Drying-closets for drying the men's clothes, coal-stores, washhouses, bath-rooms, &c., are also provided; also lifts to take coals, &c., to the upper floors. It is hardly necessary to say that a fire station should be so placed that the horses may safely be driven out at a good speed; for this purpose it is desirable to have a wide road in front of the station, and to set the station back a few feet from the footway. Description of the stations of which drawings are now exhibited:—*Brompton Fire Station.*—This station was designed to accommodate the following men, horses, and appliances:—One engineer, ten married men, one married coachman, two horses, one steamer, one manual, one hose-cart. The engine-room is in the centre of the building, and measures 24ft. by 34ft., and is 13ft. 6in. high. The watch-room is on left of engine-room, and measures 14ft. by 12ft. The stable in this case opens into the yard. The coachman's quarters are on the ground floor to the right of the engine-room. The basement contains a large washhouse, with stores of fuel for the use of the engine, and for use in the firemen's quarters, each man being supplied with a separate coal store. There is one bath for the use of the firemen, as it is necessary that they should have a hot bath upon returning from a fire. Upon the first, second, third, and fourth floors are the quarters of the engineer and firemen. The usual size of each room is about 14ft. by 12ft., and 9ft. high. The architect's estimate for the erection of this station was £6,600. *New Cross Station.*—This is a superintendent's station of the largest class; it stands at the angle formed by two roads, and was built to accommodate one superintendent, one foreman, eight married men, eight single men, two coachmen, four horses, one steamer, one manual, one hose-cart, four escapes, one hose-van, one long ladder on van. The engine-room is 27ft. by 34ft., and 13ft. high, with additional space at the rear. The watch-room and the foreman's office are upon the right of the engine-room, and the recreation-room is upon the left. The single men's mess-rooms and dormitory are placed behind the recreation-room, and there are quarters for two married coachmen at the rear. The yard contains stores for fuel, &c., and shed for long ladder. The basement contains a workshop with stores of various kinds. Upon the first floor are the quarters of the superintendent and the foreman, and married firemen are accommodated upon this floor, as well as the second and third floors. The rooms generally are about 14ft. by 13ft. 6in. and 9ft. high. There is a wash-house with drying-room over the long ladder-shed in the yard. The estimated cost of this station was £16,000.

CHIPS.

The Mersey Docks and Harbour Board has decided upon extensive alterations and improvements at the Foreign Animals Wharf, Birkenhead. In connection with the cold-air stores there is to be a complete renovation of the refrigerating machinery, a large portion of which is of an antiquated description. The new machinery is to be on the Linde ammonia compression system, and an additional chill-room, to be kept at a uniform temperature of 33° Fahr., is to be constructed. The estimated expenditure is £10,000.

At the meeting of the highways committee of the town council of Stockport held on Thursday the 26th of September, Mr. Jas. Platt Widdows, of Oldham, was, by a unanimous vote, appointed as architectural assistant under the borough engineer.

The Safety Tread Syndicate, Ltd. (Mason's patent), have been appointed contractors to H.M. War Office, the Admiralty, and the India Office for the supply of their safety treads.

Messrs. S. Moss and Co.'s sawmills at Gloucester were destroyed by fire on Friday, the damage being estimated at £1,500.

Mr. Richard Carter, M.Inst.C.E., of Springbank, Harrogate, died on the 26th ult., aged 77 years. He was a director and consulting engineer of the Harrogate Waterworks Co., the engineer of the Ripon Corporation Gravitation Waterworks scheme, and consulting engineer for many other public bodies.

The foundation-stone of a new mission church in connection with the parish of St. Margaret, at Durham, was laid, on Friday, at Neville's Cross, a suburb of the city. The church will be Early English in style, and will consist of nave of five bays, short chancel, and apsidal baptistery at west end. Over the south porch is a tower, to be capped by an octagonal broach spire.

At Friday's meeting of the Waterworks Committee of the Bath City Council, Mr. Gilby, the city engineer, stated that up to the present time £15,597 had been paid to the contractors for the new Monkswood reservoir. The tender of Mr. W. Birth, amounting to £216, for relaying mains so as to be out of the reach of frost, was accepted.

What is expected to be the last stage in the drainage scheme for Eastleigh, Hants, was commenced last week by making preparations for substituting iron pipes for a portion of the present drains near Chickenhall, where the principal leaks occur. Messrs. Crook and Batten, of Southampton, are the contractors, and Mr. Green, the former clerk of the works, superintended the alterations.

Intimation is given of the death of Mr. Thomas Shelmerdine, of Edenhurst, Blundellsands. During a prolonged period the deceased was engaged in the pursuit of his profession as an architect and surveyor in Liverpool. He had reached the 77th year of his age.

The Archbishop of York preached on Thursday, the 26th ult., at Doncaster parish church, on the occasion of the reopening of the grand organ, by Schulze, which has been restored by Messrs. Abbott and Smith, of Leeds, at a cost of £1,340.

The members of the water and baths committee of the Heywood town council visited the corporation waterworks at Naden on Wednesday week. The three reservoirs were inspected, and various matters were explained by the engineer, Mr. James Diggle. The chairman of the committee announced that the new 18in. main from Clay-lane to Heywood had been laid. They had laid over 4,000 yards of pipe, with over 1,800 joints. All the joints had been tested, and had proved perfectly satisfactory; not a bad joint in the whole lot.

---

* By Thomas Blashill, Architect to the London County Council. Read before the Amsterdam Fire Congress last week.

CONTENTS.

Power Running to Waste 471
Crooked *versus* Shapely Plans 472
Ancient Lights 472
Photographs in Pall Mall 473
School Board Architects and their Remuneration ... 473
Classic Details and their Application 475
The Manchester Society of Architects (Incorporated) 476
The New Street from Holborn to the Strand 478
Stonehenge and its Earthworks 478
Proposed Welsh Water Supply for London 479
The London Fire Station 480
The Building News Directory ... ... xi.
Our Illustrations 481
Building Intelligence 500
Greater Liverpool 501
Steel Sections 501
Hygienic Ventilation 501
Registered Grates and Tile Stoves 501
Obituary 502
Engineering Notes... 502
Correspondence... 502
Intercommunication 503
Legal 503
Legal Intelligence 504
Water Supply and Sanitary Matters 504
Our Office Table 505
Meetings for the Ensuing Week 506
Trade News 506
Tenders 507

ILLUSTRATIONS.

SELECTED DESIGNS FOR THE WEST HAM TECHNICAL INSTITUTE AND LIBRARY.—PRESBYTERIAN CHURCH AND SCHOOLS, TULSE HILL.—THE "PRECINCTS," GATEHOUSE, HAMPTON COURT. — PUBLIC BATHS, BRENTFORD. — DINING-ROOM, "CENTURY" CLUBHOUSE, NEW YORK.

Our Illustrations.

WEST HAM TECHNICAL INSTITUTE AND FREE LIBRARY COMPETITION.—SELECTED DESIGN.

Last week, when the whole of the seventy-five competitive designs for these buildings were on public view in the Town Hall at Canning Town, we gave a review of the plans.* To-day we illustrate the first premiated and chosen design, giving, besides the perspective view and two principal plans, a reproduction of the large-scale detail of the main entrance front. Messrs. Gibson and Russell are the architects. Our illustrations sufficiently display the leading features of the design, and the plans clearly show the internal arrangement, which, it must be admitted, are exceedingly well contrived, the strong point of the plan being centred in the clever disposal of the big hall and its approaches. The library, too, is well worked out, while the distribution of the classrooms leaves little to be desired. We shall illustrate the design further, and give reproductions of the other premiated plans, at an early date.

PRESBYTERIAN CHURCH, COURT ROAD, TULSE HILL, WEST NORWOOD.

The buildings illustrated are shortly to be erected on an elevated site at the corner of Court-road and Thurlow Park-road, for the local Presbyterian body, and comprise a church to seat 450 people, with vestries for minister, elders, and choir; also a school to seat 200 children, with various classrooms, lavatories, &c. The materials to be used externally will be Bourton or Weldon stone for the walls, and Broseley tiles for the roof; the turrets to be covered with copper. The architects are Messrs. Treadwell and Martin, of 2, Waterloo-place, Pall Mall, S.W.

THE GATEHOUSE, THE "PRECINCTS," HAMPTON COURT.

This drawing, from this years's exhibition of the Royal Hibernian Academy at Dublin, shows the entrance gateway leading to two large quads of about forty riverside homes, intended to be built adjoining Hampton Court Palace, on a splendid site overlooking the Green to the north and the Thames on the south. The scheme comprises middle-class houses of the better sort, grouped together with terraces and gardens abutting on the shore, and maintained in common for the use of all residing within the "Precincts," but each house in itself is provided with every necessary convenience, all the reception-rooms in the main blocks being situated towards the river, with a piazza extending the length of the entire façade. The style adopted aims at agreement with the architecture of the Palace, with red brick and Ham Hill stone dressings. Messrs. T. H. Adamson and Sons were engaged as the builders, and Mr. Maurice B. Adams, F.R.I.B.A., the architect. The matter remains in abeyance, owing to unforeseen difficulties which prevented so far the execution of the contract.

PUBLIC BATHS, BRENTFORD.

The foundation-stone of this building was laid yesterday, the 3rd inst., by Mr. James Bigwood, M.P. for Brentford. The accommodation will consist of a swimming-bath, 92ft. by 42ft., with a water area of 75ft. by 27ft. The tank, lined with white glazed bricks, will be 6ft. 6in. deep at one end, and 3ft. 3in. at the other. Twenty-four first-class dressing-boxes will be provided along one side of the bath, and thirty-two second-class dressing-boxes, made of enamelled slate, will be erected on the opposite side. A gallery will run along both sides of the bath, and this will be supported with iron girders and columns. The gangways will be covered with granolithic paving. A soap-hole will be added, and ample provision made for w.c.'s and urinals. The District Council secured a large plot of land surrounding their offices, and arrangements have been made whereby, at no very remote date, an additional swimming-bath can be erected; but until the success of the institution has been assured, it has been resolved to set apart certain fixed days for the different classes of bathers. In the work now proceeding, arrangement is made for the erection of four first-class men's slipper-baths, with a shower-bath, the necessary waiting-room and w.c.; six second-class men's slipper-baths, with waiting-room and w.c.; two first-class and three second-class women's slipper-baths, with waiting-rooms and w.c. With the boiler-house, washing-house and laundry, drying-room, &c., ticket and superintendent's offices, which will be provided, an excellent work will be accomplished. The contract for this work is let to Mr. J. Barnes, of High-street, Brentford, for the sum of £4,850; but, with other work in connection with the building, a loan of £5,200 will be required. The work is being carried out from the designs and under the superintendence of Mr. Nowell Parr, the engineer and surveyor to the council.

DINING-ROOM AT THE "CENTURY" CLUBHOUSE, NEW YORK.

We illustrate on another page this week the refined interior treatment which the architects, Messrs. McKim, Mead, and White, have adopted at this New York club-house. The wooden chimneypiece is appropriate and dignified, though the same remark hardly perhaps applies to the inner marble mantel, which does not seem to harmonise with the rest of the work. The panelling, which is carried up to the plaster ceiling of geometrical pattern, is quite plain, and without moulding. The furniture is substantial, the armchairs in general use throughout adding not a little to the character of the apartment. We are indebted to the *American Architect* for the view from which our sketch was made.

◆

A few months ago the Oak House at West Bromwich was in the market, and was purchased by the mayor (Alderman Farley), who presented it to the town, to be preserved as a museum and art gallery. His worship has now volunteered, at his own expense, to have the house thoroughly restored.

After interior redecoration at the hands of Messrs. Tillotson and Harrison, of Keighley, the Devonshire-street Congregational Church, Keighley, was reopened on Friday. The organ has also been replaced by an instrument which, in point of cost and scope, has no peer in the district. Messrs. Harrison and Harrison, of Durham, have entirely filled the orchestra with an instrument which has 52 stops (43 speakers and nine couplers) and 2,460 pipes. The vox humana has been made and voiced by Messrs Cavaillé and Co., of Paris. The wind is derived from six distinct pairs of bellows, worked by a Ross Valve Company's hydraulic motor. The cost of the extra works to chapel and organ has been £1,500.

The South Australian Waterworks at Happy Valley, near Adelaide, are approaching completion. They are divided into four sections; an inlet tunnel, for which Messrs. Carter and Gummows, of Sydney, are the contractors; an outlet tunnel with valve tower, Messrs. G. and P. Leaby, contractors; the reservoir itself, and the embankment at Clarendon. The work has been done from plans by, and under the supervision of, Mr. Beyer, Government sanitary engineer. The outlet tunnel at Happy Valley is a mile and a half long, the north end finishing into the pipe head tank, from which steel mains lead to Adelaide. The first shot was fired on May 18, 1893, and the last on July 27th of the present year.

COMPETITIONS.

Newport, Mon.—At the meeting of the Newport Board of Guardians, on Saturday, it was decided to award the first premium of £30, offered for the most approved plan for alterations to the workhouse, to Mr. B. Lawrence, of Newport, and the second premium of £15 to Messrs. Swash and Bain, of the same town.

Thurles.—The town commissioners of Thurles have decided to erect a new town-hall and market house, for which they invited designs in competition from architects. After a scrutiny of the designs submitted, those of Mr. J. Kelly Freeman, architect, Sun Chambers, Dublin, were selected.

◆

CHIPS.

Mr. Louis Harper, A.M.I.C.E., Aberdeen, has received an order to supply a steel-rope suspension bridge to be erected over a river in Bombay. The bridge will have a span of 210ft., with a footway 6ft. wide.

Mr. E. J. Halsey, the chairman of the Surrey County Council, opened, on Friday, the new Rutlish Science School at Merton. The building is of red brick, faced with Bath stone dressings, and the outlay has been £7,000.

Mr. Charles Philip Slocombe, late master on the staff of the National Art Training School at South Kensington, died at Hendon on Tuesday, Sept. 24, aged 63 years.

The painting of the front of Buckingham Palace, now in progress, will cost about £17,000. The work will be completed by the end of this month. The Prince Consort got into the hands of incompetent advisers when he built the great front wing. The stone has rotted away considerably, and even three coats of paint, with various additions of both stone and cement, fail to bring the facings of the material up to its proper smooth level.

The restoration committee of Peterborough Cathedral decided, on Friday, to erect a scaffolding at once, so that the west front may be thoroughly examined, as it is feared it is in a very dangerous condition. Already about £1,300 has been subscribed for the purpose, and the committee are appealing for further subscriptions to carry out the work of restoring the façade in accordance with Mr. J. L. Pearson's report.

The foundation-stones of a Primitive Methodist Connection Chapel were laid at Queensferry, Flintshire, on Saturday. The chapel is situated in the heart of the village, on a site presented by Mr. George C. Hughes, its architect and builder. The chapel will seat 200, and cost £600.

In commemoration of the bi-centenary of Doddridge Chapel, Northampton, a branch mission-chapel and schools are about to be built at St. James's End, in that town. The cost will be about £3,000. Messrs. Morley and Anderton, of Goodyear-chambers, Northampton, are the architects.

The town council of Bodmin, after considering several alternative sites, have finally selected that now occupied by Hugo's temperance hotel for the free library premises to be built at the cost of Mr. J. Passmore Edwards.

The Malton urban district council, on the recommendation of a committee, and after hearing an elaborate report from Mr. Millhouse, C.E., Scarborough, and Mr. Richardson, the surveyor, have resolved to accept the tender of Messrs. Simpson and Co., of Pimlico, for a new steam pumping engine for the waterworks, at a cost of £920. The provision of a new pumping engine will effect a saving to the ratepayers of about £200 a year.

The city and borough of Dundee, stimulated by Mr. Andrew Carnegie's offer of a gift of £1,000, have decided to adopt the provisions of the Public Libraries Acts.

At a meeting of the local church building committee held at Bishopthorpe, near York, last week, it was decided that the site of the present church is unsuitable, as it is too near the river, and it was therefore agreed to build the new church on the new burial-ground. It was also decided that the diocesan architect be employed to draw plans and superintend the erection of the building.

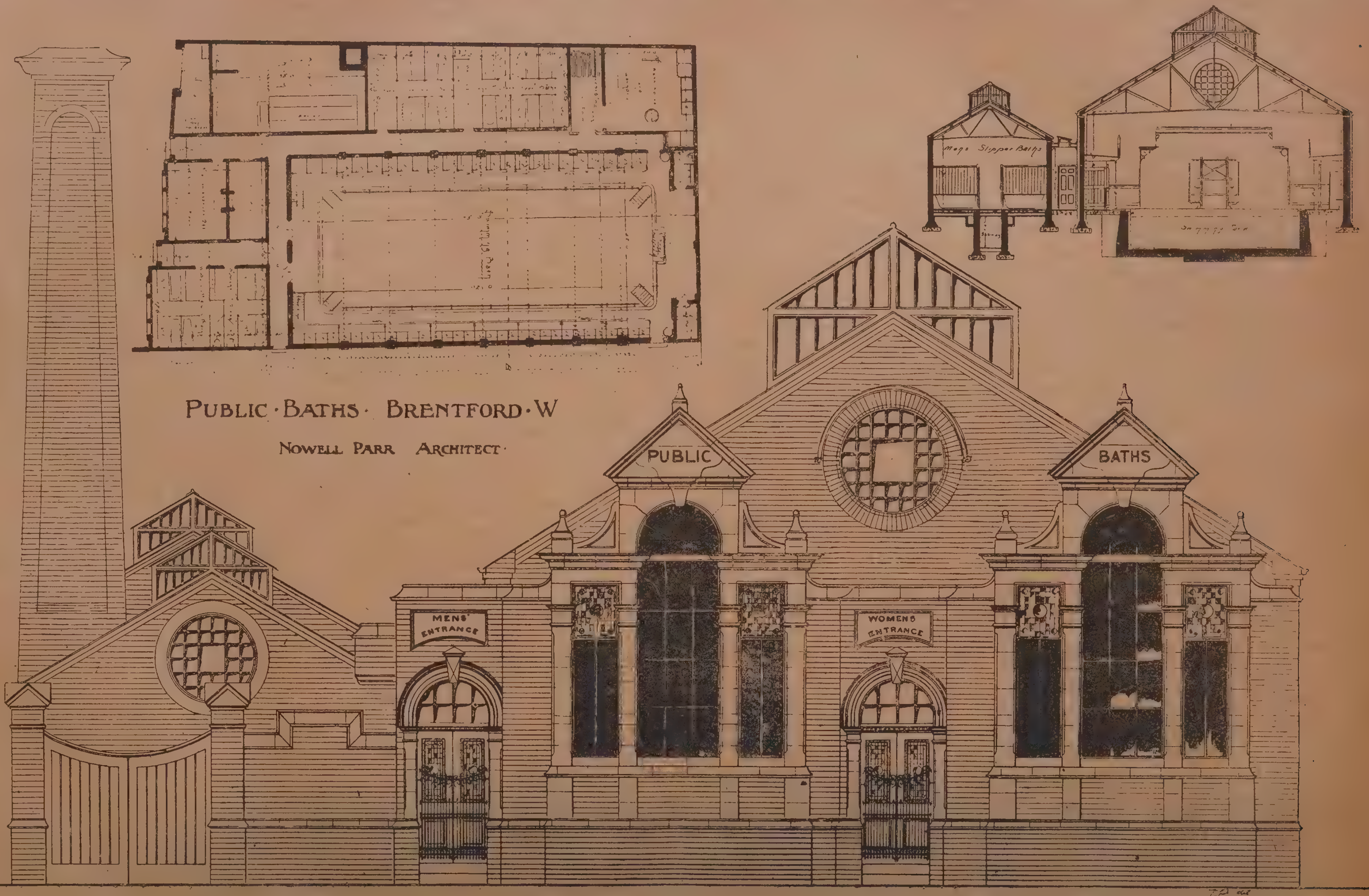
Dr. H. G. M. Monk, who since August, 1892, has been medical officer of health for Scarborough, has just received a similar appointment at Leicester. The salary at Scarborough was £350, this including the analytical and meteorological work; and the salary at Leicester is £500.

Mr. A. E. Prescott, assistant town surveyor at Dukinfield, has been elected assistant borough engineer under the Luton corporation.

An intermediate education school is about to be built for Denbighshire on a site of four acres at Penyfont, Llangollen, purchased by the Governing Body on Friday for £1,200.

---

* We understand that the design "65," which we suggested in our review last week might be the work of Mr. J. M. Brydon, was contributed by Messrs. Wigg, Oliver, and Hudson, of Bedford-row.



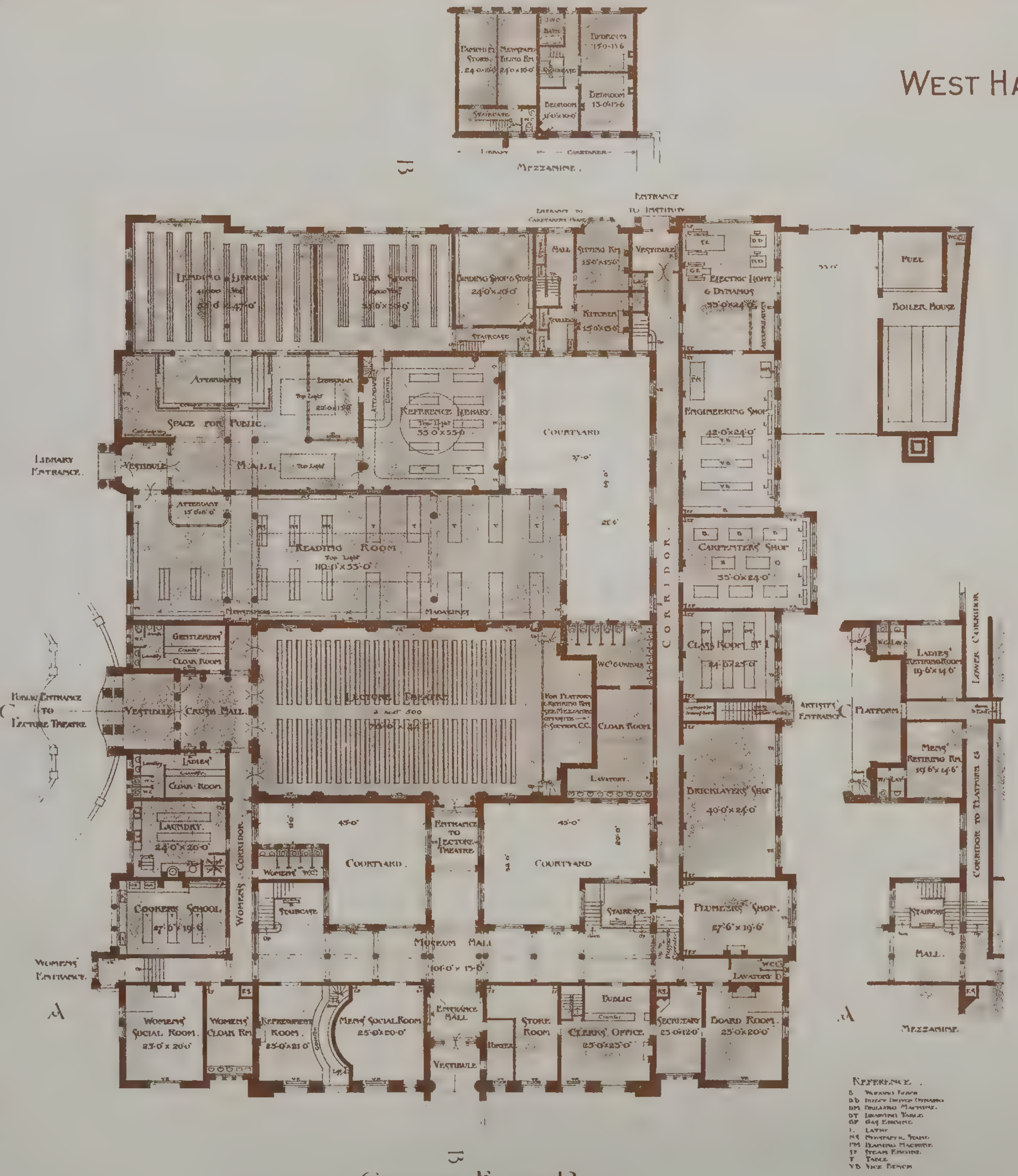
PUBLIC · BATHS · BRENTFORD · W

NOWELL PARR ARCHITECT ·

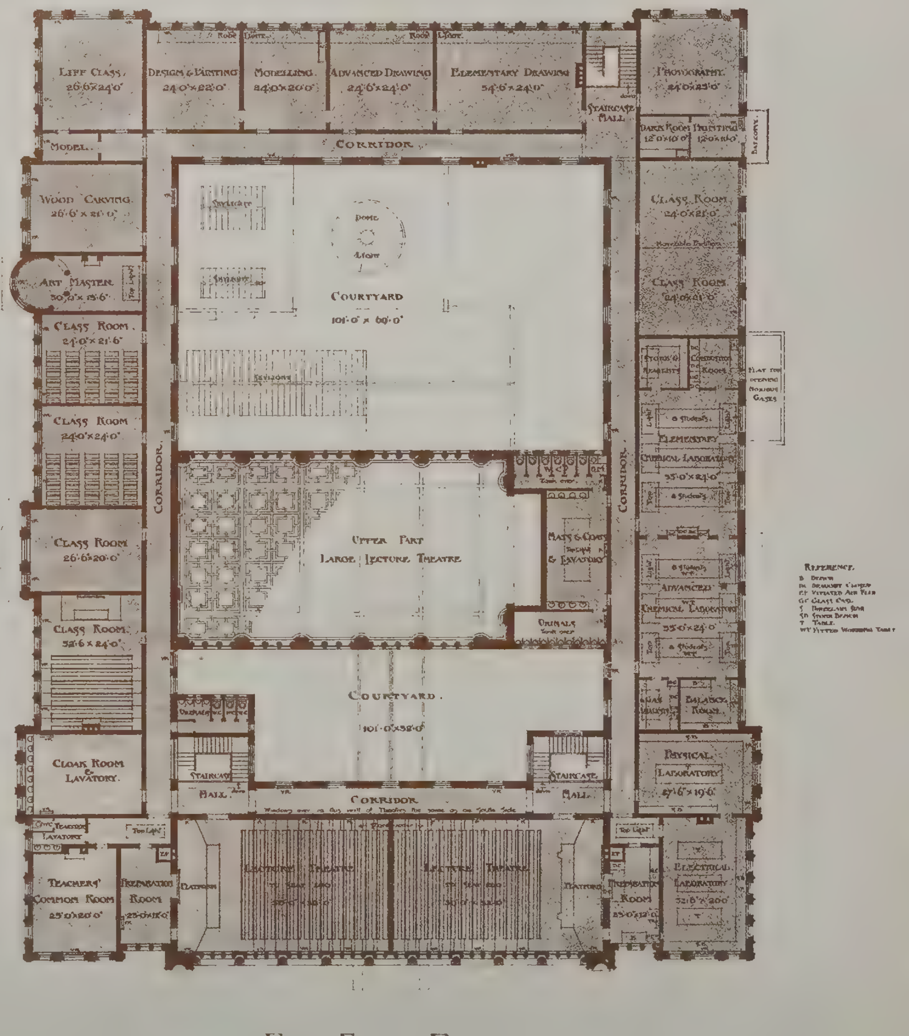
WEST HAM TECHNICAL INSTITUTE & FREE LIBRARY-COMPETITION,

SELECTED DESIGN.

MESSRS. GIBSON & RUSSELL, ARCHITECTS.

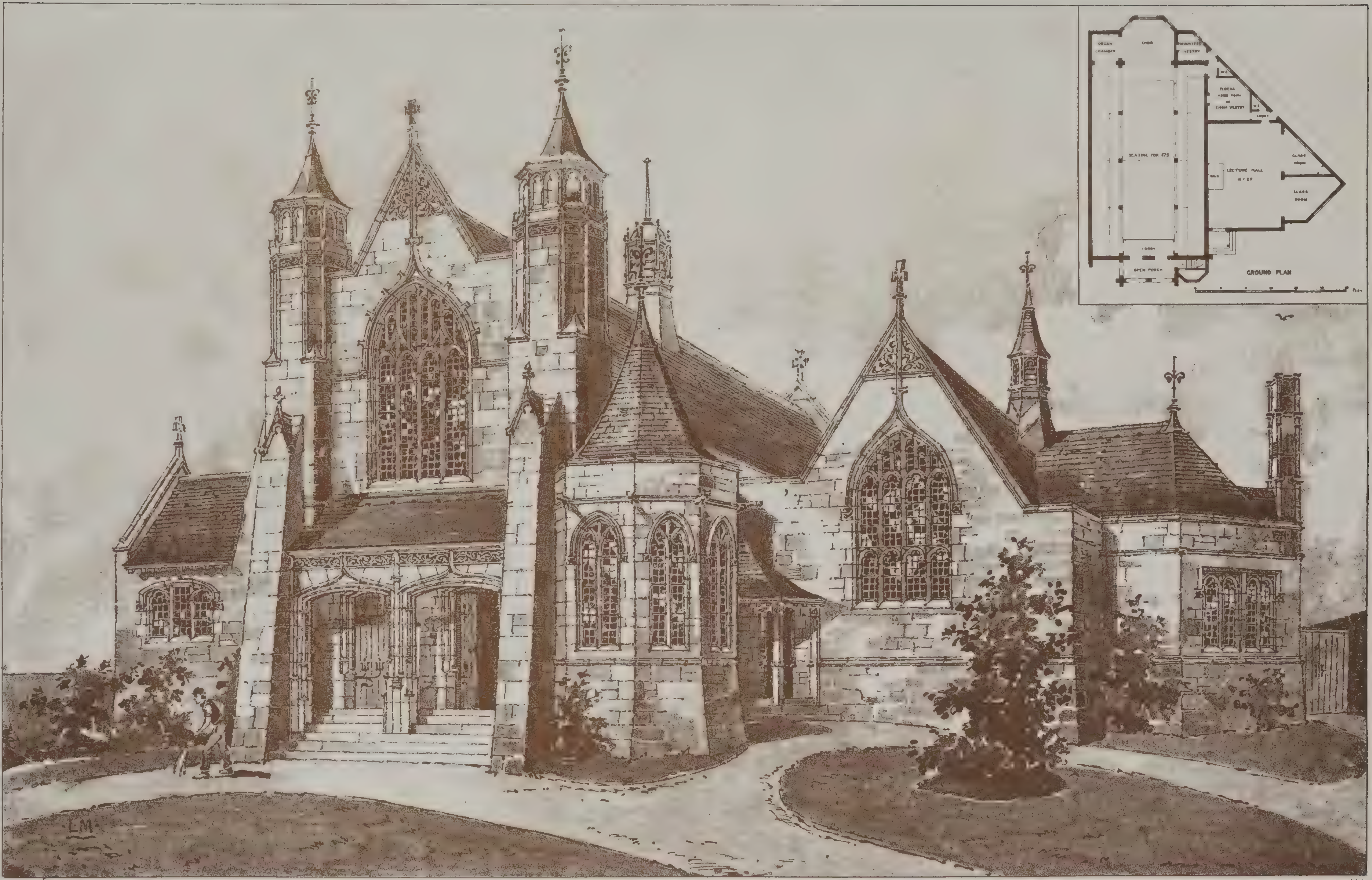


· GROUND · FLOOR · PLAN ·



· FIRST · FLOOR · PLAN ·

"PHOTO-TINT," by James Akerman, 6, Queen Square, London, W.C.



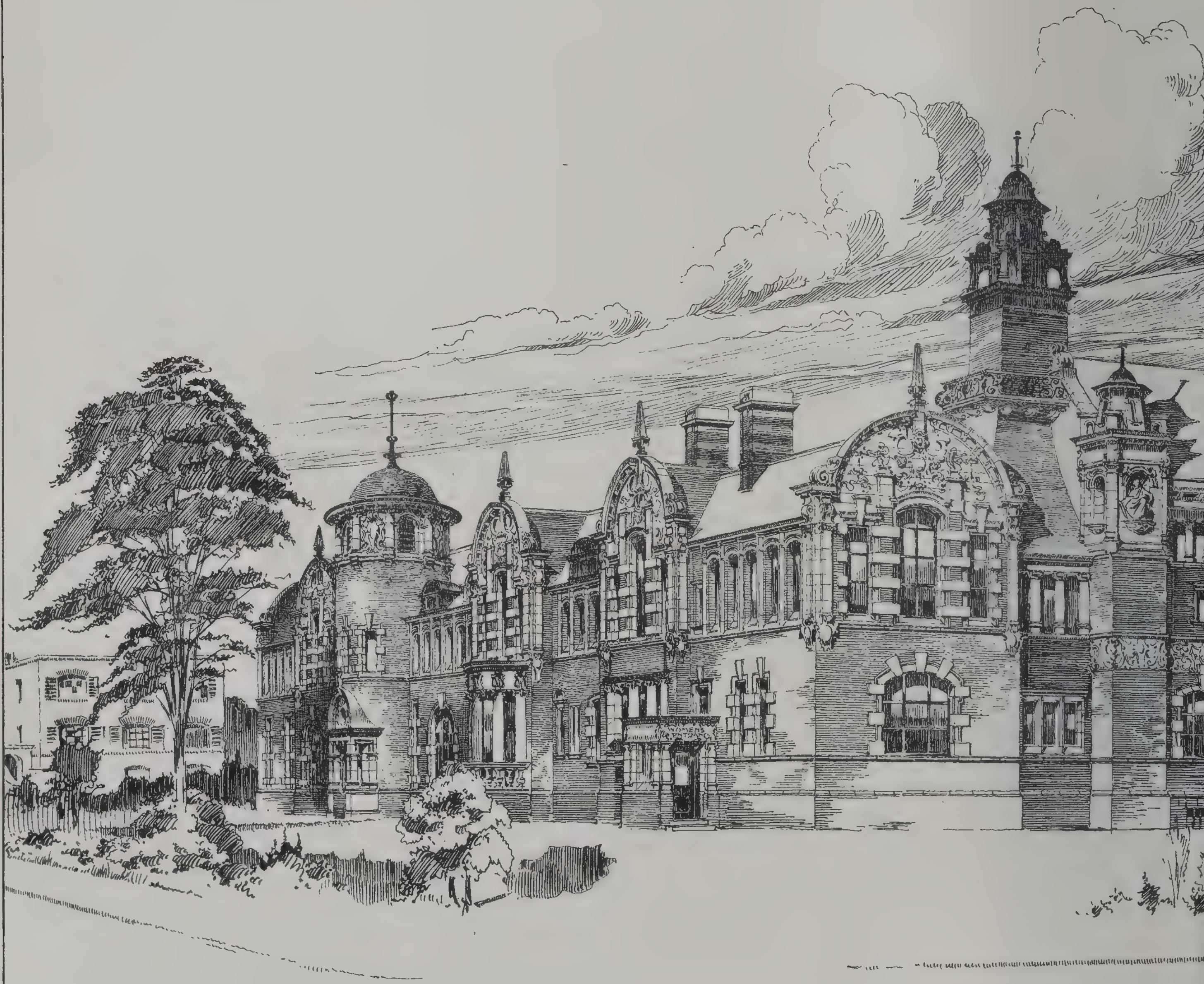
PRESBYTERIAN · CHURCH · & · SCHOOLS · TULSE-HILL · MESS^RS TREADWELL & MARTIN · ARCH^TS ·

"PHOTO-TINT," by James Akerman 6 Queen Square London W C

WEST HAM TECHNICAL INSTITUTE & FREE LIBRARY-COMPETITION,

SELECTED DESIGN.

MESSRS GIBSON & RUSSELL, ARCHITECTS.



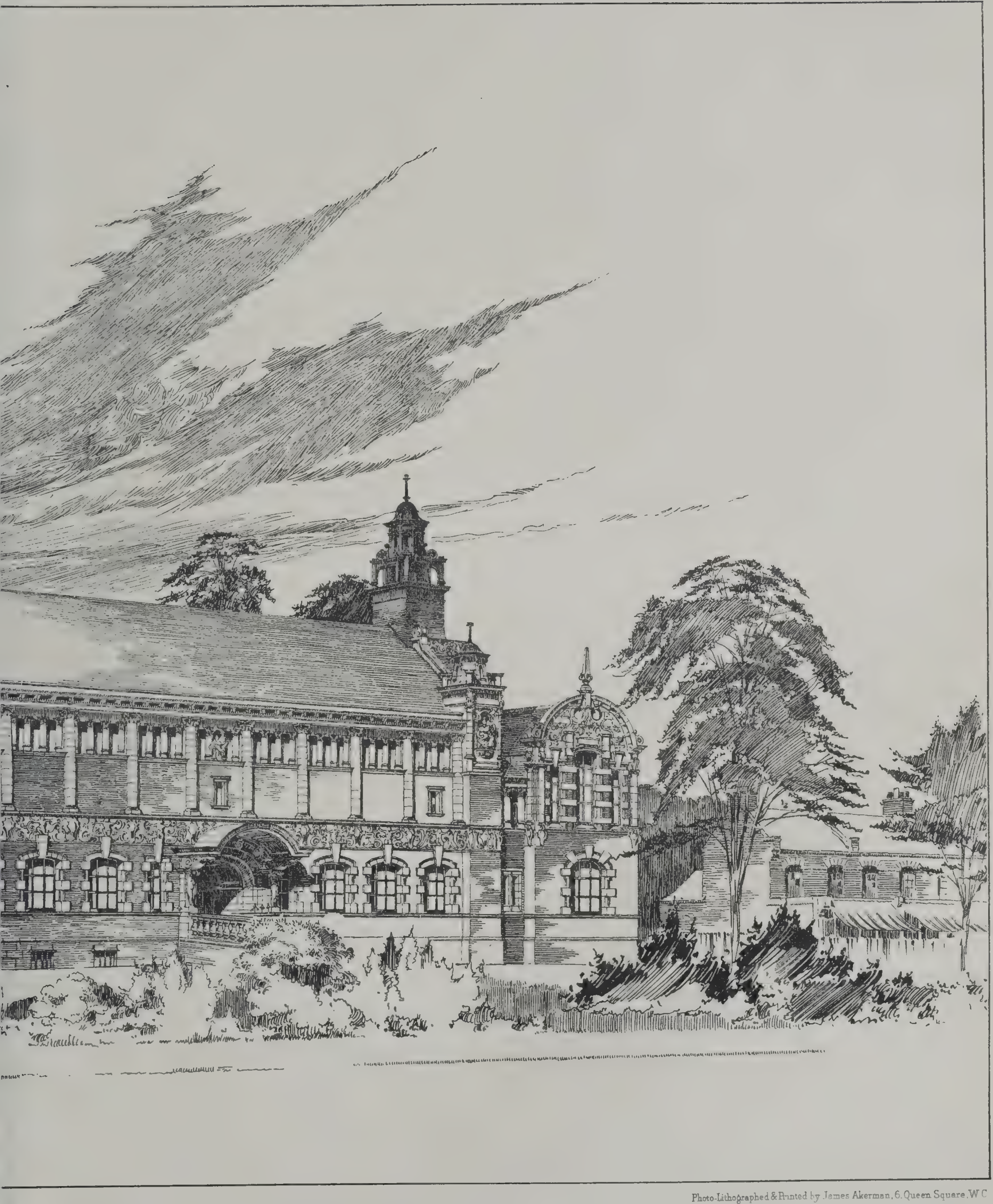
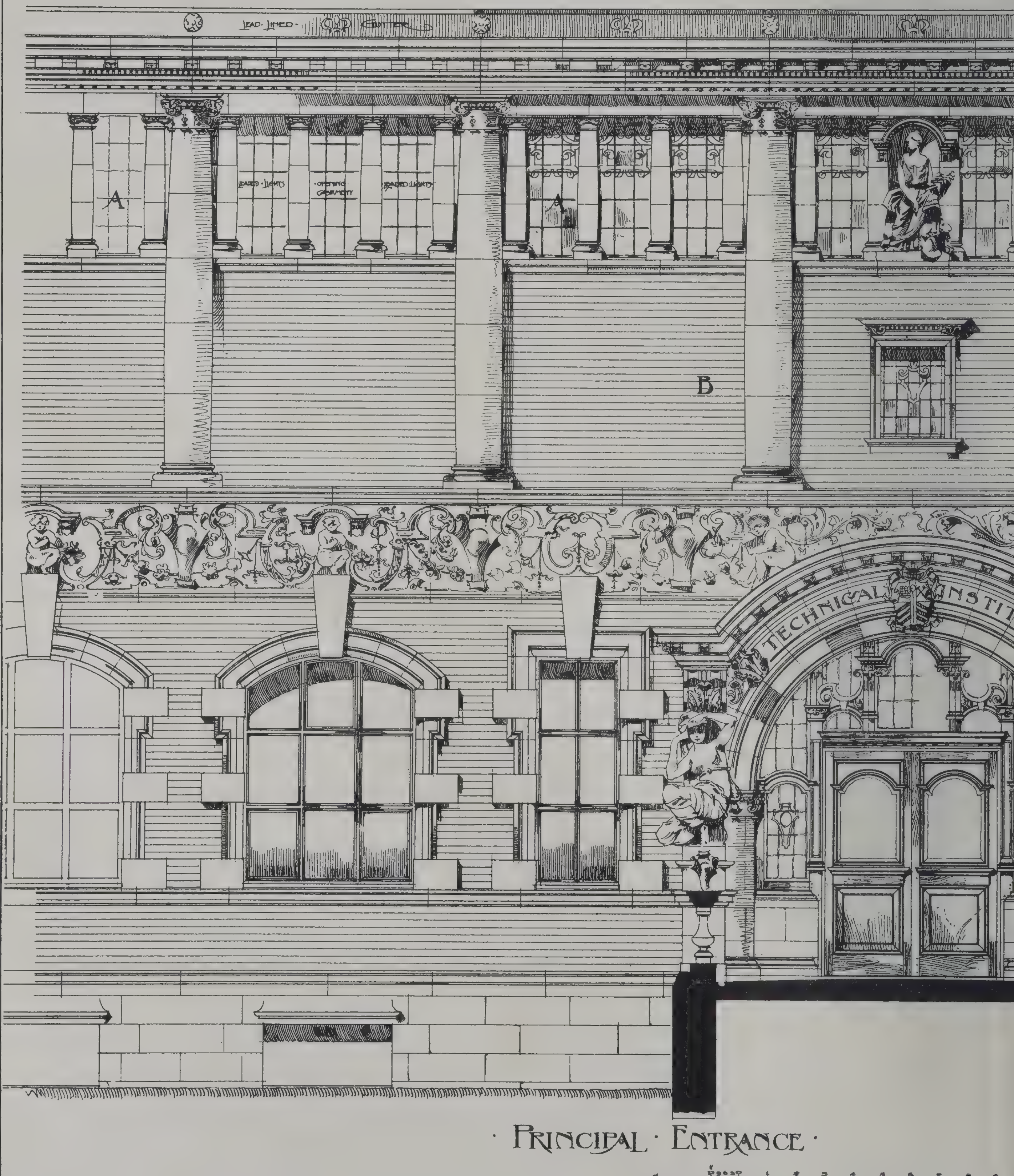


Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C.

WEST HAM TECHNICAL INSTITUTE & FREE LIBRARY-COMPETITION

SELECTED DESIGN.

MESSRS GIBSON & RUSSELL, ARCHITECTS.



· PRINCIPAL · ENTRANCE ·

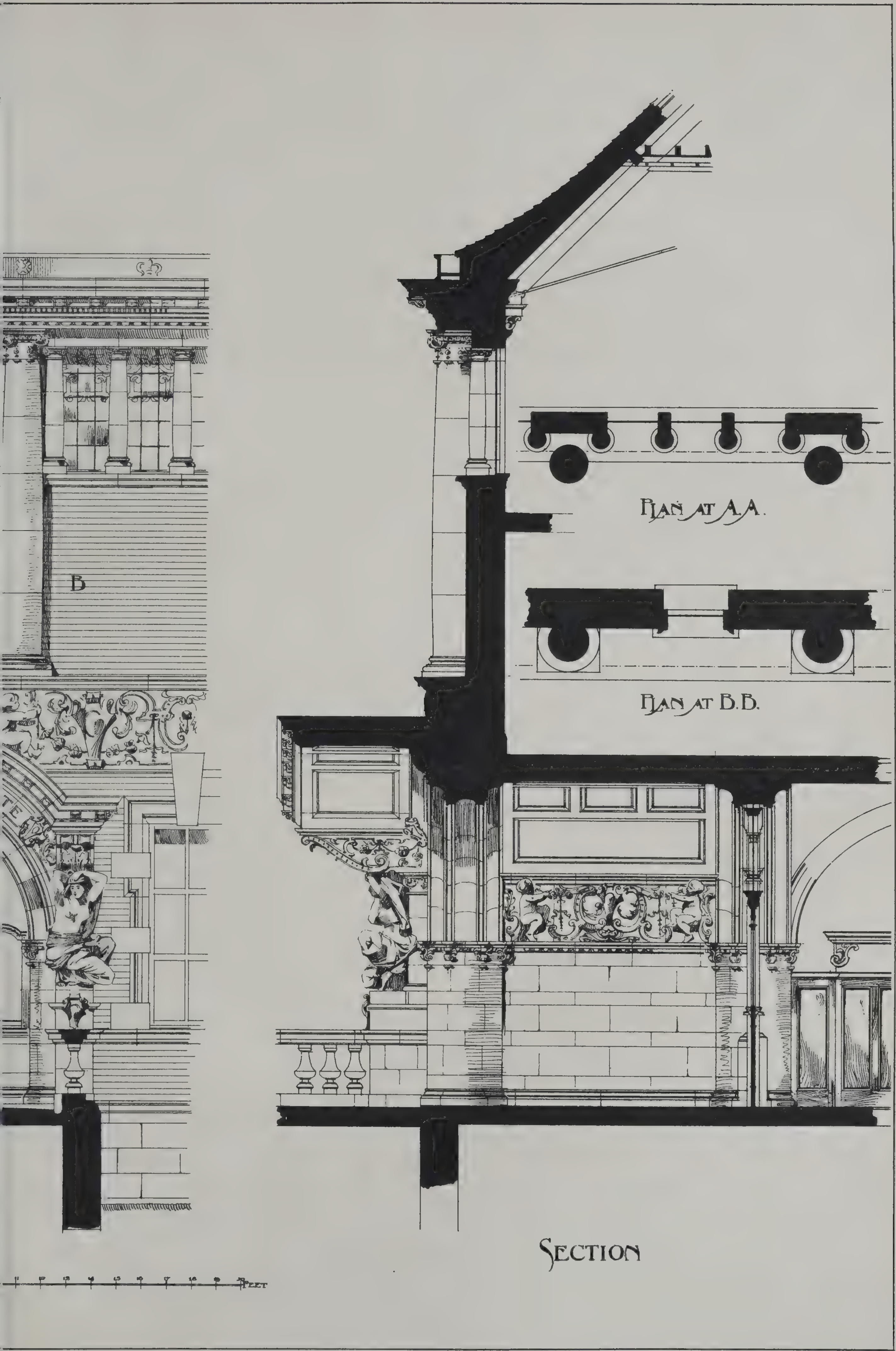
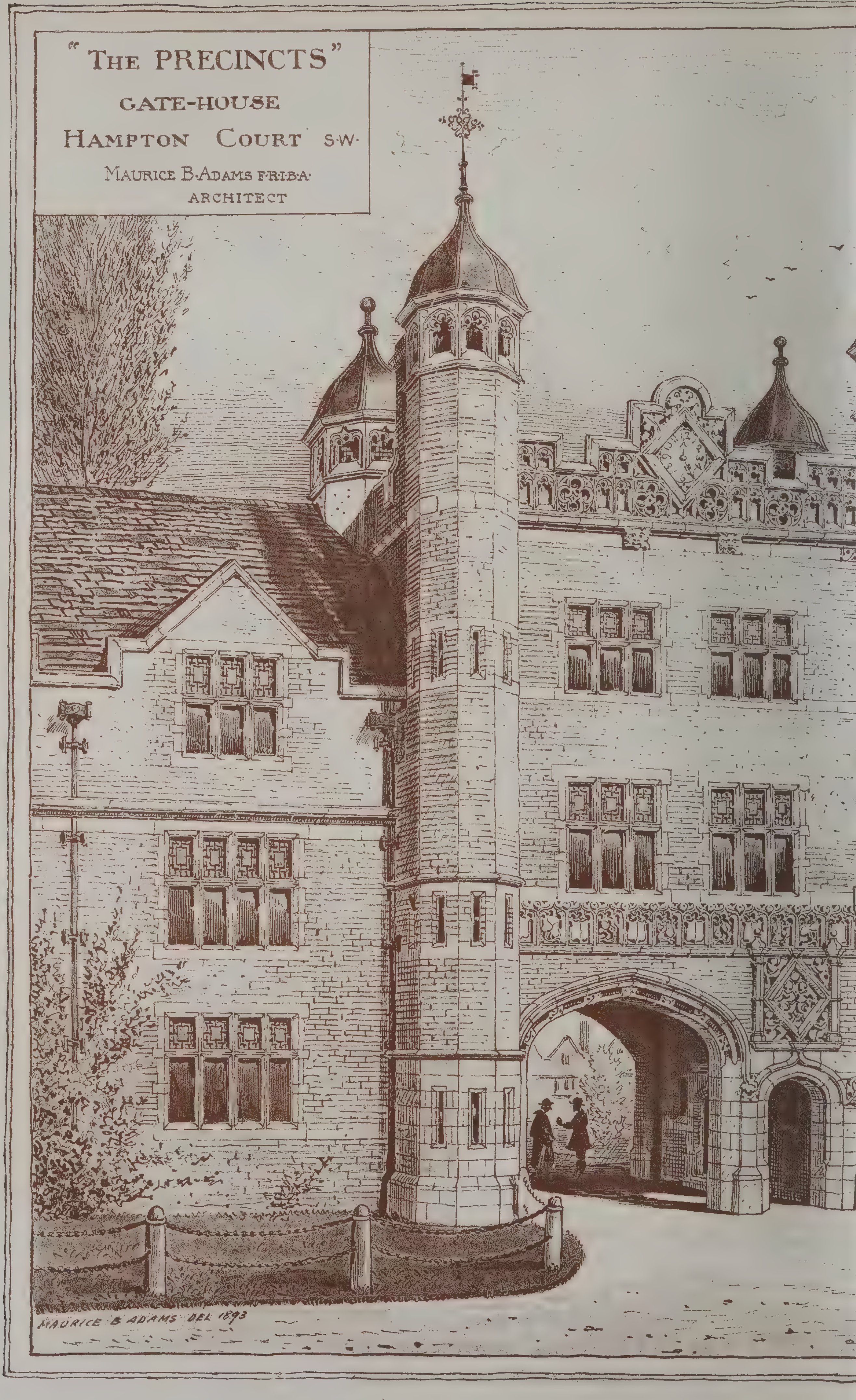
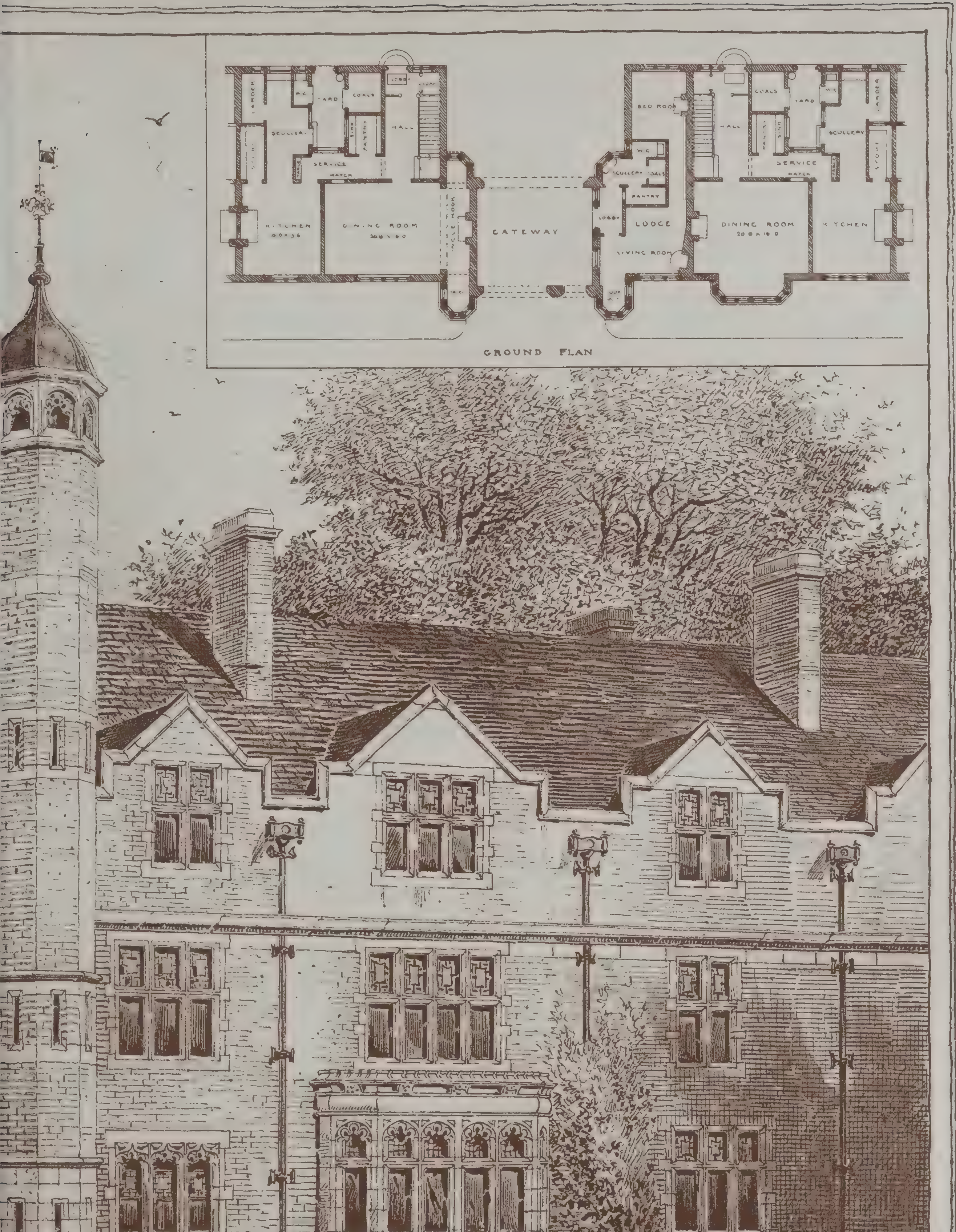


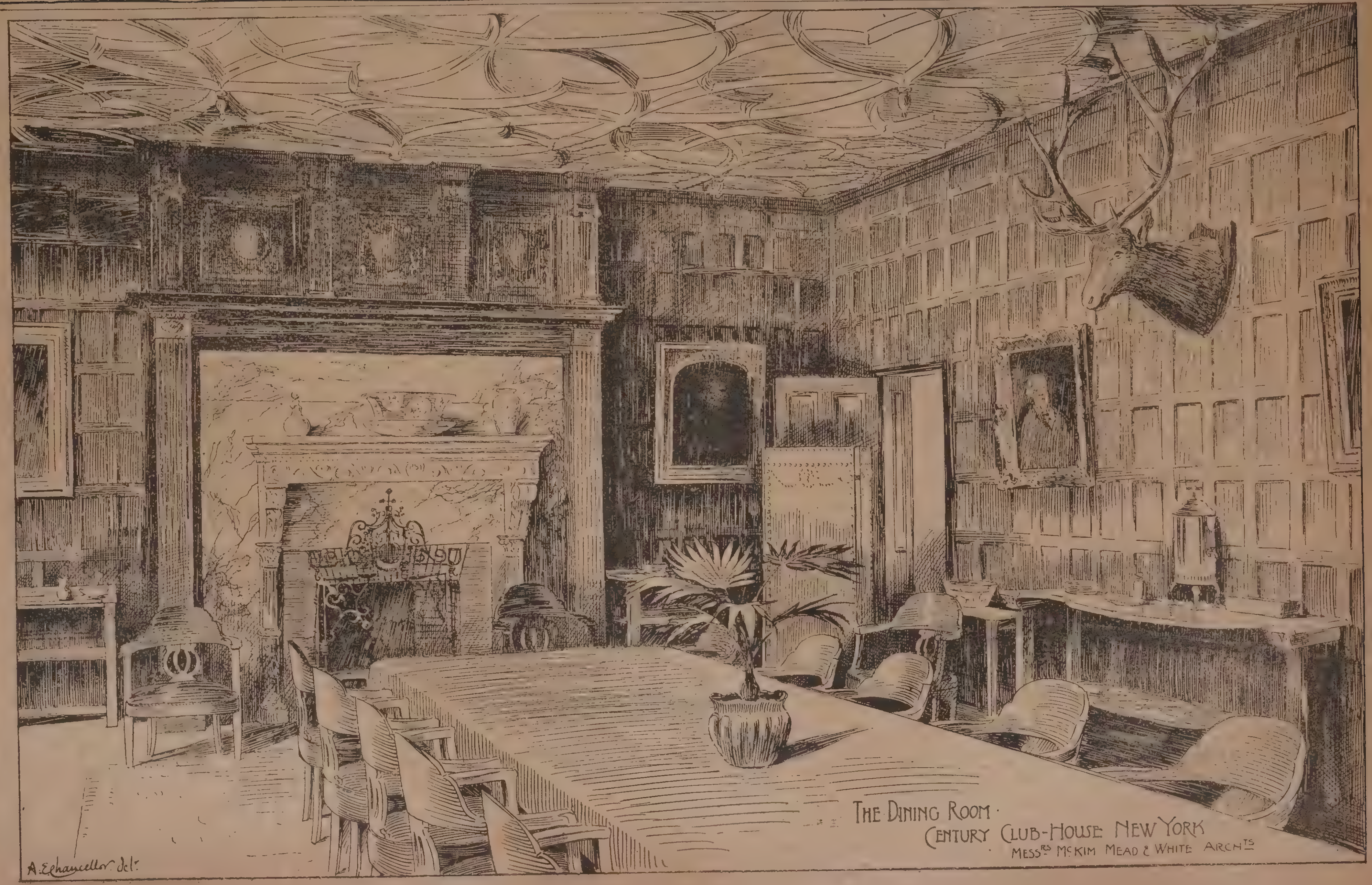
Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.



"THE PRECINCTS"
GATE-HOUSE
HAMPTON COURT S·W·
MAURICE B·ADAMS F·R·I·B·A·
ARCHITECT



"Photo-Tint," by James Akerman, 6, Queen Square, London, W.C.


A. E. Chancellor del.

THE DINING ROOM · CENTURY CLUB-HOUSE NEW YORK
MESS^RS MCKIM MEAD & WHITE ARCH^TS

Building Intelligence.

Bromsgrove.—The new school of science and art at Bromsgrove was opened on Friday by Lord Windsor. The building, which has cost about £2,000, occupies a site adjoining the New-road, near to High-street. It abuts immediately against the new Institute buildings recently opened, and in exterior style and construction the two institutions harmonise and range with each other, and appear like one united building. The main entrance to the schools will be from the New-road. On the ground floor the science students will be accommodated. There is a laboratory for chemical-teaching, 22ft. 8in. by 20ft.; a lecturer's preparation-room; and a lecture-theatre the same size as the laboratory. These rooms are in connection, and on the opposite side of the corridor-passage is a science class-room, 17ft. by 15ft. At the rear of these rooms, which are all 15ft. high, a small room for students is provided. The whole of the upper floor is devoted to the school of art. One room is 56ft. 8in. long by 20ft. wide, and 12ft. 6in. high to the wall-plate, and is lighted by side and top lights. The roof is open-timbered and boarded, supported on four framed principals on stone corbels, carved with the heads of artists. A master's room, to serve also as a committee-room, is provided. The architect is Mr. J. Cotton, of Oxford, and the builders are Messrs. Brazier, Bromsgrove. The carving generally has been executed by Messrs. Martyn and Co., of Cheltenham.

Limpsfield.—The new Caxton Convalescent Home, which has been provided by Mr. Passmore Edwards at the Chartlands Farm Estate, at Limpsfield, Surrey, for the benefit of members of the printing and allied trades in London, was formally inaugurated on Saturday. Mrs. Passmore Edwards unveiled a medallion portrait of her husband, executed in terracotta by Messrs. Doulton and Co., which has been placed over the main entrance. Mr. C. J. Drummond explained that it was originally intended to erect the home at Swanage, but the distance was a great drawback to that site. The building, which stands on nine acres of ground, was to consist of a central block and two wings, and Mr. Passmore Edwards had consented to defray the cost of the centre portion, which accommodates twenty patients. Mr. Edwards had also supplied a library of 512 books. The architect is Mr. A. Saxon Snell.

London County Council.—At Tuesday's meeting of this body, consideration of the important scheme for the construction of a new street from Holborn to the Strand, and the widening of the latter thoroughfare at Holywell-street, estimated to cost £2,093,000, dealt with elsewhere, was postponed for a week. Considerable discussion ensued on a recommendation by the Works Committee that the estimates for various works should be referred back to the committees concerned, the estimates not being satisfactory. The recommendation was carried, an amendment to invite tenders for the works being lost. It was reported that the subaqueous portion of the Blackwall Tunnel had been entirely completed. Work, however, to the estimated cost of some £250,000, some of it of a very difficult and delicate character, remained to be done, and it would be impossible to open the tunnel to the public before the spring of 1897. It was referred to the Technical Education Board to see whether any and, if so, what steps can be taken to establish a permanent museum of arts and crafts in the Metropolis.

Manchester.—Constantine's new baths, Oxford-street, St. Peter's, which have been erected on the site of the older baths, were opened on Sept. 23rd. They consist of first and second class gentlemen's Turkish baths and gentlemen's large Russian bath; also ladies' Turkish and Russian bath. All the baths are fitted with needle, shower, and douche, and supplied with hot and cold water. There are also four private Russian baths, seven ordinary vapour baths, and two local vapour boxes. There are also seven ordinary porcelain baths supplied with hot and cold water, and two rooms are set apart for sulphur and chemical baths. The first-class Turkish bath is provided with a plunge bath, lined with white glazed bricks and with white marble floor, with granite sill and light screen in front, the whole covered by a skylight. The first-class Turkish bath is entered through a screen of Moresquè design. The openings between the several rooms have horseshoe arches in red and buff glazed bricks with enamelled corbels. The ceilings are finished with moulded teak ribs and enamelled glass panels, and the floors throughout are of concrete, with marble mosaic surface and borders. The doors and frames are of hard wood. The windows of the hot rooms are double-glazed with stained glass, and finished with marble window bottoms. The shampooing rooms have marble slabs on white glazed brick risers. Water and steam are supplied by copper pipes cased over so as to be accessible without disturbing bathing operations. There is a lift from the kitchen, with speaking tube, to the Turkish and Russian baths. The main staircase is lighted from an area lined with white glazed bricks and a roof light. The second-class Turkish bath is over the first-class, with Alhambresque oak screen from vestibule. The walls throughout are finished with glazed bricks with horseshoe arches, and the plan is the same as the first class, except for the absence of plunge bath. The ceilings are finished in plaster, with moulded ribs and cornices. In the ladies' Turkish bath the arrangements for control of heat and for supply of hot and cold water are the same as for the first-class bath, and the floors are finished with marble mosaic. The warm air for the Turkish and Russian baths is supplied from two convoluted stoves fixed in the basement, giving a change of air in the hot room equal to 30c.ft. per minute for each bather. The reserve of hot and cold water—about three thousand gallons—is stored in cisterns in the top story. The cold air is received in a chamber on the roof, where it is filtered before it descends to the heating apparatus in the basement. After being heated it is delivered through the separate hot-air flues to the various rooms. The hot and cold air flues are all lined with white glazed bricks. The ventilating flues descend to chambers under the floor in the basement, which in turn are connected to the main shaft. Messrs. Barker and Ellis, of Manchester, were the architects.

Muthill, N.B.—On Saturday week the memorial-stone of the new Free Church, in course of erection at Muthill, Perthshire, was laid by Mr. Samuel Smith, of Orchill, M.P. for Flintshire. The style of the building is French Gothic. The principal front is towards Drummond-street, and shows a buttressed gable with a large traceried window and a central arched and recessed doorway. On either side of the doorway are double-arched windows to the vestibule and cloakroom. A tower is placed at the west corner in a line with the front gable of the church, having a battlement course at the top of the masonry, and finished with a slated spire. The length inside the church is 60ft., and the width is 40ft.; while the height of the ceiling is 35ft. The only gallery is an end one arranged over the vestibule, and sittings will be provided in the church for from 450 to 500 persons. A hall is arranged at the south end. The plans are by Mr. G. T. Ewing, architect, Crieff, and the total cost is expected to be about £2,000.

Salford.—Reopening services were held at St. Philip's Church, Salford, on Thursday in last week, the seventeenth anniversary of its consecration, to mark the completion of internal alterations completed under the direction of Mr. Medland Taylor. A ritual chancel, raised several steps above the nave floor, with a low screen around it, has been formed within the church. The new choir stalls and the screens are of oak. The east end of the south aisle has been made into a morning chapel, and a baptistery has been formed at the west end, with an open oak arcade and balustrade, within which a new font has been placed. A vestry for the choir has been partitioned off at the west end of the north aisle. The reseating of the church and the decoration and painting and other improvements will be proceeded with next year.

Sparkhill, Birmingham.—St. John's Church, Sparkhill, has just been extended in accordance with the original designs for the building, and has been reopened. The first section of a permanent building, consisting of chancel, transepts, and part of the nave, with accommodation for 666 sittings, was opened in 1888. In March last it was resolved to proceed with the enlargement of the church, and to complete the building, with the exception of the upper portion of the tower and spire, at a cost of £2,460. The exterior of the extension is formed of picked common brick facing, with pressed-brick moulded jambs and arches, with Horsley Castle stone sills and heads to the windows, filled in with cathedral glass in lead. The roof is covered with Lewis's tiles. The interior is carried out in accordance with the present portion, being in one span carried on curved ribs, which rest in turn on stone cornices let into the walls. The ceiling is divided into bays, and subdivided by pitch-pine moulded panelling, the spaces between being filled in with adamant cement. The mouldings and general treatment are in the Late Decorated style. The base of the future tower and spire, with entrance porches and lobby, form the lower portion of the west end, the main gable of which is filled in with tracery-headed windows, about 11ft. 6in. wide, and 20ft. in length. The doors and screens are of pitch pine, and partly filled in with glass in lead. The seating arrangements of the whole of the church will give accommodation for 1,000 persons. It is proposed to add the upper portion of tower and spire at as early a date as future funds will permit. The whole of the work has been carried out under the superintendence of Messrs. Martin and Chamberlain, the contractors being Messrs. Sapcote and Sons, of Camden-street, Birmingham.

Southport.—An important group of public works, which have been carried out by the Corporation of Southport, were formally opened by the mayor on Thursday and Friday in last week. The principal of these is the infirmary, inaugurated on the former day. This institution, of which Mr. C. Sydney Ingham, Southport and Manchester, is the architect, is situate in Scarisbrick New-road, and will furnish accommodation for 24 males, 24 females, and 12 children, these three wards being arranged with the administrative block in the centre. The walls are faced with stock bricks and terracotta, Longridge stone being used for dressings. The laundry, kitchen, dispensing, and domestic offices will be large enough for any future additions which may be placed upon the site. The total cost of the building and its equipment has been £25,000. The interior walls of the three main wards are lined with J. C. Edwards's glazed bricks. The floors of these rooms are of oak parquetry, laid by Messrs. Doveston and Co., of Manchester. Messrs. Doulton, of Lambeth, have supplied all the sanitary fittings and glazed ware for mantels. All the corridor and hall floors are paved with marble mosaic by Messrs. J. and H. Patteson, of Manchester. Mr. George Wragge, of Manchester, has been responsible for the wrought ironwork. The clock is by Messrs. Potts and Son, of Leeds. The building has been carried out by Messrs. Wishart and Irving, of Southport, and the clerk of works was Mr. Thomas Field, of Blackburn. The infirmary was illustrated by a perspective and plan in our issue of March 8 of the present year.—The first work opened on Friday was the new marine drive, which, starting from the lifeboat-house, and finishing near Nevill-street, is over three-quarters of a mile in length, and incloses about 90 acres of foreshore. The two marine lakes have been united, and the drive is carried over alongside the pier by means of an iron bridge, the whole of the work having cost £27,750, bringing the total expenditure of the corporation upon the foreshore works, since its purchase of the foreshore, up to £129,000. Both drive and bridge are 42ft. in width. The second was an extension of the electric light plant which trebles the former capacity of the works, bringing it from 4,000 8c.p. lamps to 12,000 8c.p. lamps. Mr. Musgrave, J.P., of Bolton, was the contractor for these works, and Mr. Ferranti, of London, was the electrician. A recreation ground, 6½ acres in extent, close by, and a second one at the end of Duke-street ground, were also declared open.

At the quarterly court of the Plumbers' Company, held at the Guildhall, E.C., on Monday, the following were sworn into office for the year ensuing:—Sir Philip Magnus, Master; Mr. Philip Wilkinson, Warden; Mr. Alderman Richard Hind, Renter Warden.

The gas committee of St. Helen's, Lancs, are taking steps for putting down an electric lighting plant for supplying the centre of the town with electricity. The corporation have made application to borrow £10,000 for the purpose, and a Local Government Board inquiry was held on Tuesday by Mr. F. H. Tulloch, M.I.C.E., an inspector to the Board, who also conducted an inquiry into an application to borrow £3,000 for putting down a new engine and boiler for the Eccleston-hill pumping station, and £3,200 for repaving streets. Mr. Broom, borough surveyor, explained the proposals.

GREATER LIVERPOOL.

THE Liverpool Corporation have received an elaborate report from Mr. H. Percy Boulnois, the city engineer, on the changes in the arrangements in his department necessitated by the passing of the Liverpool Boundaries Extension Bill. It is pointed out by Mr. Boulnois that 8,026 acres will be added to the existing area of the city, making it 13,236 acres, exclusive of the river; 138 miles of roads will be added, making a total of 415 miles; 106 miles of main sewers will be added, making a total of 663 miles, and $19\frac{1}{8}$ miles of tramways, making a total length of approximately 68 miles, including about $1\frac{3}{8}$ mile owned by the Liverpool United Tramways and Omnibus Company. The sewage farms of West Derby and Walton, containing together approximately 385 acres, will also be taken over. Alluding to the officials in the districts which are on the eve of incorporation, Mr. Boulnois suggests that Mr. John Price, engineer and architect to the Toxteth Urban Council, be appointed assistant city engineer for the incorporated districts at a salary of £550 per annum, and that his duties be to assist the city engineer in all works and administration of all kinds in the added areas. Mr. Boulnois also suggests that Mr. W. H. Travers, surveyor, of Wavertree, be appointed district road surveyor for Wavertree and Toxteth, at his present salary of £240 per annum; and Mr. F. C. Everett, surveyor of West Derby, be appointed district road surveyor for West Derby and Walton, at his present salary of £275 per annum. Mr. Joseph Lace, inspector of works, Toxteth, and Mr. John Baker, assistant surveyor of Walton, to be appointed inspectors of sewers for their present districts, at their present salaries of £150 per annum. As to the building surveyor's department, the engineer recommends that an assistant building surveyor be appointed to examine plans, &c., to assist in the conduct of prosecutions, and give general assistance in the work of the department. This officer should have a good knowledge of building construction, and the engineer proposes that his salary should be £175 to commence, increasing £10 per year to £205 per annum. In case the committee adopt his suggestions with regard to the duties arising out of the inspection of, and reporting upon, necessary structural alterations in connection with places of public resort, he recommends that Mr. John Henry Price, assistant surveyor of Toxteth, be appointed chief assistant building surveyor at his present salary of £175 per annum, increasing to £205 per annum, and that Mr. W. Goldstraw's title of "chief assistant building surveyor" be altered to that of "deputy building surveyor." It will be necessary to appoint three additional building surveyors, and with the retirement of an official the number will be increased to four. The engineer has provided for all the engineering staff of the new districts to receive appointments under the Liverpool Corporation, with the single exception of Mr. Stephen Middlebrook, the surveyor to the District Council of Walton, who is to be pensioned under an arrangement already made. Mr. Boulnois then deals with the West Derby and Walton sewage farms and their staff, and proposes that for the present the same staff be continued for both farms.

STEEL SECTIONS.*

A USEFUL handbook has been issued by Dorman, Long, and Co., Ltd., of Middlesbrough, for the use of architects, engineers, and builders who have occasion to specify or adopt steel sections. Messrs. Dorman, Long, and Co.'s new book will be of much convenience to those who have no time or inclination to make special calculation for every section or rolled girder or joist they use—indeed, such labour is unnecessary when we can obtain a section book such as this is, having all the useful sizes in stock, and giving all particulars. The steel of this firm is manufactured by the "Siemens-Martin Open-Hearth Acid Process," recognised as productive of high-class steel, and the tests guaranteed are 28 to 32 tons tensile strain per square inch, and 20 per cent. elongation in 8in. The illustrations are very comprehensive, and include sections of steel bars of various sizes, equal square angle irons, unequal angles, tees, Z iron sections, channels, and the various sizes of I sections, compound girders, plate and box girders, trough decking sections, &c. The handbook thus comprises the advantages of an illustrated catalogue and handbook of formulæ. Those formulæ of general application are given. The moments of inertia and resistance of the various sections of joists and the safe loads for every ordinary span are given on each page of sections. Everything useful or required is tabulated. Thus each table gives the weight per foot in pounds, size, depth and width, area in square inches, moment of resistance in square inches, distributed loads in tons that 1ft. will carry. Three factors of safety equal to 10·6, 8, and 6·4 tons tension per square inch of section respectively are given. These are practically one-third, one-fourth, and one-fifth of the breaking strain; the first to be used for permanent dead loads, the second for live loads gradually applied, and the last for live loads or machinery in motion. Architects requiring to know what girders and joists they must provide for floors carrying certain loads, will find every particular here. For dwellings and offices, the authors state the live load may be taken at 154lb. per square foot, including both dead and live loads. The notes and hints given about angle connections, stanchions, and a variety of other information are very useful.

HYGIENIC VENTILATION.

MR. JOHN LE MARCHANT BISHOP read the following paper before the members of the Manchester Society of Architects (Incorporated) on Tuesday evening, October 1, the President, Mr. John Holden, in the chair:—

Ventilation is a purely hygienic matter, and can only be dealt with upon hygienic principles. The laws of hygiene require that mankind shall at all times breathe pure fresh air, under conditions of immunity from the noxious influences of draughts and variations of temperature. Here we have at once the true object of ventilation and the true standard for ventilation schemes. None of the schemes as yet in vogue in this country approach this standard, and most of them fail egregiously. The chief causes of this general failure may be classified as follows:—1. Misconceptions concerning (*a*) the nature, scope, and objects of ventilation, and (*b*) the various scientific and other conditions to be dealt with. Hence: 2. Practical error, such as (*a*) inadequacy and inappropriateness of the means and appliances employed, (*b*) want of precision in their design and construction or execution, (*c*) absence of system or logical relation in their various proportions, adjustments, and arrangements. In a word, rule of thumb, blind speculation, and empiricism have hitherto been paramount in a sphere wherein the practical embodiment of philosophical thought following upon adequate scientific knowledge could alone be reasonably expected to succeed. The very frequent practice of diverting the fresh currents away from the persons of the occupants of a room, in order to protect them from draughts, thus rendering impossible the acquisition of pure air by those to whom it is essential, and for whose sole benefit it is introduced, often at considerable cost, is typical of a numerous class of practical errors common to both mechanical and automatic schemes. It must be accepted as a cardinal principle that true hygienic ventilation is impossible without a free, direct, and practically continuous circulation of pure fresh air through all parts of the air space. This, in an unoccupied room, would, of necessity, involve the thorough diffusion of the air and its complete and uniform distribution in the diffused condition. Since, however, its diffusion from below would be at once an intolerable nuisance, and hygienically pernicious to the occupants, it must necessarily be diffused from above, and brought to them in its diffused form. This, again, would necessitate its extraction from below—namely, at the floor line—in order to avert its resumption of the current form about the persons of the occupants. The mere extraction from below, however, would effect neither the diffusion nor the distribution of the incoming air. Only by means of a carefully and judiciously devised system of inlets and outlets, freely and uniformly distributed about the room, having definite relation to each other in point of areas, numbers, and situations, to the plan and dimensions of the room, and to the numbers of persons assembled, with other appliances and accessories, affording complete control of the admitted currents—a system, in short, devised upon strict philosophical principles, and executed with mechanical precision—could this be effectually insured. In such case, not only would draughts be impossible, but the whole of the admitted air pressed into actual service would mingle freely amongst the occupants, instead of escaping from the room above their heads; while the exhalations, participating in the general downward sweep, would be immediately drawn towards the outlets and carried away by the exhaust. There is nothing chimerical or Utopian in this, unless the substitution of the guiding principles of science and philosophy for rule of thumb, speculation, and haphazard be such. Upon the principles herein suggested, effectual ventilation, whether by the mechanical or the automatic process, would become an accomplished fact; and more real and effective work would thus be automatically obtainable than either process could yield upon the usual methods. Not only would less power be needed in mechanical ventilation, but a combination of the two processes in one effective system, hitherto impracticable, would then be practicable, whereby the operation of power, indispensable during the periods of assembly, could be suspended during the intervals of recess without interruption to the continuity of the circulation of fresh air, so essential to the purity and healthfulness of all inclosed places of assembly.

REGISTERED GRATES AND TILE STOVES.

WE have received a copy of a new illustrated catalogue of stoves, just issued by Messrs. McDowall, Steven, and Co., Ltd. (late Steven Bros. and Co.), of 4, Upper Thames-street, London, E.C. It is prefaced by a plate of photo. process portraits of members of the firm and views of the extensive showrooms in Upper Thames-street. A large selection of register grates of all sizes and of moderate price are illustrated in the earlier pages, the price being as low as $4\frac{1}{2}$d. per inch. The extra strong grates, ground-glazed and Berlin-blacked, made from 30in. to 40in., $7\frac{1}{2}$ to $10\frac{1}{2}$d. per inch, are worth attention, and the square-headed stoves, from 1s. 1d. per inch, are very suitable for good houses. These are of slow combustion, with brick backs, sides, and bottoms, with 18in. fire. The "Board Room Grate" is well adapted for large schoolrooms and waiting-rooms. Other special ventilating grates illustrated are Captain Galton's "The Marlborough," with adjustable canopy, hob register grates in all finishes and in every variety of pattern, Sussex and Rumford grates, &c. The designs shown for tile stoves, with printed and coloured tiles, and brass reed and electro-bronzed mouldings, are numerous, and many of artistic character. In each case the sizes and prices are given. Plain "interiors," with bars and bottom, now often provided in small houses, are given, some with fluted backs and canopies. It would be impossible to give our readers any idea of the variety of designs of "interiors" with firebrick backs and bars in several styles. These vary in price. Mantel and overmantel designs are numerous. "Adam" iron mantelpieces in several good designs, dog grates, fireplace suites, with wood mantels and overmantels, and a large assortment of tile panels for stoves and hearths, marble and slate chimneypieces, &c., are illustrated. All builders, architects, and house owneas will find the catalogue of McDowall, Steven, and Co. of much use in the selection of castings and ironmongery of this description.

* * *

In a letter of excuse for the unpunctuality of his company's trains, Mr. Sarle, the secretary of the London, Brighton, and South Coast Railway, mentions that the first section of the works of lines and stations near London, that between Victoria and Streatham, is completed, and only awaits inspection by the Board of Trade. These works, which will cost at least a million sterling, are, he states, undertaken not for the purpose of tapping new sources of traffic, but solely to better accommodate the traffic on the existing lines.

The new corporation schools at Doncaster were opened on Sept. 26. The range of school buildings is 202ft. by 59ft. wide. All the rooms are on the ground floor. For each department an entrance-hall, a teachers' private room, and the usual requisites have been provided. In the playgrounds are gravelled play-sheds, gymnastic apparatus, &c. The schools are warmed throughout with hot water. There is accommodation for 220 boys, 220 girls, and 272 infants. The total cost, exclusive of the land, is £5,700, or about £8 per head of the accommodation. Messrs. Malthus and Richardson, of Doncaster, were the contractors.

---

* London: McCorquodale and Co., Ltd., Cardington-street, N.W.

OBITUARY.

A very able and upright man has just departed from amongst us in the person of Mr. Henry Smith, F.S.I., whose death occurred on the 25th of September, at his residence, East Lodge, Clapham Park. The deceased gentleman was apprenticed to his father at Nottingham, but at the age of 21 came to London, and entered the office of Messrs. Myers, the great firm of builders. He was one of their principal measuring clerks from 1852 to 1874. When the Messrs. Myers retired from business, he started as a quantity surveyor on his own account at 8, John-street, Adelphi. Mr. Smith was engaged in his professional capacity in many important works. From 1855 to 1861 he lived at Aldershot, and "measured" at least a million pounds' worth of work done by Messrs. Myers. For that firm he also acted when they built the Netley Hospital, the Reading Assize Courts, the Rothschilds' mansion in Piccadilly, the Staff College at Sandhurst, the grand staircase at Windsor, &c. Afterwards, when in business on his own account, he was quantity surveyor at the Royal Free Hospital, the Brompton Oratory (dome, St. Wilfrid's chapel, &c.), the Portsmouth R.C. Cathedral, St. Joseph's College, Tooting, and the West London Asylum. Mr. Smith had a high character in his profession as a man of great ability and integrity.

CHIPS.

Major-General C. Phipps Carey, R.E., one of the Local Government Board inspectors, held an inquiry on Thursday in last week at the offices of the East Barnet Valley Urban District Council, into an application by the local authority to borrow the sum of £2,650 for private street improvements. Mr. Henry York, the surveyor, appeared for the council.

The Horticultural Society of Shrewsbury, having previously secured the whole of the land and gardens lying between St. Julian's Friars and the Crescent-lane, which it is intended to be converted into recreation and ornamental grounds, have now purchased a strip of land between the latter place and the Kingsland Bridge by the river side. The committee for carrying out the negotiations are now also in treaty with the Kingsland Bridge Company and with Mr. Salt for purchasing the remaining length of riverside land up to the Quarry, and when that is accomplished it is intended to form a broad, continuous promenade as far as St. Julian's Friars or the Grey Friars Bridge.

On Wednesday week, the Bishop of Coventry opened a new mission-room in Spon-end in connection with St. Thomas's parish, Coventry. It is constructed of corrugated iron upon a timbered and felt framework, and is lined with matchboarding. The large room, seating 200 persons, has a platform at one end, and is fitted with comfortable seats of pitchpine. There are also three smaller classrooms at the rear. The cost has been £500. The architect was Mr. H. Quick, the contractor for the ironwork Mr. Boulton Paul, of Norwich, and for the foundations, brickwork, and drainage, Mr. John Isaac, of Foleshill.

Mr. Henry Hines, builder, of Eye, Suffolk, and for many years one of the charity trustees of that town, died on Sept. 26, aged 70 years.

The new railway 'round Etna, about sixty-two miles in length, was formally opened for traffic at Catania on Sunday.

The old Independent Chapel, Sheffield-road, Barnsley, is about to be altered and enlarged. The plans, prepared by Mr. Moxon, architect, Barnsley, provide for an increased number of sittings, and 15 classrooms for the Sunday-school.

A centennial exhibition of lithography was opened on Sunday at the Champ de Mars. The work of the lithographer is traced chronologically from the primitive work of Sinefelder down to the daring street placards of M. Cheret, the most modern of the Parisians.

The town council of Southampton have decided to cover in the two reservoirs on the common at an estimated cost of £6,000. The recommendation was supported by Mr. Matthews, the water-works engineer, and the medical officer of health.

The Liverpool Art Committee have purchased Miss Flora M. Reid's picture, "The Last Sacrament," in the current Autumn Exhibition, for their permanent collection at the Walker Art Gallery. This work is the first that has been bought out of the funds and in accordance with the terms of the late Earl of Derby's bequest. The committee have also secured Mr. Charles J. Allen's statuette group, "Love and the Mermaid," in room No. VI., which is to be reproduced in bronze. The Mermaid is twining her fish-like body round Cupid's feet, and stretching her hands up to him.

Engineering Notes.

Progress of the Blackwall Tunnel.—This undertaking has now advanced to an important stage. From the Kent side the open cutting of 860ft., the cut and cover portion next in succession 946ft., the No. 4 caisson, the inclined portion of the ensuing tunnel 602ft. 6in., the No. 3 caisson and the level tunnel 1,212ft. beyond it, are completed to the No. 2 caisson on the Middlesex side of the river. This caisson is 58ft. in diameter, and the face of the tunnelling shield, 27ft. 9in. in diameter, is touching its external surface. The shield will next be put to work on the land side upon the first portion of the up-hill tunnel 447ft. long. No. 1 caisson will have next to be passed, and a further length of 821ft. of tunnel excavated and formed; and beyond this 436ft. of cut-and-cover and 875ft. of open cutting, these two latter portions being already practically complete. There thus remains 1,311ft. of tunnel to be accomplished, through ballast, clay, and soils of irregular and uncertain character, including, in some parts, masses of rock. The main portion now completed, which includes the crossing of the river from shore to shore, was begun on the Kent side on the 16th September last year, and the shield touched the caisson on the Middlesex shore on Wednesday last, the 25th inst., almost within the limit of one year. The contractors are Messrs. Pearson and Son, and their engineer in charge of the work is Mr. A. W. Moir. The tunnel has been executed by the engineer in chief of the London County Council, Mr. A. R. Binnie.

The annual autumn excursion of the Clifton Antiquarian Club took place on Saturday last, when the day was spent in a visit to Llanthony Abbey and the priory church of St. Mary at Abergavenny.

At the Edinburgh Dean of Guild Court, on Friday, warrant was granted to the city authorities to widen Canonmills Bridge. It is proposed to take down the old toll-house on the south-west side of the bridge, extend the present abutments, piers, and arches of the bridge, construct a new south-west wing wall, rebuild the present parapets in new positions, and alter the footway and carriage-way, all on the west side of the bridge. The result will be to widen the carriage-way by 7ft. and the footpath by 2ft. It is in contemplation to further widen the bridge by 5ft. on the east side.

At a meeting of the Glasgow timber trade held on Friday it was decided that the offer by the secretary of the Royal Exchange of the use of the piazza of that institution for their weekly meetings till the end of the year as an experiment was adopted. The members of the trade have for some time been engaged in trying to solve this question, and have latterly been holding their Wednesday markets on the platform of the Central Station, a spot which was found to be a somewhat unsuitable rendezvous.

A monument, erected to the memory of the late Dr. James Morrison (1816-93), founder of the Evangelical Union, has been unveiled in the Glasgow Necropolis. The monument is a monolith of grey Creetown granite, standing 22ft. in height, and contains as a medallion in bronze a likeness of Dr. Morrison, with inscriptions.

The construction of the new bridge across the river Dee at Queensferry, to replace the primitive ferryboats from the Flintshire to the Cheshire side, is being pushed forward with celerity. The abutments and approaches have been practically completed by Messrs. Schofield and Sons, of Leeds, the contractors for this portion of the work, and the workmen are now sinking the piles upon which the bridge will rest on either side of the river. The width of the river is 400ft., and the bridge will consist of two fixed spans (one at each end) of 140ft. each, and two telescopic portions, each 60ft. long. The ironwork is being prepared by the Teeside Iron Company, Middlesbrough, and its delivery will very shortly commence. The cost of the bridge will approximate £13,000.

A handsome altar frontal and super-frontal, executed under the supervision of Sir Arthur W. Blomfield, A.R.A., and Sons, have just been placed in St. Mary's Church, Mortlake, S.W. The frontal, of red damask silk, comprises a device of lilies, with the sacred monogram, and a powdering of stars and pomegranates inclosed by very rich green orphreys The super-frontal is of red silk velvet, having three scrolls of pomegranates containing the word "Sanctus." It is the gift of the parishioners, and the work has been carried out by Mr. Alfred Stalman, of 67, Frith-street, Soho. The colouring is especially good, and it is satisfactory to know that it has been done entirely by English hands under Mr. Stalman's personal direction.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to The Strand Newspaper Company, Limited.

TERMS OF SUBSCRIPTION.

One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India, £1 6s. 0d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front-page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No Front-page or Paragraph Advertisement inserted for less than 5s.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page Advertisements and alterations in serial advertisements must reach the office by Tuesday morning to secure insertion.

Situations.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., LI., LIII., LIV., LVIII., LIX., LX., LXI., LXII., LXIII., LXIV., and LXV. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Received.—E. J. Sampson.—F. O. and Co.—Reg. Plumb. —C. J. W.—E. R. (Bedford).—J. R. B. Co.

Correspondence.

PROPOSED COUNTY INTERMEDIATE SCHOOLS, WELSHPOOL.

To the Editor of the Building News.

Sir,—Supplementary to the letter of Mr. J. H. Williams, appearing in your last issue, permit me to say: Having seen the advertisement in your columns inviting architects to submit competitive designs for the proposed schools, I applied to the clerk to the governors (Mr. E. L. R. Jones) for particulars, and, in reply, received a post-card asking the payment of half-a-crown for them. This sum I duly forwarded, and in course of post received a very rough, sketchy plan of the site, with the surface levels indicated thereon, and a reference to the positions of the water-mains and sewer; also a copy of the "prospectus (preliminary) of the County Intermediate Schools, Welshpool," the latter containing lists of the "governing body" and "teaching staff," the "school curriculum," "rules," &c., the latter *not being of the competition*, but of the school. Deeming the information thus furnished insufficient for the competition, and it being stated in the advertisement inviting designs that the clerk "will send copies of the school curriculum, *and give any other information to intending competitors*," I addressed to him the following questions:—

(1) Is a caretaker's house to be included in the designs?

(2) Are all the competitive drawings to be a uniform scale? If so, to what scale?

(3) Is there any suggested or fixed limit of cost of the proposed buildings? If so, what is the amount?

(4) Are any boundary walls to be included? If so, on what portions of the site?

(5) Are the main walls intended to be of stone or brick?

(6) Are the competitive designs to bear the authors' names, or are they to be submitted under motto?

If a proper code of instructions had been issued the above inquiries would have been unnecessary, and although a fortnight has elapsed since the questions were asked, they have not been accorded even a bare acknowledgment. As a protest against such discourtesy I have abandoned any intention of entering the competition, and would venture to suggest that the persons responsible for it may, with advantage, become pupils in the intended schools, to be instructed in the ordinary business courtesies of life.—I am, &c., Disgusted.

HALF-A-CROWN FOR COMPETITION CONDITIONS.

Sir,—Your correspondent of last week should consider himself fortunate in actually having his 2s. 6d. returned. In common, doubtless, with many others, I applied for the conditions of competition for the County Intermediate Schools, Welshpool, and in reply to a postcard request forwarded 2s. 6d. for same. In return I merely received a prospectus of the school, mentioning the terms of tuition, the school hours, &c., together with a litho. plan of the site, but absolutely no instructions regarding the drawings required, the accommodation to be provided for, materials to be used, or the competition generally. I then wrote to the secretary for further information, but my letter has not even been acknowledged. Is this a hoax?—I am, &c.,

Thomas A. Pole, A.R.I.B.A.

35, Bernard-street, W.C.

THE CONTRACTOR'S PRICE BOOK.

Sir,—This book, recently reviewed in your columns, is a most useful compilation. Its value, however, is limited by the omission of a schedule of the rates of wages on which the several prices have been based. As wages not only vary considerably in different parts of the kingdom, but fluctuate in any one district from time to time, information as to the scale adopted is essential for the proper use of the book. It appears from "Items" Nos. 3 and 4, p. 1 (the latter item being referred to constantly in the work), that the original intention was to give lists of the various wages. The author, Mr. de Vere Buckingham, would, I am sure, enhance the value of his book by giving in your pages the desired information.—I am, &c., Z.

◆

A new public hall built in Palmyra-square, Warrington, at the expense of Mr. J. Charlton Parr, and presented by him to the Warrington corporation, was formally opened on Sept. 26. In the large room sitting accommodation is provided for 1,500 persons. It is very lofty, has galleries on all sides, and is surrounded on every side by a corridor. In addition to all this, there are retiring-rooms and ante-rooms. The work was intrusted to a Warrington contractor (Mr. R. W. Collin), from the design of Mr. William Owen, architect, of the same town.

On Thursday in last week St. Matthew's Church, Smethwick, was reopened after being closed for five or six weeks for restoration, and the gifts which have been placed in the church as memorials of the late Capt. H. Mitchell were dedicated by the Bishop of Lichfield. The memorials consist of a stained-glass east "Crucifixion" window, by Mr. S. Evans, West Smethwick, at a cost of £150; a reredos at a cost of £75, a pulpit, a font, choir-stalls and clergy desks, marble and alabaster altar-railings, mosaic pavements, &c. The decorations were carried out by Mr. Coulton, Birmingham. Mr. J. Hardy, Smethwick, relaid the pavement in the aisles, and he has also altered the pews at his own expense. The whole of the work has been executed under the direction of Messrs. Wood and Kendrick, architects, West Bromwich.

Mr. J. H. Maden, M.P. for the Rossendale Division, christened the engines and started the one machine at present laid down at the Haslingden-grane Brick and Terracotta Company's Works on Saturday. The works are situated about half a mile above Grane Church. The plans have been executed by Messrs. Whittaker and Co., of Accrington. The land, which the company will work for shale, will subsequently be quarried by Mr. H. H. Bolton, who will lay a line from the works to join his existing railway running to the quarries. At present only one brick-making machine is down, but in a short time about eight machines will be at work. The company have taken half an acre of land so far, but have exclusive rights for a radius of four miles.

Intercommunication.

QUESTIONS.

[11433.]—**Steel Bridges (of 100ft. span, and, say, 40ft. wide).**—1. State the most economical proportion for depths of girders with regard to the span? (*a*) State formula for obtaining cross-sectional area at top and bottom boom respectively? (*b*) State the distance rivets should be placed apart in ordinary work? (*c*) The thickness of floor-plates generally adopted? (*d*) State the tensile strain per square inch steel should withstand? (*e*) State the elongation per cent. the same should withstand without fracture?—No Sig.

[11434.]—**Damp Cellar.**—Can any reader explain to me why some cellars in new houses should remain damp after being concreted? The bottom is hard dry sand, of Fox bench nature. The bottom was laid 3in. deep with stone-mason's chippings, and a large quantity of water put on and pounded down after. The top was cement and lime dust 1½in. thick, and seemed all right and nice to look at; but the top remains moist and damp after three months. Sometimes it looks fairly dry, but the damp comes again—in this very dry weather, too. I shall be thankful for any information.—James Brundrett.

[11435.]—**Glass-Lined Tubes, &c.**—The writer would like to know the names of any cast-iron glass-lined tubes, cisterns, &c., for holding water. Any information on the subject would be esteemed.—O. W. L.

CHIPS.

The new police-station in Bute-street, Cardiff, the last of a series of six district stations for the borough, was formally opened last week. It has cost about £5,000, exclusive of site, and has been erected by Messrs. W. Thomas and Co., West Bute Docks, from plans by Mr. W. Harpur, the borough engineer.

The Basingstoke Board of Guardians, at their last meeting, adopted, after a long discussion, a report by a special committee recommending the re-arrangement of the workhouse wards, and the erection of a new infirmary to accommodate 40 cases.

New premises to serve as a Church home and Sunday-school are being added to Christ Church, Blacklands, Hastings. Mr. A. W. Jeffery, of that town, is the architect, and Mr. Warman, the builder. The outlay will be £1,300.

The National Free Labour Association claims to have a membership of 130,000, chiefly drawn from the building trades.

The Manchester and Salford Sanitary Association have obtained a report from Mr. William Thomson, F.C.S., on the Thirlmere water, which will be satisfactory to the corporation of Manchester. Mr. Thomson was requested to test the supply. The water does not, he finds, dissolve any metallic lead, and is, therefore, quite as safe as the former Manchester water.

The urban district council of Gainsborough have decided that the services of Mr. Jabez Church be called in for the purpose of supervising the work of the new reservoir, an amendment asking the council's surveyor to do the work being lost.

Owing to an outbreak of fever in Grantham, temporary hospitals have been erected at very short notice, the same being warmed and ventilated by Shorlands' patent Manchester stoves, specially designed for such buildings.

At a meeting of the Dale Memorial Committee held in Birmingham on Friday it was decided that the public memorial to the late Dr. W. R. Dale should take the form of a seated statue in marble, which, when completed, will be placed in the Art Gallery in that city. The commission will be given to Mr. Onslow Ford, R A., and it is anticipated that it will be executed in about two years.

According to the estimate of the Leeds city engineer (Mr. T. Hewson), the cost of the lands and buildings proposed to be acquired by the sanitary committee for the purpose of improving a portion of East Leeds will be about £129,185. For alterations and the making of new streets there will have to be added the sum of £36,259, but the deduction of £58,473 for surplus land will leave the net expenditure £106,971.

The death is announced of Mr. William Frye, the senior inspector of the Department of Buildings of Boston, Mass. Mr. Frye was a native of Salem, and, after serving his apprenticeship, established himself at Boston as a builder. For some time he was associated with Nathaniel Adams, a noted builder of the last generation; but in 1873, soon after the establishment of the Department of Buildings, he was appointed inspector, and placed in charge of the mercantile district, by far the most important in the city.

In a few weeks' time there will be laid before the Corporation of Stockton a large scheme, which will provide for the construction of a road along some two miles and a half of the river frontage towards Haverton-hill, which, it is anticipated, will tend to largely develop the town by attracting fresh industries to it.

Legal.

THE RATING OF PARKS.

THE question of the rateability of local parks, gardens, and the like, which are really open for the public benefit, is one of much interest and importance, especially to ratepayers. The whole matter was gone into very fully by Mr. Baron Pollock and Mr. Justice Wright in the recent case of Brockwell Park (*Times*, Aug. 9, 1895), where the London County Council appealed against the rating assessment. It appeared that this park of 78 acres was kept by the Council as a public park and recreation ground for the perpetual use of the people. There was a house on the land used for various public purposes, and a lodge and a cottage, in which constables and keepers lived rent free. The grazing was let, but the whole income from this and other sources was less than the £2,000 a year which it cost to keep up the place. The Council were assessed separately upon the land, house, lodge, and cottage at a gross estimated rental of £406, and rateable value of £359. From this the Council appealed, and the question was whether they were rateable at all in respect of this public park and houses thereon, and if so, upon what basis.

The Court delivered a considered judgment, going very carefully into all the authorities. They began by laying it down that there are no absolute exemptions from rateability except by express statute, or where land is appropriated to purposes of public government. With these exceptions all land is rateable if its occupation is, or can be, beneficial, even though its purpose is merely fiduciary. This value may be little or nothing; but still the statutory test of what it is worth to let by the year must be applied, if possible. It was formerly held that there was no beneficial occupation in the case of lands used for local public purposes; but that doctrine has been upset by recent decisions, and it is now established that the local authority itself must in general be taken into account as a possible tenant, to whom the occupation may be beneficial if not profitable. In other words, even here the statutory test may be applied, for it might be worth while to pay a rent for what it is necessary or beneficial to have, without reference to pecuniary profit or loss. The Council would, in fact, be willing to pay more rent rather than forego this park, which is valuable to the public for the purposes of recreation. The Court, therefore, held that the Council must be rated for the park and premises in one assessment, and they sent the case back again to value their beneficial occupation upon certain stated principles.

Fred. Wetherfield, Solicitor.

1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

J. J. B.—House.—Windows.—Liability.—Broken windows would be damages to the premises which the tenant must make good, and for which he would be legally liable, quite apart from any question or agreement as to repairs.

◆

The returns at the Auction Mart, Tokenhouse-yard, are improving. The aggregate for last week was £66,683.

At the Southwark Police-court on Thursday in last week George Baxter, of 1, Frederick's-place, Old Jewry, was fined £5 and costs, at the instance of St. Olave's Board of Works, for having defective drains at 10, Curley-street, Southwark.

At the Manchester Consistory Court on Friday a faculty was granted to take down the east wall of St. Mary's Chapel-of-Ease, Todmorden, and to build a new chancel; to build a vestry and organ-chamber on the south side of the chancel, to form a choir vestry and parish room under the chancel, to rearrange the heating apparatus, to turn the lower part of the tower into a baptistery and to place a new font therein, and to build a porch to protect the present door of the nave.

The foundation-stone of St. Mark's new schools, in Great Brickkiln-street and Humber-road, Wolverhampton, was laid on Thursday in last week. The existing schools were provided in 1848 at a cost of £1,500, and accommodate 480 children. They are, however, deemed inadequate by the Education Department. A site of 2,400 square yards was purchased from Lord Barnard for £233, and the new schools, which are to accommodate 570 children, will cost £2,500. The contract is held by Mr. H. Gough, and the architect is Mr. J. Lavender.

LEGAL INTELLIGENCE.

The New Railway to London.—Compensation Case.—At the London Sheriff's Court, Bloomsbury, on Tuesday, before Mr. Under-Sheriff Burchell and a special jury, the case of "Johnson v. the Manchester, Sheffield, and Lincolnshire Railway Company" came on for hearing. Mr. W. Ed. Johnson, dentist, of Newton Lodge, Finchley New-road, St. John's Wood, claimed from the railway company £2,205 as compensation for the destruction of his premises due to the construction of the Manchester, Sheffield, and Lincolnshire Railway Company's extension to St. John's Wood. For the claimant, Sir J. Whittaker Ellis estimated the damage at £1,300, and it is stated that the Board of Trade estimate was £520. The jury viewed the premises, and at the conclusion of the case assessed the damages at £1,000.

CHIPS.

The plans of the new baths and gymnasium, which Mr. Thomson Paton, of Norwood, has agreed to erect and present to the town of Alloa, have been passed by the Dean of Guild Court, and the work will be proceeded with shortly.

The town hall for West Ham, in Stratford Broadway, is undergoing renovation and redecoration under the supervision of Mr. Lewis Angell, the borough engineer, at an estimated cost of £1,900.

At Delabole granite quarries an important departure—or, rather, extension—is about to be made in the manufacture of "slate bricks."

The corporation electric-lighting station and installation in the streets at Stafford will be formally inaugurated by the mayor on Tuesday week, the 15th inst.

At the annual meeting in London of the South-West Africa Company, on Friday, the chairman said that already 315 miles of the proposed railway from the coast to Bechuanaland had been surveyed, and the country appeared to present no engineering difficulties whatever.

Mr. James Mansergh, M.Inst.C E., is to receive from the city council of Toronto a fee of £3,000 for his report on the waterworks system of the city, which will take him a month to complete.

At the West U.P. Church at Kinross, a new organ, designed and built by Messrs. C. and F. Hamilton, of Edinburgh, was opened on Sunday.

At a meeting of the committee of the Sunday Society, at the Prince's Rooms, on Monday night, Professor Corfield in the chair, letters were read from 44 clergymen and Nonconformist ministers, promising to preach on Museum Sunday, Nov. 3, while the Council of University College and the Governors of Dulwich College wrote to say that their art collections would be opened to the members of the society on the occasion. Upwards of 80 museums, art galleries, and libraries will be open on this year's "Museum Sunday."

The picture by Mr. Phil. Morris, R.A., which was exhibited at the Royal National Eisteddfod, held at Carnarvon last year, and which represents Edward I. showing his infant son to the Welsh people, has been purchased by public subscription, and placed in the public library of Carnarvon.

The magistrates of Sheffield have refused to license the Empire Palace of Varieties, which has just been erected in the city, to accommodate an audience of 3,500 people, and at a cost, including the site, of £65,000. The theatre, which has frontages to Pinstone, Union, and Charles streets, is faced with red bricks and stone. Mr. Frank Matcham, of London, was the architect, and Messrs. Longden and Son, of Neepsend, Sheffield, were the contractors.

Several archæological discoveries have been made at Monkswood, near Bath, where a reservoir is being constructed to supplement the water supply of the city. An iron hatchet has been found in the peat, with a handle formed of a human leg bone. Round the socket is a rough ferrule of lead. The metal head was kept firm by means of wooden plugs, traces of which were found clinging to the iron. Oolitic flint hammer-heads and an interesting collection of bronze weapons and articles of personal adornment have also been brought to light. These discoveries have been inspected by Professor Boyd Dawkins. The excavations are in the charge of Mr. Charles Gilby, city engineer of Bath.

A private meeting of the Wolverhampton Town Council in committee was held on Monday to consider the report which had been prepared by the borough engineer, Mr. Bradley, with regard to the substitution of the waste-water closet for the pan system. It is estimated that the conversion will cost about £30,000, and the General Purposes Committee recommended that the change be made. The question was discussed for over two hours, and ultimately it was decided to refer the matter to the committee again for further information to be obtained.

WATER SUPPLY AND SANITARY MATTERS.

Birmingham.—At their meeting, on Tuesday, the city council of Birmingham authorised the water committee to promote a Bill in Parliament empowering the corporation to acquire sites for the deposit of spoil from the aqueduct works in connection with the Welsh scheme, and to construct a line of railway from Rubery Station to the site of the proposed reservoir at Frankley. It was explained that, when the reservoir was first projected, Mr. Gray, then the water engineer, was of opinion that a sufficient quantity of clay would be found on the site to make the lining, even if the soil was not of such an impervious character as not to require lining; but when Mr. Mansergh sank a number of trial holes, it was found that the quantity of clay there was comparatively small, and the quality was not of such a character as to encourage him to use it. It had therefore been decided to line the reservoir with concrete, with a surface of asphalte. For this some 200,000 tons of stone would be required, and it would have to be brought from two quarries in the neighbourhood of Rubery Station. A railway would therefore bring the material at a far less cost of haulage than would be entailed by haulage with carts. It would also be available for the bricks, the ironwork, and machinery for the pumping machinery, the sand for the filter-beds, and the coal for the pumping.

East London Water Supply.—The inquiry directed by the Local Government Board into the causes of the deficient supply of water to the inhabitants of East London during June, July, and August was opened on Tuesday at the Hackney Town Hall. Among the witnesses called were several medical officers of health. Dr. Warry, of Hackney, said the death-rate of that district rose above the average of the rest of London, and there was nothing to account for this but the want of water. Counsel for the East London Water Company admitted that a constant supply had had to be replaced by an intermittent one; but said this was due first to the drought, and secondly to the obstruction of the Company's Bill in Parliament. On Wednesday, Dr. G. P. Bate, medical officer for Bethnal Green, said that in June, July, and August there was a great scarcity of water, and an increase in the rate of mortality. Dr. Taylor, medical officer for Mile-End, and Dr. V. Rygate, medical officer for St. George's district, gave similar testimony. Mr. F. W. Barrett, surveyor for Bethnal Green, said there was enormous waste of water through the negligence of the company. Mr. James Lovegrove, chief surveyor to the Hackney Vestry for the past 39 years, stated that between Jan. 1 and April 30 this year there were 1,536 permits applied for by the water company to open the roadway for the repair of their pipes. In the same period for 1893 there were 514 applications, and in 1894, 509 permits were granted. The average depth of the mains varied from 1ft. 6in. to 3ft. In Terrace-road there was a 4in. main, which was at a depth of 1ft. 9in. Mr. J. M. Knight, for the past 27 years surveyor to the Mile-End Vestry, Mr. Dawson, surveyor for the Leyton district, and a number of sanitary officers of the various East-end parishes spoke to the serious inconvenience experienced by the poorer population through the deficient water supply. The case for the petitioners having closed, the Court adjourned.

Edinburgh.—The New Talla Water Supply.—The Edinburgh and District Water Trust carried out on Saturday the inauguration ceremony that signalises the commencement of the great undertaking by which the Talla, one of the head-waters of the Tweed, is to be made available for the supply of an ever-increasing population. The party proceeded by rail to Broughton, near Peebles, whence an eight-mile drive along Tweedside took them to the portion of the Talla and Tweed where the first sod was turned. The trustees will facilitate the operation of raising their embankment across the valley of the Talla by constructing a permanent railway down Tweedside to Broughton, and a permanent bridge to carry the railway and pipes will be thrown across the Tweed at the site selected for the inaugural ceremony. The present scheme is designed to afford a supply of twenty-four million gallons of water per day. A first instalment of eight millions per day is to be drawn from the Talla, and fifty million gallons per day will ultimately be obtained, which will supply a population of 1,250,000 in addition to the present population of 387,000, allowing forty gallons per head to each person. Mr. Wilson is the engineer, and Messrs. James Young and Sons are the contractors.

Leeds.—The corporation of this city have under consideration a report by the sanitary committee recommending that an application be made to the Local Government Board under the Housing of the Working Classes Act, 1890, for powers to take over, demolish, improve, and otherwise deal with one-third of an insanitary area in East Leeds. The portion selected is bounded on one side by the whole of Marsh-lane and part of Kirkgate, and on the other by High-street and Dyer-street, and comprises Duke-street, Off-street, Brussels-street, Stainburn-square, Sykes-place, and St. Peter's-square, and it is estimated to contain 78,795 square yards. There are several mills and manufactories within the boundaries above named, and these will not be interfered with, but it is proposed to make a wholesale clearance of the house property, and to improve the locality by constructing a number of fairly wide streets, in order that the new cottages to be afterwards built may be supplied with as much fresh air as possible.

Newark.—At the invitation of the mayor of Newark the members of the Corporation have paid a visit of inspection to the new waterworks at Farnsfield. Mr. Rolfe, engineer, accompanied the party, and explained the working of the various parts of the scheme. The town of Newark and the outlying villages, which are taking water from the corporation, are being supplied at present by temporary machinery, but the permanent plant is fast nearing completion. The two beam-engines which are being erected were explained by Mr. Rowe (representative of Messrs. Watt and Co., the makers). They will run at 16½ revolutions a minute, each pumping a million gallons per 24 hours. There are three boilers of large dimensions, and the water has to be forced from the works to Newark and Balderton, a distance of 12 to 14 miles. All the buildings, engine-sheds, walls, reservoirs, workmen's cottages, &c., are now completed. The entire cost of the undertaking has been about £56,000.

Mr. Edward Smith, the Master of the Carpenters' Company, will distribute the prizes to-day (Friday) to the students of the architectural classes held at King's College, Strand, under the direction of Professor Banister Fletcher and his son. The Rev. Henry Wace, D.D., will preside.

The Birmingham Arts Club closed its doors on Saturday night, and its rooms are now in possession of the bailiffs. Besides the landlord, several tradesmen have claims against the committee. The club was opened five years ago with a membership of 700, but owing to loss of interest of members, the number on the roll has been reduced to comparatively small dimensions. The Arts was unique in Birmingham club life, inasmuch as it was the only one that was open on Sundays.

The unveiling of the memorial to the late Primate of Ireland, the Most Rev. Dr. R. B. Knox, which consists of a portrait bust by Mr. Joseph Whitehead, and is to be placed in a carved marble niche, takes place in Armagh Cathedral on Monday next.

The annual scholarship of the Royal Drawing Society has been awarded to Miss P. T. Pawson, of the Sutton High School.

At the forthcoming inauguration of the new University buildings at Aberdeen, it is proposed to confer the honorary degree of LL.D. upon Mr. Alexander Ross, architect and antiquarian writer, Provost of Inverness; and on Mr. Cecil Harcourt Smith, department of Greek and Roman archæology, British Museum.

The nineteenth annual report of the School of Drawing and Painting of the Museum of Fine Arts at Boston, Mass., shows a very satisfactory condition of affairs. During the past year 214 pupils were enrolled on the school lists, and the treasurer's accounts show a balance of receipts over expenses. The pupils come mainly from New England, but some were drawn from Wisconsin, Illinois, and Michigan.

Plans have been prepared for the extension and improvement of the North British Railway Station at Craigendoran Pier, Helensburgh, the starting-point of the railway's fleet of Clyde steamers. Provision will be made for another pierhead platform, and for extra coal sidings. It is also proposed to enlarge the quay accommodation by extending the quay further seawards.

The French Budget Committee, who are retrenching vigorously in view of the outlay in Madagascar, propose to sell the building in the Place Vendome for about £125,000. The Hôtel des Invalides is now to be used in the future as a home for veterans.

The opening of the Medical Session on Tuesday was marked at the Medical School attached to the London Hospital by the formal presentation to that institution of a subscription portrait of Dr. J. Hughlings Jackson, F.R.S., painted by Mr. Lance Calkin.

Mr. Alderman William Powell, the Mayor of Basingstoke, was entertained at dinner in the drill-hall of that borough on Tuesday night in last week, when he was presented with a chiming clock, cruet, inkstand, and other plate, subscribed for by upwards of 650 inhabitants, as a mark of appreciation of the manner in which he has discharged the duties during his year of office.

Our Office Table.

The forthcoming publishing season is to include the following works due to the enterprise of Mr. T. B. Batsford, who hopes to have out his folio of collotypes illustrating "London Churches of the Renaissance Period," chiefly from the City, with descriptions written by Mr. Geo. H. Birch, F.S.A., the Curator of the Soane Museum. Mr. Lewis F. Day is the author of a fully illustrated work on Decorative Glass; Mr. Anderson, of Glasgow, is doing a students' book on "The Renaissance Architecture of Italy"; and "Plastering, Plain and Decorative," is the title of another textbook with 50 plates which ought to be interesting. "The Architecture of the Later Renaissance in England," in similar form to Gotch's big folio, is in course of preparation, under the direction of Mr. J. Belcher and Mr. M. E. Macartney. Mr. Batsford has also a series of photographs in hand of the "Payre" and other collections of woodwork, to be issued in portfolios. This, if really done well and to scale, showing the detail of the ornament clearly, may depend upon an appreciative number of subscribers.

The following were the resolutions passed at the Firemen's International Congress held last week at Amsterdam:—(1) Proposed by M. Bruyn, of Amsterdam.—"The flash-point of mineral oils to be above 40° (test Abeli)." (2) Proposed by Mr. Edwin O. Sachs, of London.—"It is part of the duties of fire departments to see to minimising the water damage at fires, and each fire department should have its own salvage section." (3) Proposed by M. Huygen, of Rotterdam.—"That insurance companies should lessen their rates for public buildings supplied with some central systems of heating." (4) Proposed by Mr. Edwin O. Sachs, of London.—"That the good planning of theatres is of more importance to the audiences than the materials of which they are made, and that permanent fire-watchers in theatres are of more importance than regular official inspections." (5) Proposed by M. Cacheux, of Puys.—"That public authorities should insist on householders having means of self-help in case of fire."

Some particulars of the work already accomplished by the London Survey Committee are furnished by the secretary, Mr. Ernest Godman, of Essex House, Bow, in the current issue of the *A.A. Notes*. The object is to prepare a register of the old and interesting buildings of Greater London and Suburban Essex, and to publish an illustrative series of monographs with plans and measured drawings of some of the principal remains. Since the commencement of the work in May, 1894, the Survey Committee have visited, for the purpose of recording in the Register, some two hundred houses and buildings of interest in the district east and north of London, within a distance of about twelve miles from it. The collection of sketches, photographs, and drawings already made numbers close on three hundred, and is open for the inspection of any who may wish to see it. The actual Register, which will contain the record of work done, together with reproductions of the most important of these illustrations, will, it is hoped, be ready for publication in the course of a few weeks. After the completion of this first part of the work, it is proposed to extend the survey to the district of Chelsea and neighbourhood, and to form a local committee having its centre at Chelsea.

The School of Art Woodcarving, Central Technical College, Exhibition-road, South Kensington, has been reopened after the usual summer vacation, and we are requested to state that one or two of the free studentships in the evening classes, maintained by means of funds granted to the school by the City and Guilds of London Institute, are vacant. To bring the benefits of the school within the reach of artisans, a remission of half fees for the evening class is made to artisan students connected with the wood-carving trade. Forms of application for the free studentships and any further particulars relating to the school may be obtained from the manager.

The work of excavating the Roman city at Silchester, which is being gradually proceeded with as funds permit, has yielded very interesting results during the present season. The digging has this year been confined to a block of buildings between the Basilica and the West Gate. This space was occupied by two large buildings, which were probably the residences of two of the chief citizens. Both houses had apartments for summer and winter use, the latter being warmed by a system of hot-air passages. The well-wrought tesselated pavements in the summer apartments are in excellent preservation. None of the tesseræ are more than ½in. square. Fragments of the glass from the windows and pieces of the coloured plaster from the walls have been found, as well as a bronze stylus, spoons, tweezers, and fibulæ for the clothes, of excellent workmanship; many coins, pieces of the rare highly-glazed Samian pottery ware, the black ware from Upchurch, variegated pottery from Caistor; steel-yard weights, and portions of mortars.

A difficulty has arisen respecting the erection of the new building of the Royal Alexandra Children's Hospital and Convalescent Home at Rhyl, the foundation-stone of which was laid in July, 1894, by the Princess of Wales. The proposed new building, which is to cost £15,000, is to be erected from plans by Messrs. Waterhouse and Son, of London, on the site of the old hospital which stands on the Promenade at Rhyl. For a long time past the local authority tried to induce the hospital committee, of which the Duke of Westminster is a member, to erect the building on another site, so that the Rhyl sea-front might be clear of obstructions; but failing in this, they negotiated to have the building set back. Fresh difficulties have now arisen, and the owners of property near the hospital will avail themselves of every legitimate means to prevent the hospital being re-erected on the sea front. The urban district council and the owners of property have twice petitioned the Duke of Westminster to use his influence to have a new site selected, and now await his reply.

An appeal is being made by the Vicar of Dedham for £500 for the restoration of the noble tower of his parish church, well known to all lovers of Constable's paintings, and the principal feature in the landscape of the Vale of Dedham. A report has been received from Mr. J. T. Micklethwaite, F.S.A., of Dean's-yard, who states that the roof is in a very bad condition, the massive timber-work upon which the stability of the tower depends being much decayed. The stonework of the four great windows, and also that of the smaller ones, is very dilapidated, the oak louvre-boards and framework need repair. The cracks in the walls, which are an old trouble, show signs of widening, and must be dealt with at once. If the work is not speedily executed it is alleged serious disaster may result. The fabric of the church, nave, aisles, and clerestories has been completely repaired within the last ten years, and upon the interior and exterior work the parishioners themselves have spent £1,650.

At the last session of the Edinburgh Dean of Guild Court, plans were submitted for the new chimney which is to replace the well-known shaft 329ft. high now existing at New-street gas-works. It was explained that the engineer now proposed to erect a flue 250ft. in height, the first proposal to carry it up only 160ft. not giving sufficient draught. Dean of Guild Miller said the position in which the commissioners now proposed to put the chimney was a good deal better than the former one. The Court did not wish to delay the construction in any way, but they thought that a chimney 200ft. high might be sufficient. Another point was, that there was no reason why it should not be a handsome chimney. It would be conspicuous, and the Court strongly urged the Gas Commissioners to employ an architect, and give it a little more architectural character. That would not cost much, and it would improve the chimney immensely. In the meantime, the Court would grant warrant to build up to the first intake. Mr. Masterton, for the commissioners, agreed to lay the suggestions of the Court before the commissioners, it being explained that the portion for which warrant was granted was 20ft. or 30ft. in height, and would take several weeks to build.

Some useful remarks are made in an article on "Surveying and Mapping a City," by Mr. C. H. Rice, in the *Engineering Magazine*. Speaking of triangular systems, Mr. Rice refers to the bases or measured lines used at Baltimore, two in number; these were measured with a tape 300ft. long, supported on pulleys at intervals of 20ft. "The pulleys were hung on wooden supports, carefully set in line and grade. The tension was measured by spring balances, and the temperature read at three different points on the tape every time it was suspended. The constants for the tape, its length at a standard temperature (62° Fahr.), rate of expansion per degree, &c., were determined by comparison with the Mount Royal standard. The work was done at night, to reduce the temperature correction to as small a quantity as possible. Each base-line was about 7,000ft. in length." The writer gives the many uses to which city maps may be put. A map on a scale of 500ft. to one inch, with contours every 5ft., is useful, and sufficient for street improvements, sewering, &c. Those on a scale of 200ft. to one inch would show all buildings and fences, and wood, grass, or cultivated ground. Real estate owners would make use of such a map, as well as engineers and architects, for street locations, drainage, &c. Maps 100ft. to one inch would show everything on the surface of ground—sewers, gas, water-mains, electric conduits, &c. Engineering problems could be worked out on them. Lastly, those drawn to a scale of 40ft. to one inch (24 streets to a square mile) would show even the ground plans of buildings, materials of which they are built, number of stories, owners' names, and would be invaluable to all architects and house-agents.

The inauguration of the scheme for cutting a ship canal from Bruges to Heyst, was celebrated with many festivities on Sunday. The canal, which is to be constructed for the Belgian Government, will be six miles in length, and will be cut in a direct line from Bruges to Heyst, a village 14 miles north of Ostend. It will accommodate vessels of 6,000 tons register, and on either side will be flanked by a railway, also laid at the cost of the State. At Heyst an absolutely new port will be constructed on a scale large enough to accommodate at one time from 12 to 15 of the largest Atlantic steamers, and it will be protected by a breakwater, already commenced, and will stretch some two miles or more into the sea. The contract for the canal works has been taken by Messrs. Coiseau and Cousin, at about £1,560,000 sterling.

Work has just commenced on the Seattle and Lake Washington Canal, which is to connect the Puget Sound with the fresh water lake, Lake Washington. It includes the excavation of two waterways, each about one mile long and 1,000ft. wide, from deep water through the tide flats of Elliott Bay; two waterways connecting the east and west waterways with the mouth of the west channel of the Duwamish River; a canal waterway about one mile long and 218ft. wide, from the head of the east waterway to the shore line; a canal through the upland 80ft. wide at the bottom, in a direct line nearly two miles to Lake Washington, and the filling to a level of 2ft. above high tide of 1,525 acres of tidal land with the excavated material. The two main waterways and the canal are to be excavated to a depth of 26ft. at low tide, the canal itself to 30ft., and the Duwamish waterways to 12ft. The amount of material to be excavated is 36,000,000 cubic yards, just about enough to do the filling required. While the east and west waterways will be 1,000ft. wide, the space clear from traffic will be only 552ft. between the pier head lines, the remaining 448ft. being allowed for the extension of wharves and slips.

The inauguration of the great bridge over the Danube connecting Tchernavoda with Fetesti took place on Sept. 26th. The work has been completed within five years and a half, having been begun in 1890. Its construction has been superintended by M. Saligny, the inspector-general of Roumanian railways. The total cost of the work amounts to £1,350,000 sterling. The structure consists of three viaducts and two bridges properly so called. The principal bridge crosses the main stream of the Danube at Tchernavoda, while the other spans an arm of the river called Borcea am Fetesti. The two bridges are connected by a viaduct and an embankment running across the Island Balta, which is submerged at high water. The two other viaducts form approaches to the main bridge from either side and are rendered necessary by the height of the structure and by inundations to which the country on either side is liable. The superstructure of the bridges is of steel, with cantilevers resting on gigantic piers. The height of the principal bridge is 95ft. above high-water level, thus leaving navigation free for the largest vessels. The height of the smaller bridge is 40ft. The foundations are laid on piles driven to a depth of from 38ft. to 70ft. below the bed of the river. The viaducts are of masonry. Their combined length is 9,300ft., which added to 6,625ft., the length of the two bridges, gives a total length of 15,925ft., or a little over three miles.

As a result of nearly 40,000 tests of timber made at the laboratory of the Washington University at St. Louis, under the direction of the forestry division of the Department of Agriculture, the following facts have been determined: Seasoned timber is about twice as strong as green timber, but well-seasoned timber loses its strength with the absorption of moisture; timbers of large sections have equal strength per square inch with small ones, when they are equally free from blemish; knots are as great a source of weakness in a column as in a beam; long-leafed pine is stronger than the average oak, and bleeding timber does not impair its qualities.

By the merest accident (an American journal remarks) the cause of an acoustical defect, which had been attributed to faulty construction, was recently discovered in Trinity Church, Pittsburg, Penn. A magnificent organ had proved a disappointment, there being a lack of volume and a slightly muffled effect. This was ascribed to the position of the organ. It recently happened that the church was undergoing a thorough repairing and cleaning. The ingrain carpet and padding had been taken up. It was then noticed that the volume of sound from the organ was increased, and that the muffled sound had entirely disappeared. The cause was thus, to the surprise of all, discovered to be in the carpet. A narrow strip of matting, or tiles, will be substituted for the carpet in the aisles. Perhaps the defective acoustics in other buildings may be found to arise from a similar cause.

◆

Sir Benjamin Baker, the president of the Institution of Civil Engineers, has been elected as one of the three trustees of the benevolent fund attached to the Institution, in succession to the late Mr. Alfred Giles, a past president, and formerly M.P. for Southampton.

The Harrogate Town Council resolved, on Tuesday, to borrow £23,500 for works and plant for the electric-light installation, and £1,500 for street lighting. It was also decided to borrow £1,500 for the construction of an underground lavatory and conveniences on the Stray, on Prospect-hill; £150 for additional sanitary conveniences in the Victoria Baths; £4,000 for the construction of ten additional reservoirs for storing sulphur water; and £3,000 for the purchase of land in Beckwith, for obtaining therefrom a further supply of sulphur water—altogether a total of £36,500.

The Mayor of Brighton laid, on Wednerday, the foundation stone of a technical institute, which is to be erected in that town at a cost of £26,000. The Brighton Corporation is now training in technical knowledge 1,100 scholars in various schools.

Saxby Parish Church, Lincolnshire, was opened, after renovation, on Thursday in last week. This is one of the few Georgian churches in the neighbourhood. It is built with the Roche Abbey stone, which was second in selection for the Houses of Parliament.

The proposed extension of the promenade was again before the Blackpool Town Council on Tuesday, and. after a discussion, it was decided that a sum of £20,000 be expended in commencing a scheme for widening the carriage drive seawards to an extent of 60ft., the first section to be at the South Shore.

Mr. Scaping, of Grimsby, is the architect of the extensions now being made to the Heneage and Welholme Board Schools in that town, and estimated to provide 600 and 480 additional school places respectively.

The urban district council of Rugeley decided, on Tuesday, to offer a sum of 50 guineas as a premium for the best scheme for the disposal of the sewage, the present sewers as far as practicable to be utilised and properly ventilated. The premiums are to be merged in the sum paid for carrying out the scheme should the author be appointed as the engineer.

Mr. R. Walton, an inspector from the Local Government Board, held an inquiry at the town hall, Halifax, on Tuesday, relative to an application from the Halifax Town Council for powers to borrow £11,000 for street improvements in Pellon-lane, Bull-green, Skircoat Green-road, Bull Close-lane, Carlton-street, and Blackwall. There was no opposition to the proposals.

Mr. Walter Money, F.S.A., of Newbury, writes to point out the injury done to church towers by change-ringing on the peals of bells. The performance is, he says, merely a mechanical one, and quite foreign to the original purpose of these ancient heralds of the church.

MEETINGS FOR THE ENSUING WEEK.

Monday.—Society of Engineers. "Relative Value of Percolation Gauges," by Reginald E. Middleton. United Service Institution, Whitehall. 7.30 p.m.
Liverpool Architectural Society. Opening address by the President, Alfred Culshaw. 7 p.m.
Tuesday.—Sheffield Society of Architects and Surveyors. Opening conversazione. Address by the President, Chas. Hadfield.
Friday.—Architectural Association. Annual meeting. Address by the President, W. D. Caröe and presentation of prizes. 7.30 p.m.

CHIPS.

The Alexandria Municipal Museum was opened on Friday by the Khedive.

The Bristol Town Council discussed for over three hours on Friday the Docks Committee's proposals for constructing railways to the timber-yards, and crossing the river by railway and foot-bridges; also for providing coal-tips. A motion was made to postpone action until Mr. Wolfe Barry's report on river improvements was forthcoming; but this was rejected by 34 votes to 17, and the committee's report was then adopted without a division. The remaining part of the committee's scheme, dealing with additional accommodation for pleasure steamers, was adjourned till Monday, when, after much discussion, it was also adopted.

A proposal is to be submitted to the Hull Town Council for the erection of cold storage buildings near the Alexandra Dock, at a cost of about £40,000.

A new hall has been added the Connaught Institute, in Lewes-road, Brighton, at a net cost of £3,650. It accommodates 1,200 persons, and has a frontage to Melbourne-street. Mr. J. G. Gibbins is the architect, and Mr. William Willett the builder.

The parish church of Ingworth, Norfolk, is undergoing re-roofing and other restorations from plans by Mr. Herbert Green, of Norwich. Mr. R. W. Riches, of Postwick, is the builder. Funds will not permit of the rebuilding of the tower, which fell many years ago, so it is proposed simply to repair the bellcote on the western gable.

The Bishop of Durham performed the rededication service of the parish church of Stockton on Friday. The present stage of the restoration scheme has been completed at a cost of £3,000.

The Hanley Town Council decided on Tuesday, by 13 votes to 8, "that no contracts for corporation work be given to firms paying less than the standard rate of wages of their district, and that the same be notified when advertising for tenders."

A stained-glass window, representing the Annunciation, has been placed in the south aisle of Preston Candover Church, near Basingstoke, which has also been enriched with a second three-light window containing figures of Noah, Daniel, and Job, and with a font-cover of wrought-iron work. The above windows, as well as the rest in the church, were designed and executed by Messrs. Heaton, Butler, and Bayne, of Garrick-street, Covent Garden, and the font-cover is by Messrs. Shrivell and Co., Castle-street, Long-acre.

Mr. John Lysaght, the proprietor of the extensive galvanised iron and spelter works at Bristol, and also of the Swan Gardens Ironworks and the Roller Mills at Wolverhampton, employing in all 2,700 hands, died on Tuesday at his residence at Springfort, Stoke Bishop, at the age of 64, after a throat affection lasting over twelve months. He was a magistrate for Bristol, and in 1883 served as high sheriff, and was more widely known as a yachtsman.

Colonel Coke, M.I.C.E., Local Government Board inspector, inspected, on Wednesday week, the water supply and sewerage schemes which, at a cost of £3,000, are being carried out at Hatherleigh, and which are now approaching completion.

The memorial stones of a new Baptist chapel, which is to be erected at Stoke St. Gregory, West Somerset, were laid on Thursday in last week. Mr. Pople, of Burnham, is the contractor, and the outlay will be £1,500.

It is proposed to restore the parish church of St. Paul, Deptford. Towards the £2,000 wanted over £1,300 has been subscribed.

Mr. Jabez Lowes Sears, for years a well-known architect of Boston, Mass., died at Brookline on September 15.

A stained-glass window, representing the Good Shepherd and the Good Samaritan, has been placed in the chancel of Brewood Church.

A new vicarage is in course of erection in connection with Holy Trinity Church, Birchfield, near Handsworth. The builder is Mr. George Trentham, whose tender was accepted at £1,614.

At Aberdeen, on Friday, the Plans Committee of the Town Council sanctioned plans of new buildings to the value of £4,000.

Trade News.

WAGES MOVEMENTS.

Falkirk.—As a result of the strike among Falkirk joiners, the masters are placing orders with wood merchants in Bo'ness who turn out manufactured goods. The strikers are consequently making efforts to get the Bo'ness joiners to stop work.

◆

Lord Wolseley will open the new rifle range provided for the Nottingham regiment of Volunteers (the Robin Hoods) on Thursday, November 7. The range adjoins Trent Station, on the Midland Railway, about midway between Nottingham and Derby, and is the first provided under the Military Lands Act, 1892. The Nottingham Corporation obtained the sanction of the Local Government Board for a loan of £16,000 to cover the cost of the land and the building of the range. Messrs. Brevill and Bailey were appointed the architects, Major Brevill being an active officer of the battalion, and the range, with the necessary buildings, is now approaching completion.

Backed by the grant of no less than a hundred and thirty lakhs of rupees, or more than a million and a quarter sterling at par, Mr. Lee Pogson, C.E., has at last succeeded in giving the port of Madras a still and deep harbour for the second time. The first was washed away by the cyclone of November, 1881, after it had cost more than half a million sterling. Since 1885 Mr. Lee Pogson has been carrying on the instructions of the local government and the Secretary of State for India, and has now created a haven, protected by two piers of concrete blocks which run out into the Bay of Bengal for about 4,000ft., with an eastern entrance 515½ft. broad, and inclosing a depth of 39ft. of peaceful water.

The building committee of the Congregational church about to be built in Hartington-road, Liverpool, have resolved to accept the tender of Messrs. Paterson and Son, and Messrs. Hay, the architects, were instructed to make arrangements for the commencement of the work. The church, which will accommodate about 500 people, consists of nave and transepts, with apsidal east end containing vestries and organ-chamber opening out with large arch into the body of the church, the whole terminating at the west end in a spire. The exterior of the building will be faced with Doulton's pressed brick with freestone dressings. The amount of the accepted tender is £3,079.

The first sod of the Budleigh Salterton Railway will be cut in about a fortnight's time by Lady Gertrude Rolle. The contract has been placed with Mr. John Aird, of London. The contractor, accompanied by Mr. Chamier, agent of the Rolle Estate, went on Friday over the route which will be taken by the line, and the contractor has made the necessary arrangements for getting his plant on the spot at once. The work of construction will be simultaneously commenced at both ends.

A new highway bridge is being built at Iddesleigh, spanning the river Ochmont. The contract has been taken by Messrs. Ash and Son, of Sampford Courtenay, and the cost is borne in equal proportions by the parish council, the Okehampton rural authority, and the Devon County Council.

At the Lancaster Brewster Sessions on Friday a provisional license was granted for an hotel on the Moorlands estate, which is now in course of erection. It was stated that on the estate there was provision made for 555 houses, that 97 were now inhabited, 201 were in course of erection, and the population in the immediate district was 2,130. The house will replace, so far as licenses go, the Feathers Hotel, which is about to be demolished by the corporation in carrying out the widening of China-lane.

A report on kitchen boiler explosions was presented on Friday by the General Purposes Committee of the Manchester City Council. It was agreed to request the Lord Mayor of the city to bring the question before the Council of the Municipal Corporation Association, with a view to bringing all domestic boilers within the scope of the Boiler Explosions Act.

The ceremony of opening the Barrack Park, which has been acquired from the Earl of Home for the community of Dundee, took place on Saturday. The acquirement and laying-out have involved an expenditure of some £30,000.

In restoring the Crown Point Printing Works at Hunslet, Leeds, which were destroyed by fire in September, 1894, Mr. Alf. Cooke has had erected a large tower clock. It is illuminated by night, and is fitted with Westminster chimes, the weight of the bells for chiming and striking aggregating two tons. The new clock, which has cost £300, is triple-faced, the dials being 5ft. 6in. in diameter. It has been manufactured by Messrs. Evans and Sons, of Handsworth.

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXIX.—No. 2127.

FRIDAY, OCTOBER 11, 1895.

THE STREET WE ARE TO WAIT FOR.

BUSINESS is reviving, and the County Council's postponed undertaking would most certainly have revived it more. London, of course, is the place, and building is the trade which might have been expected to profit most. But had the scheme gone on without further delay, it would have brought up labour from the provinces, and helped to employ the multitude of provincial labourers who have come up already. Few of them, probably, know much about building. They are, in great part, the men who used to plough, and sow, and reap when English harvests were worth having. Thrown out of employment by the ruin of agriculture, they have been driven to the towns as the only alternative to the workhouse—and there is reason to fear that they have been faring badly. Their labour is what townspeople call "unskilled"—as most people's labour would be if they were taken away from the trade they had learned and set to exercise one which had no relation to it. Skill is relative, and the London street boy attempting to hoe a row of turnips would cut quite as poor a figure as the village lad trying to find his way, say, across "the rather difficult country," as Mr. Eugene Wrayburn called it, "about Bethnal Green." Unskilled labour, however, is largely wanted in the making of a new thoroughfare. There is a quantity of rough work implied in it, especially in its earlier stages; the skilled artisan gets his turn a little later.

There is much to be said in favour of the scheme which was definitely put before the public ten days ago. A new route—if the word "new" is not superfluous, for at present there can scarcely be said to be a route at all—between Holborn and the Strand could hardly go where it did less damage. The Olympic Theatre would come down, and Wych-street would probably be closed. There, and in the middle row between Holywell-street and the Strand, we should lose some vestiges of Old London. But, considering the character of these localities, and remembering also the paint and compo, the enamelled skins, the making "beautiful for ever," which have long disguised the ancient houses they contain, we could manage to reconcile ourselves to their removal. Mr. Ernest George, in an etching of which some years ago we published a photo-lithograph, has preserved a faithful likeness of modern Wych-street at its best. With a glimpse of St. Clement Danes' tower at the end of it, it makes a very picturesque and successful drawing, but for all that, Wych-street, for many years, has been better on paper than in reality. It is with art as with love, "Things base and vile, holding no quantity, Can art transpose to form and dignity," and the charm of this particular etching is rather due to its sketcher than its subject. We rejoice that no interference was proposed with the two churches of St. Clement Danes and St. Mary-le-Strand. With the aid of these important features, the junction of the proposed avenue with the Strand might be made one of the finest things in London. If it could but be kept out of the hands of the speculative builder, and what is almost worse, of the speculative architect, we might have a success which would blot from memory the Shaftesbury-avenue Circus, and half atone for the costly failure in Piccadilly. A primary necessity is that the new buildings at the junction should be comparatively low. It does not follow that there should be no lofty features here and there amongst them. But their general masses should not much overtop Somerset House nor at all dwarf St. Mary's tower. Yet who is to see that they do not? And who could be trusted, even if they were given the power, to exercise a wise discretion about what designs were or were not allowable in such a situation? To refer this to the Institute would probably mean one of two things. Either it would fall into the hands of the "building negotiants"—the surveyors who get so much architectural work for which they are quite unfit, and who do it so badly—or it would be settled by a tribunal of past-presidents, vice-presidents, and the like, out of whom perhaps two in ten would be the right men in the right places. Even without such a tribunal, we fear it would be hard to get the County Council to agree on a limit of height. Such a limit implies some loss of money, though little enough in comparison with the whole cost of the scheme; and the modern Englishman is generally ready to spoil a ship when he can save a halfpenny-worth of tar. However, when the scheme goes on, if it ever does, we must make a fight for it. To keep the building negotiants at the business they understand, and to prevent the merely ornamental figures at Conduit-street from stepping off their pedestals, and blocking up the paths to improvement, are two objects well worth striving for. They will not be attained in a day, or a year; but no effort which brings us a little nearer to them will be wasted, and it may do something, if not everything, towards preventing another great public opportunity from being foolishly thrown away.

A graceful tower, like that of St. Mary's, would make a far more impressive centre for the proposed space than a mere drinking-fountain, like that in Piccadilly. Moreover, it is ready built for us, and will cost nothing. But the church it belongs to was never meant to stand bald and bare, quite away from other structures. It is too straight, too narrow, too unbroken to seem satisfactory so. Moreover, being still in use, its congregation, whether small or large, cannot conveniently be turned out on to the very margin of a crossing. How the County Council meant to deal with this part of the scheme we do not know. It seems imperative that a clear carriage-way should be left on both sides and at both ends of the church. From every quarter, therefore, a road—and a busy one—would have to be crossed to reach it or leave it. This forcibly suggests, for one thing, that a good space must be set apart for the church to stand on. It must have an island to itself in the sea of traffic, and this island might be planted with trees and flowers, so as to form a beautiful centre to the space. But even then it is rather awkward for a little crowd of people to issue from a public building into a position which they cannot possibly escape from except by dodging the cabs and omnibuses. For many years there has been a talk of light bridges at important crossings. By a light bridge, the engineer means one thing, and the architect another; and if the engineer's idea were adopted and set up, then farewell to any hope of a noble central opening in the Strand. But it is for the engineer, as it is for the building negotiant, to keep within his own province, and that province is not here. Some of us remember—as one of the most telling points in Mr. Street's first design for the Law Courts—the light stone arch which he proposed to throw across the street in place of Temple Bar. It was not erected. John Bull spent his million or so on the Law Courts; saved a few hundred pounds on this arch, which would have been the proper finish to them, and set up, instead of it, his beloved "Griffin." He spoiled his ship—but he saved his halfpenny. Still the result does not quite satisfy him. His conscience is partially awakened now, and he might perhaps be brought to consider the desirableness of building, not that same arch—for it was a Gothic one—but an arch equally architectural, to form a footway from St. Mary's Church to the nearest pavement. At Croyland there is a triangular bridge—a compound of three such arches. Certainly three footways above the three lines of traffic suggest themselves here; and if the thing fell into the hands of an artist, he could make of them something which other artists would come over the seas to paint, as they go over sea to paint the bridges of Venice. This, perhaps, is too much to hope for; and if the scheme fell into the hands of the building negotiant, as such things are apt to do, *one* bridge would be a great deal more than any of us could put up with.

St. Clement Danes, it may be said, is already shut off from the street pavements, and yet no such bridge seems wanted there. This, at present, is true. But, then, St. Clement's does not stand at the junction of three great streets. Practically, most of the traffic passes to the south of it. The roadway between it and the Law Courts is little used, and it is easy enough to reach the pavement on that side at any time. There will be a different state of affairs whenever the middle row which forms the south side of Holywell-street is removed. A full half of the traffic is then sure to pass on the northern side; but even with this alteration it will remain far less difficult to reach the pavement from St. Clement's than from St. Mary's. In the former case there will be only half a street to get over, for the vehicles going east are pretty sure to be kept to the north of the church, and those going west to the south of it. At the proposed semi-circus, if we may so name it, this can hardly be. The traffic will be passing St. Mary's in six different directions. There will be the carriages going east and those going west along the Strand. Then there will be those coming from the west to the new street, and those going west from the new street; and, lastly, those coming from the east to it, and going east from it. Crossings at circuses and junctions, moreover, are much more dangerous than those at right angles to a straight roadway. Omnibuses stand, one after another, close to the pavement and block the view. The passenger has to pass them, and get near the middle of the roadway, before he can see what chance there is of getting further. Very often there is no chance for a minute or two. While he is waiting, the omnibus which was behind him has moved on. It, or another one, has cut off his retreat, and he cannot step back, whatever happens. Then comes, perhaps, a hansom in a hurry, with a driver not quite so sober as he should be. The passenger cannot by any possibility get out of his way. The cabman swears at him, and drives over him, and so his "knell is knolled." This is a type of one of the commonest of street accidents. There is a favourite variation on it, in which the "crawler" plays the part of the waiting omnibus; but the principle is the same. So hundreds of people are injured every year, and scores killed. In Birmingham they have numerous small cab-stands, and allow no "crawlers." How long will it be before the London County Council take pattern by so good an example? Is this, too, one of the improvements which the Council can cheerfully put off from this year to next year, sometime or never?

VAGUE SPECIFICATIONS.

PRECISION and accuracy are unfortunately not conspicuous in the modern specification. It is hurriedly written in the spirit of getting everything good, and cheaply. A writer of some eminence has told us that the "absolute balance of give and take—the doctrine that everything has its price—and if that price is not paid, not that thing but something else is obtained," pervades all transactions, and that doctrine seems to be forgotten by the specification writer and the quantities taker. They seem to think that good material and workmanship can be had without thought, adequate description, or price. By a loose or inaccurate description, in which the terms "best," "approved," "good quality" are plentifully used, they imagine the contractor will supply the really best; but why should they anticipate so much without the trouble or thought of a really accurate description?

The vague specification is chiefly indictable in two things—namely, in describing qualities and in dealing with workmanship or modes of execution. It is in these two respects that most specifications fail. Under the head of Qualities we have everything that pertains to building stones, bricks, cements, &c., their nature and properties; the substances and qualities of various materials, like timber, iron, lead, glass, decorative materials, thickness and manufacture of all fittings. Under Workmanship, we have all in which skill and labour can do, all kinds of construction of stone, brick, timber, iron; all fittings and apparatus like lifts, heating apparatus, sanitary fixtures, ventilating contrivances. We do not complain so much of the want of completeness of specifications; every trade may be noticed, every material and fitting specified. As mere lists of materials and trades, they may be perfect. It is easy to draw up a list of requirements; but quite another thing to describe their character, the qualities of the materials and the workmanship. The latter calls for technical knowledge and experience, and it is just in regard to quality and workmanship that the specification is necessary; the drawings and quantities furnish connection and position, the number and the sizes of the various materials and fittings; but it is left to the specification to define and describe. Let us take a few instances of the want of these essentials in modern specifications. In matters of foundations a good deal is left to the builder, or recourse is had to the "covering" clause which places all responsibility on the contractor. Much indefiniteness is found. We have frequently seen clauses such as this: "Dig out for basement and for all footings to a depth necessary to obtain a good foundation," but no depth is stated beyond that which the sections supply. The contractor has to guess or take the risks, which in some cases involve an expenditure of some hundreds of pounds in addition to the quantities estimated. If a builder signs a contract with such a clause, he commits himself, but in properly-prepared contracts all excess of digging and concrete work is measured and valued. Such a clause as, "Do all the necessary pumping and shoring," may mean a good deal, or nothing at all; and the experienced contractor puts down a large sum to cover all risks.

Then the ordinary specification is often vague in its description of stone. If a particular quarry is specified, care should be taken to ascertain whether it is really working. We have known instances in which the quarry specified has actually been worked out, and a very inferior quarry has been selected in its stead. Surely with the authorised lists published of stones and quarries, an architect ought not to go wrong in these matters. The valuable reports prepared by the Commissioners of Woods and Forests, when the stone for the Houses of Parliament was selected by Sir F. A. Abel and others, are within ready access. After specifying a known quarry, the architect may cover his indecision or ignorance by adding "or stone from some other equally good quarry." But even a quarry may mislead, if the essential properties are not described. Thus, in the selection of a quarry for Portland stone for external work, the specification should state that the stone must be of "uniform structure," or from the best "base-bed" varieties, and free from cavities, which generally occur in the kind known as "whit-bed" stone, which, though often appearing of greater hardness and compactness in part, is more liable to have cavities within it. But the ordinary run of specifications merely say that the stone must be from such and such a quarry—perhaps unknown, or "of the best quality free from all veins, shakes," &c., which may mean almost anything, as it is the ordinary specification formula; for every practical builder knows how impossible it is to insure freedom from all these defects if particular quarries are specified, so that one intention is frustrated by the other. Just in the same manner, it is absurd to require that the timber is to be "perfectly free from sap, shakes, large loose knots, and other defects," a condition which can be carried out only to a limited extent, for the simple reason that few architects and clerks of works would get good timber if they rejected all with knots and shakes. So with all standards that cannot be attained. It is absurd to introduce any condition which the architect has no power to enforce, as, for instance, to say all the cement must be able to bear a certain weight without breaking, when he has practically no means or apparatus for carrying out his requirements. The various specification standards on this point alone show how useless such tests are in a majority of cases. But the architect or engineer who writes a specification for works to be executed in cement, thinks it sufficient if he copies a usual clause, such as that used by the London County Council or Mr. Grant's form; it looks like business if it has no other recommendation. Well and good if these conditions and tests can be insisted upon; but to put them in as vague and unmeaning threats can only help the evasive and underbidding contractor to an unfair position. These are the men who profit by general clauses which are not intended to be complied with; while the scrupulous builder, who tenders and takes them as meaning what they say, is the real sufferer. One of the worst faults of the modern specification is to insert clauses which cannot be carried out, or to make them so vague and indefinite that the contractor evades them altogether. The jerry builder's rule is to omit all he can; to put in the softest stone or unburnt brick when good stone and brick are specified; to fill in walls with "shuffs," and to avoid bonding where it cannot be found out. He does not mean to comply with the specification for the carpenter. Why should he if he can introduce Swedish timber for Dantzic or Memel, or substitute inferior deals for best quality Petersburg? The vague specification gives him many opportunities for omission or substitution. He eagerly seizes every general expression, as "of the best quality," "free from sap," "in a proper manner," or "approval," and interprets it in a relative manner, or as being a formula of no significance. They are convenient expressions, because they save a good deal of technical knowledge, and they save accurate and definite description of materials. It would be much better and surer, however, if a stone was definitely described as of a certain quarry and bed; if the bricks were specified as those of a certain firm's manufacture, and if the accurate trade or distinguishing brands of timbers and deals were given. If the manufacturer's name or a certain brand were given, we are sure there would be less chance of evasion in contracts. Few architects are good judges of timber; but if they take care to specify the brand, the chances of their being deceived is considerably lessened. Thus Swedish goods are carefully sorted into various qualities in the English market, giving a fair idea to the purchaser. At least such definite description of materials and qualities is more reliable than loose general terms. We cannot hope to acquire them by using specification forms—useful as they are; still less by copying old specifications for new works. We do not even say that a knowledge of "brands" and ports is always a safeguard without a personal knowledge of what is good timber. We know instances where the architect's supposed knowledge, derived from specification formulæ, has misled him. How often we hear of an architect or clerk of works condemning a joist or a rafter if it has a vein of blue sap-wood in it, when in such a position it could not matter, or be injurious to the stability of the floor or roof. It would be more detrimental to allow such sap-wood to be used as bond timber, or built in a confined place. Again, the selection of "first" qualities for timber is specified when "best selected middling" quality would be better, and more easily obtained. Swedish is condemned, although, as a matter of fact, when the scantlings are not large, an approved quality of Swedish is all that can be desired in point of suitability. These and other facts can be only learned from practical workshop or building-yard experience.

We have, so far, dwelt on qualities; but a full accurate description is no less demanded. We lately heard of a large building put up to tender in which the glass was a considerable item. There were skylights and sidelights, and it was specified that "26oz. embossed coloured glass" was to be used. What was meant by the description was probably intended for plate-glass embossed to a design. Again, it was merely specified, the "sidelights to have proper sidelight glass." Is it surprising that one who tendered simply allowed for ordinary enamel-coloured glass? There was a large quantity, and it involved a considerable sum. As for the phrase "proper sidelight glass," it was impossible to say what was intended; it meant anything the tenderer liked—plain, coloured, embossed, or any other glass; the adjective "proper" may be interpreted in many ways, and according to many standards. In another case the specification described the roofs (very extensive) to be covered with good Bangor slates; but an inferior sort was used throughout, and a considerable saving in cost must have been effected by the builder. The mistake was in not specifying the particular quarry, as that of the Penrhyn or Dinorwic, or the best Portmadoc slates from a certain quarry.

"Good Bangor" slates may mean almost anything; but the architect ought to describe not only the quarry, but the colour as well. If a green slate is wanted, it is necessary to specify the "best slates only from Coniston," which are close in texture, and do not discolour. Not long ago an architect suggested that the specification might be superseded if the architect wrote all his descriptions and instructions on the plans, sections, and elevations, and confined his specification to a bare description of materials and preliminary clauses, without a thought of what a small scale set of drawings would be like if so burdened with descriptive matter. On the face of it the idea is feasible, as the elevation would have notes of all facing materials and details, the sections of all construction and internal joinery and fittings, plastering, &c.; the plans of everything relating to the drains, laying of floors, pavings, hearths, &c. These are matters which, however, are more conveniently introduced in the specification of all the trades, and which is accessible to all those concerned on the building. The separate document form can be divided if necessary, whereas it would be undesirable that the mason or carpenter or plasterer should have the exclusive use of the drawings. For these and other obvious reasons the specification is the right instrument for all explanatory information, if we take the trouble to make it clear and definitive, and supplementary to the drawings.

MODEL DAIRY COMPETITION.

THE British Dairy Farmers' Association have on view at the Agricultural Hall, Islington, a collection of plans and models of dairies which is of some interest. Prizes for these were offered some time ago by Sir James Blyth, Bart. In one class for small dairies, prizes of £25, £15, and £10 were offered for the three best plans for a dairy "adapted for the manufacture of both butter and cheese, and capable of dealing with the milk of not more than 25 cows." In class 82, the same prizes were offered for plans for a similar dairy capable of dealing with 50 cows, and there were also prizes of £60, £30, and £10 for models of a permanent and portable dairies. We may first refer to the awarded plans of both these classes. The judges who have awarded the prizes are T. Penrose Fitzgerald, Midleton, co. Cork; the Hon. Cecil T. Parker, Eccleston, Chester; and W. D. Caröe, architect, M.A., P.A.A. In the class of the larger dairies, the first prize has been given to No. 1627, by Mr. Charles A. Callon, of Victoria-street, S.W., for a design which shows a compact arrangement of dairy, and a pleasing exterior of red brickwork with tile roofs. The central portion has a butter-making room in front, gabled, 15ft. by 12ft., with side entrance under a verandah, which surrounds the building. Behind, in communication, is the cheese-making room, 15ft. by 12ft., with double steel cheese-tub, cooling vat, cheese-presses, and curd-mill. A side stairs leads to cheese-room over, in gabled portion of roof. This is fitted with revolving racks for 147 cheeses, and is ventilated by a shaft which forms an ornamental cupola externally. Connected with the butter and cheese-making rooms on ground floor is the milk-room, 14ft. square, surrounded by shelves or settling pans. Coolness is secured by the surrounding verandah, and there are three windows, which insure light, cleanliness, and ventilation. The right-hand wing has a boiler-house, with separate entrance, and a scullery. The author has a practical knowledge of the requirements of a dairy, which can be worked either by hand or steam power. The plans and details show a due regard for the drainage and sanitary conditions. There is shown a cistern in roof to hold 500 gallons. The drains are clearly drawn, with proper manhole-chambers and traps. The walls are of brick, with cavity. Windows with casements hinged are shown; the upper ones hinged at bottom, to fall inward, and the lower casements hinged at sides. Gauze wire-blinds are provided—a very useful precaution in summer time, and glazed sashes in the winter on the outer face of walls to open outwards. The roofs have air-shafts, and ventilators with louvre openings. Channel gullies are shown with grids. A detail drawing illustrates revolving cheese-racks, which rest on castors, and revolve on centres in the cheese-room. The elevations are simply and artistically conceived, the centre gabled portion projects, and is finished with timber framing rough-stuccoed below. The milk-room on one side, and the scullery and boiler-house on the other, are single-storied, with steep roofs of tile, which project over the verandahs. The same author receives the second prize in the next class for 25 cows. The plan is similar, and has a central butter and cheese-making room, with milk-room on the left, and boiler and scullery on the right, and there is a verandah. A similar external treatment is also shown. In both sets the author exhibits a grasp of the requirements; the plans and details are clearly drawn, and the elevations appropriate in style and economical.

The second and third prizes have not been awarded in class 82. The plan by Messrs. A. R. G. and H. S. Fenning, of Lincoln's Inn-fields, has been commended. It is is a simple rectangle, with a large dairy, 23ft. by 16ft., on the east side, and a washhouse and entrance at the west side. The cheese-room is over the dairy, with turning shelf. This arrangement has the merit of simplicity; it can be roofed in one span, and the dairy and cheese-room are well lighted and ventilated. The upper story is tile-hung, and the treatment in brick and tile is suitable and inexpensive. Hollow walls are shown, and the ventilating and draining arrangements appear to be good. The judges have also commended two other plans. The first is by Mr. C. A. Battie, of Hornsey-road, and the second by Mr. W. Rowland Howell, of Reading. The first is a rectangle, nearly a square, having a high-pitched tiled roof hipped all round, with a centre extraction turret at the summit. The cheese-making room is in the centre, with butter-making room on one side and store-room. The author has studied economy of service and expeditious working in the plan of the departments. The washing, boiler-house, and fuel store are conveniently arranged along one side, and curing room is in the roof. The design is cleverly treated and simple. The latter is also an ingenious plan, but rather broken up by the tower, which is intended for a cistern. The pressed cheese drying-room is in the upper story. There is an artistic feeling in the drawing, but economy is not the strongest point of the design. In the same class we may note No. 1613, a plan showing some knowledge of details in the arrangement of a dairy; the external design is simple, the author shows a high thatched roof, and puts peat moss litter round walls of butter larder. The cheese store is in the roof. No. 1614, by Mr. Leonard J. Hughes, has a plan with corridor connection to house and an entrance from farm, with scullery and engine-rooms on each side with press-room, cheese and butter dairies in rear, and curing-room over. The details are less satisfactory, and elevation not characteristic. The author of 1616 has a compact plan with entrance shed, but the drawings are spoilt by the pink tint of roof. The authors of 1630 (Archer and Hooper) have a more original plan, and treatment artistically conceived and tinted in sepia. The cheese-making room is in the centre between the milk and cheese rooms, with an open verandah in front of entrance, and the external elevation, with its high roof and dormer lights over verandah, is cleverly treated.

The plans for the smaller dairy (Class 81) show two or three able and practical designs. We have already noticed the design placed second, by Mr. Callon, as one of the best. The first prize is withheld. A plan with a ticket printed "Reserve No." (1612; John H. Phillips and J. Gunter, Cardiff) is compact and economical. The dairy, 28ft. by 21ft., is well lighted and ventilated by windows on three sides, with a projecting heating chamber on left for heating below level of ground. A scullery and cheese-room occupy a position also on this side. An alternative plan shows two cheese rooms for young and old cheese. The elevations are suitable, with a single-span tile roof, and hollow brick walls are shown. No. 1596 has been awarded the third prize, and is by Messrs. Fenning, of Lincoln's Inn-fields. The plan of dairy occupies the main area of building, and is 16ft. 4in. by 15ft., fitted with churn, cream separator, butter dryer, vat, &c. There is an entrance from a corner porch, with washhouse and a stair to cheese-room over. The section shows concrete and rolled-iron joist floor. The arrangement is compact and inexpensive, and the external design appropriate. The elevations are artistically treated. Brick and red tile hanging to the walls, which are hollow, and a high tiled roof are shown and effectively coloured. Next to it (1597) is a well-detailed plan in one floor, indicating practical knowledge; but there is a want of concentration. The milk-room is connected with the cheese and butter-making rooms, each on a separate block, which would not admit of simple roofing. On the ground floor also are a separator room between milk and butter room, a butter and cheese store, a cheese-curing room, and washing-room. The walls are hollow, with an outer casing of 2½in. slabs of concrete, and an inner casing of rough plate glass in large squares, or concrete slabs supported by a framework of rolled mild-steel joists, channels, T's and L's. The details are well considered.

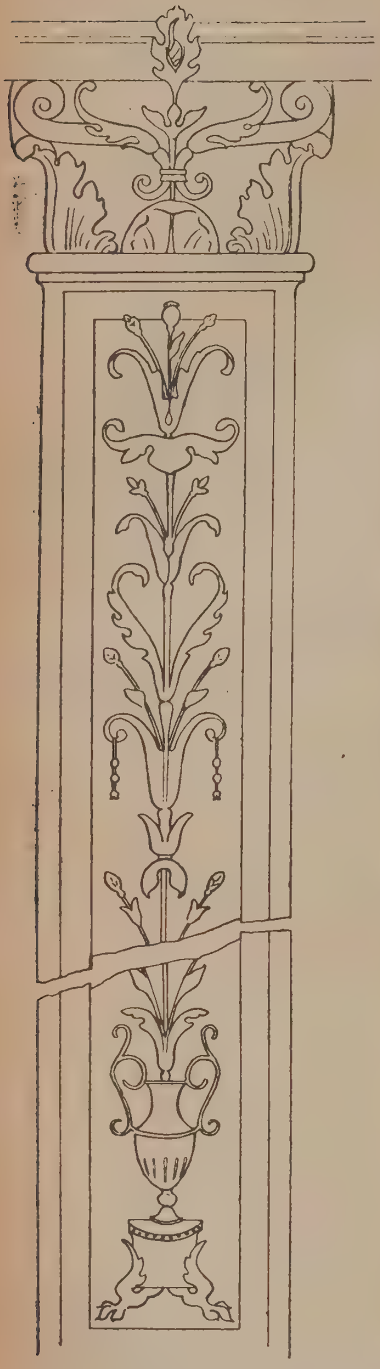
No. 1607 has the butter dairy separated by a porch from the cheese dairy and cheese-room. The plan is simple and has a yard in front of entrance, and the elevation with the gable ends is plainly treated. No. 1611 is wasteful in the entrance passage between milk and churn room; it is one story surrounded by a verandah. No. 1609 is also wanting in compactness. In many of the plans the milk-room is not in convenient relation to the butter and cheese-making rooms, and the two latter are not placed together as they should be for economical working. The vat should be near the milk-room, and the other fittings placed in those positions which offer the greatest convenience and save labour. Again, the sizes of the cheese and butter-making rooms should have reference to the quantity of milk obtained or the number of gallons per day.

Six models are exhibited, and these show a large expenditure of cost and labour. Messrs. Boulton and Paul, of Norwich, have a well-constructed model, to a scale of 2in. to the foot, of a portable dairy, adapted for the making of butter, to deal with the milk of 20 cows. The plan consists of a simple parallelogram, divided into a dairy and scullery, with ingress and exit in the centre, and the construction is shown in the Norwegian style, having framework and external 3in. deals, continued past and halved at angles, fitted to a long bolt at intervals; it is lined internally with matchboarding or vertical battens in sections, and has a roof also in sections covered with felt. This receives a second prize, the only one given. The plans and models are worth a visit.

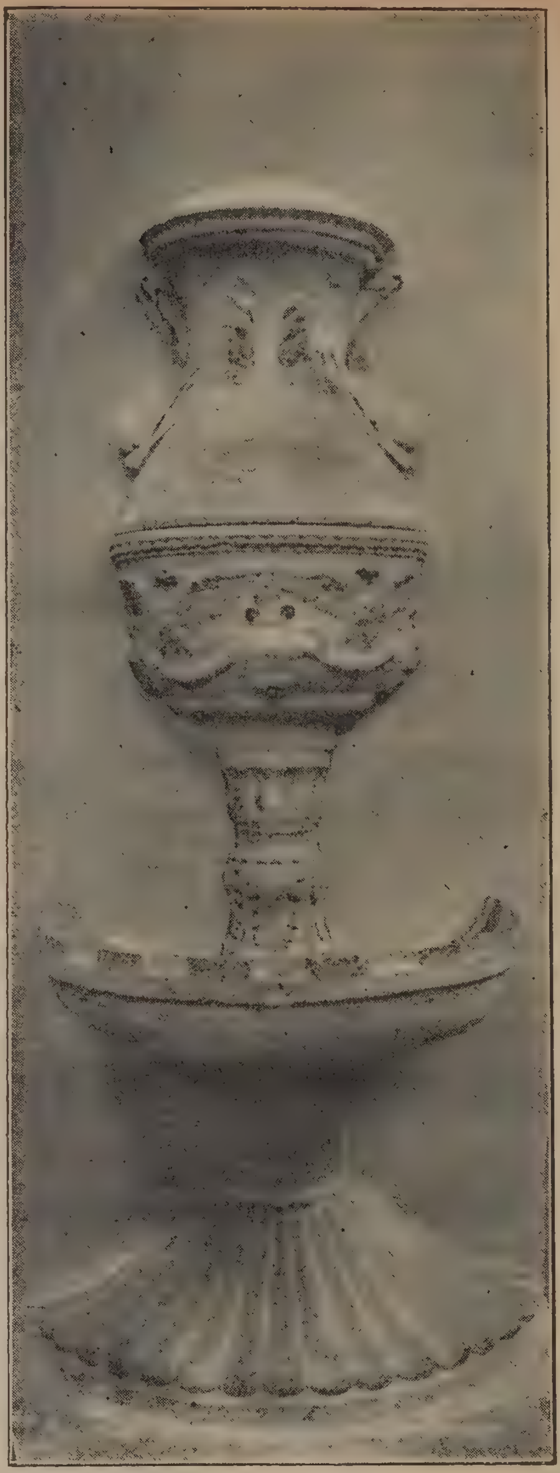
◆

THE BUILDING OPERATIONS OF THE LONDON SCHOOL BOARD.

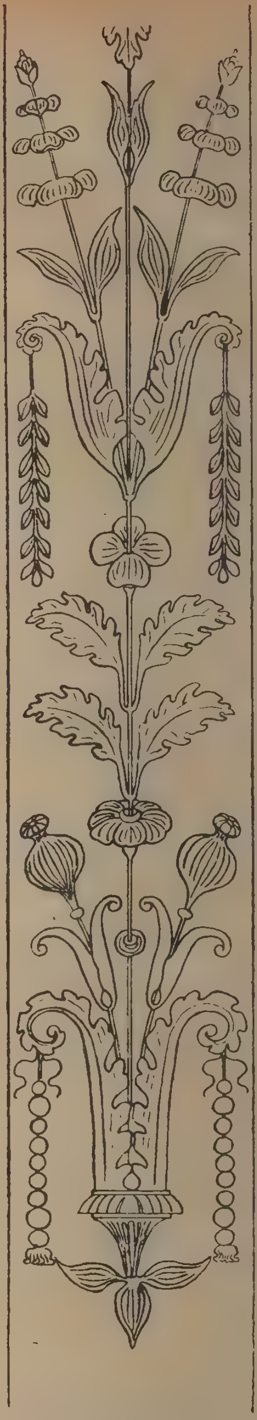
THE fourth annual Report of the Works Committee of the London School Board states that during the year ended March last the Board were engaged in purchasing interests in 55 sites. The cost of these interests was £82,265, the surveyors' fees, &c., agreed to at the time of purchase being £980. The value of all the sites purchased, or agreed to be purchased, previous to March, 1894, was £2,903,207, and costs £406,601. The total cost, therefore, of the sites purchased up to the end of the year under review was £2,985,472, and costs £407,581. The cost of the sites for 294 schools was £6 15s. 3d. per child. The total number of permanent schools which had been erected and opened to Lady Day, 1894, was 397. During the year under review nine additional schools and 28 enlargements were opened. The total amount of the loans which the Education Department authorised the Board to incur on account of these nine schools and sites was £170,417, and on account of the 28 enlargements and sites, £301,555. The average cost per head of the 294 school buildings, and of the furniture the accounts of which had been completed at September, 1894, was:—School buildings (exclusive of sites), £12 2s. 3d. per head, and furniture and fittings, 10s. 6d. Tenders had been accepted during the year for erecting eight new schools, providing accommodation for 7,447 children. Each of the eight schools, when completed, would be provided with halls, which are not counted in the accommodation, and the tenders for the new schools included the provision of cookery, laundry, and manual training centres, and in many cases a drawing-class. Tenders had also been accepted for erecting 22 enlargements of schools, including two junior mixed schools and one senior mixed school, providing accommodation for 7,102 children. All the schools which were now being erected by the Board were provided with apparatus other than open fireplaces for warming the buildings. In December, 1892, the Committee decided that each clerk of the works for repairs should be instructed to inspect and report on the drains of the schools in his district and to submit an annual report on the state of the drains and the sanitary arrangements of the schools. Reports had been received for 1894, which showed that 179 schools tenders for providing new drainage were to be obtained as soon as possible. Of these the drainage work in 79 cases had been completed, tenders had been obtained for carrying out the work in 16 cases, in 20 other cases the work would be carried out in connection with enlargements for which tenders had been accepted, and plans and specifications were being or will be prepared in the 64 remaining cases. There were 160 schools painted or cleaned during the year. The system of carrying out repairs to school buildings by workmen employed direct by the Board was being continued in 9 of the 18 districts of the Clerk of the Works for Repairs. The staff employed consisted of 20 carpenters, 12 plumbers, 2 bricklayers, 10 painters, 23 general labourers, and 12 plumbers' labourers. A stock of the materials necesssary for carrying out the repairs was stored at the Clerk of the Works' office in each of these districts, and the schoolkeeper was encouraged by the supply of tools and materials to carry out simple repairs which could be done without special assistance. The whole of the repairs to furniture were now being carried out by workmen employed direct by the Board. At the date of this report there were 29 carpenters, 7 painters, and 9 labourers employed on this work. In May, 1894, the Board decided that in all future building contracts there be inserted a clause binding the contractors to pay the rates of wages mutually agreed upon by the Central Association of Master Builders of London and the London Building Trades Federation. Since then the Board had



PANEL FROM LUCCA. (A.D. 1498.)
By Matteo Civitale.



FLORENTINE WALL FOUNTAIN. (LATE 15th CENTURY.)]
(Now in the South Kensington Museum)



PANEL FROM A WALL FOUNTAIN. (About A.D. 1490.) By Benedetto da Maiana.

agreed to consent to the following amended clause in all building contracts :—"Where the London scale of wages shall apply the contractor shall pay to the workmen employed by him the rates of wages mutually agreed upon by the Central Association of Master Builders of London and the representatives of the Unions of the various branches of the building trade, and which agreed rates of wages are set out in the schedule. In all other districts where the London scale of wages shall not apply, the contractor shall pay the workmen and all other persons employed by him in connection with his contract not less than the minimum standard rate of wages, which may for the time being be usual and generally paid where such workmen are employed." On March 25 last the following was the amount of school accommodation in course of provision :—Ten schools were in course of erection, providing accommodation for 9,622 children; 24 enlargements were in course of erection, providing accommodation for 7,562 children; 26 additional sites for new schools had been or were being purchased, the schools to be erected on which would provide accommodation for 22,202 children; 25 sites for new schools had been scheduled in the session 1894-95, the schools upon which would provide accommodation for 21,800 children; and 34 enlargements of schools had been sanctioned by the Board, for which tenders had not been accepted, providing accommodation for 11,919 children. The Education Department had also sanctioned the provision of sites in six districts (which would be scheduled next session), the schools upon which would provide accommodation for 4,000 children.

CLASSIC DETAILS AND THEIR APPLICATION.*

By G. A. T. Middleton.

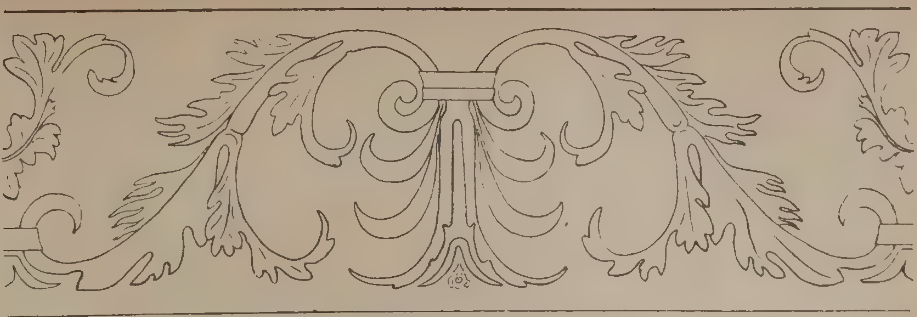
XIV.—ITALIAN RENAISSANCE : ENRICHMENTS.

NOWHERE did the exuberant fancy of the early Renaissance architects find such free play as in the enrichments of their buildings. Founding their designs mainly upon the scroll-work of ancient Rome, in low relief, they developed a treatment which, while of infinite variety, is always recognisable as that of their age and country. Sometimes formal, sometimes free, always conventional, always subdued sufficiently not to interfere with the general design which it decorates, it is uniformly pleasing. Panels and pilasters are freely ornamented with scrolls in which the acanthus is largely, but by no means exclusively, used, other leaves and flowers being introduced, conventionally treated in a highly decorative way, to fill, but not to crowd, the space available; and even what appears to be crowded in an outline drawing is not invariably so when executed in low, but varying, relief.

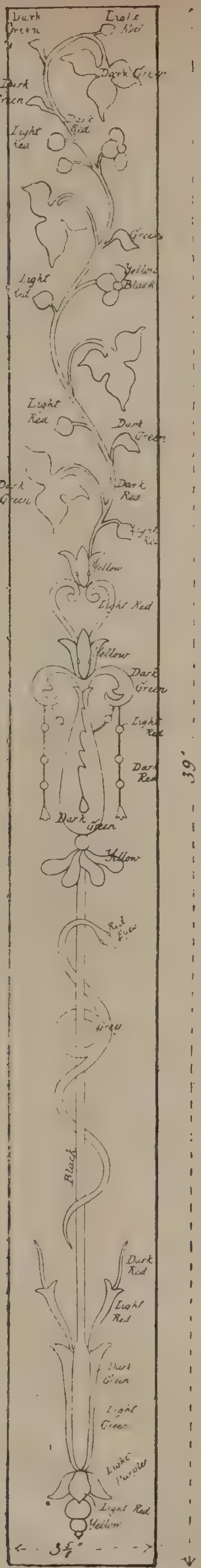
As examples, a few illustrations are given; but the variety is so infinite that they can only be accepted as notes of the sort of thing which is to be expected. So we have the formal treatment by Benedetto da Maiana in the panels of his wall-fountain (now at South Kensington Museum) of the poppy-head, pansy, and other flowers; while

---

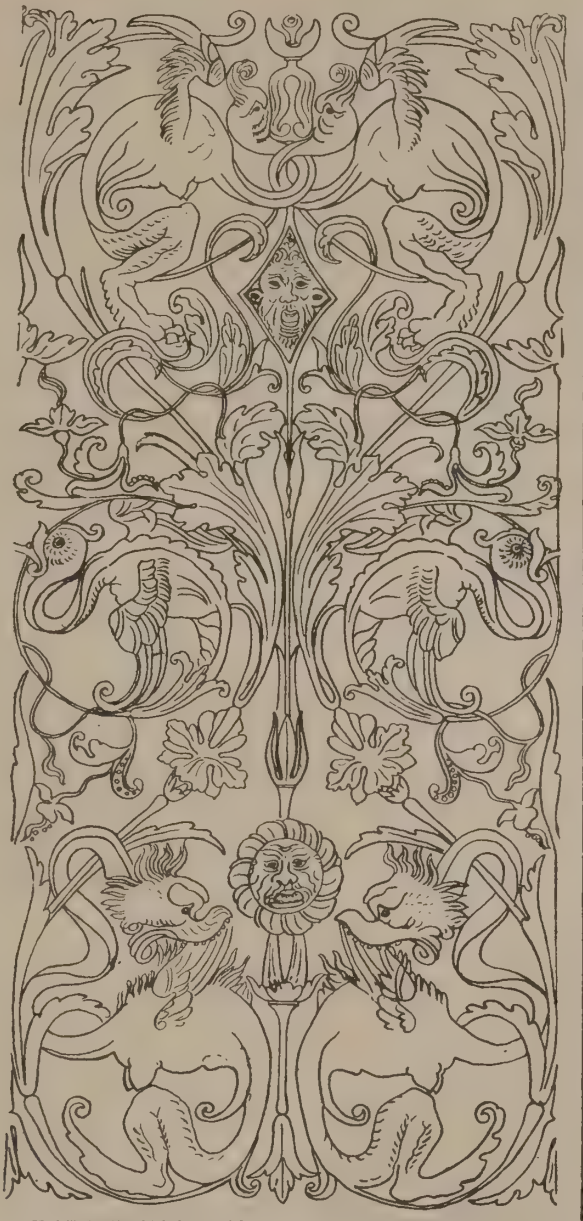
* All rights reserved.



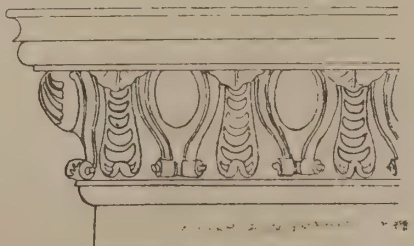
ANTHEMION FROM THE TOMB IN THE CAMPO SANTO AT PISA.—By Stagio Stagi.



INLAID PANEL FROM A MILANESE CHIMNEY-PIECE. (About A.D. 1600.)



ONE-THIRD OF DRUM OF COLUMN FROM PALACE AT CESENA. (About A.D. 1500.)



RENAISSANCE VARIATION OF EGG-AND-TONGUE (ROME).

in Matteo Civitale's panel from Lucca there is a much more light treatment of grasses and the acanthus leaf, with a capital which, if elegant, is also a curious variation of the Corinthian. Again, the Florentine wall-fountain shows the acanthus leaf upon the stem of the vase, almost as it would have appeared in Roman work; but upon the vase itself are wreaths and scrolls, birds and fish, and even a cupid's head, in rich variety; and this full decoration of the surface and the introduction of life is carried further still in the enriched column from the Palace at Cesena, where masks and grotesque figures with parrots' heads are freely used. In all these, despite their differences, there is the same spirit of elegance and freedom of design; and they are all of much the same date—the close of the 15th century.

Though a hundred years later in date, much the same spirit is also evident in the panel from a Milanese chimney-piece; but in that example the decoration was not in relief, but inlaid in coloured marbles within a white marble ground, having a light yellow flush upon it here and there. The design is a trifle more straggly, however, and it was in this direction, towards poverty, that deterioration took place eventually in the North of Italy.

In Rome, however, at that date, the copyism of the ancient Roman character, already noticed, was in full force, and variations and developments of enrichments took a more formal course, as they did in the general designs. Borromini's capital is sufficient to illustrate what is meant, especially if similar features already illustrated be referred to—a principal characteristic being massiveness, in place of the delicacy of the early work in Florence and the North. In fact, the details are rather magnificent than beautiful, beauty being often sadly lacking, especially in later work, as evidenced by the garish variation of the egg-and-tongue, of which a sketch is given, and which may well be compared with the anthemion from the Tomb, by Stagio Stagi, in the Campo Santo of Pisa, of about 1530 A.D., which, worked on a curved frieze, is light and graceful in its low relief, even though it does not possess the full beauty of curve of the examples of scroll-work already mentioned of thirty years before.

Enough has been said now, however, to show how true in all respects was the architecture of the Italian Renaissance, instinct with life, with the spirit of development, with the sense of beauty, and with applicability to the needs of the time and people. Its early work was the most refined, its later most full, and its last, with signs of debasement in eccentricity and vulgarity, was but in the usual course. It was a true architecture—a genuine development of Classic work with Classic details adapted to new purposes and used in a new way.

* * *

CONCERT HALLS AND ASSEMBLY ROOMS.—I.

By Ernest A. E. Woodrow, A.R.I.B.A.

There is constantly a fresh demand for additional buildings for public entertainment and instruction. Every town and every village, whether at home or in the colonies, requires, and obtains its concert-room or its assembly-room; and if the local community cannot afford to erect a special building, it adapts and converts the largest room in the town or village into its place of public resort.

The variety of the buildings containing within them rooms or halls for public entertainment are so numerous, and the conditions under which they are used vary so widely, that it is difficult to classify them to any extent. Before entering into matters of detail as to their internal arrangements, it is, however, necessary to mention the various kinds of places of public resort.

Among those which are erected for the special purposes of the concert-hall and assembly-room, are, first and foremost, the concert-hall proper, such as the Royal Albert Hall, and the Queen's Hall, in Langham-place. Then follow the concert-halls in connection with other premises, such as St. James's Hall, in the St. James's Restaurant; the King's Hall, at the Holborn Restaurant; and the Whitehall Rooms, in the Hotel Metropole; which give us the latest development of the assembly and public dancing-room combined. These may be accepted as premises which have been essentially erected for a specific purpose, either for music or dancing, or other entertainments of the like kind.

There are also buildings with two or more halls within them, such as a concert-hall, with a minor hall under the same roof; in many cases, whole suites of rooms are arranged for public reception.

Next in order come those buildings which are erected primarily for a wholly different usage, but have within them a hall or room devoted to entertainments; this class includes such buildings as hotels, with large assembly-rooms or dancing-rooms attached.

Lastly may be mentioned buildings used for public entertainment, but not originally designed for that purpose—that is, buildings which are at some time or another converted into dancing-rooms or concert-halls, such as swimming-baths, skating-rinks, &c.

To trace the development of these classes one is almost forced to consider their origin. The public concert-room, and with it no doubt the music-hall, found its birth in the club-room of the public-house, and commenced with the free-and-easy concert among the frequenters of the house; then followed the engagement at these entertainments of one or more paid professionals, after which the amateur entirely dropped out, and some licensed houses gave more attention to the "variety" entertainment and became music-halls; while others cultivated the glees and part songs, thus adding to the number of concert-halls.

The club-room of which many still exist, and which must be considered hereafter in detail in these papers, must therefore not be dismissed as unimportant; not only has it been the origin of the buildings devoted to music, but also the commencement of the dancing-room, public ball-room, casino, and all the varied developments of the assembly-room. This can be more easily understood when it is remembered that in many provincial towns the hotel still contains the only place for public assemblies, auctions, balls, bazaars, political meetings, &c.

The public dancing-room which is used by the dancing-master for tuition becomes at night a place for assemblies and balls, and the arrangement of this is as important as that of the large halls which are used only for balls.

Where the assembly-rooms consist of a group of halls or rooms there are to be found the large, or ball-room, the supper-room, the smaller dancing-room, and the retiring-rooms. Buildings exist where one or more entertainments take place at the same time. Take, for example, St. James's Hall or the Moore and Burgess Minstrels' Hall, the large and small concert-halls at the Queen's Hall. Of larger buildings used for many and various purposes, there are such places as the Royal Agricultural Hall and the Royal Aquarium. Again, there is a still further development, as seen in the Crystal Palace, while the grouping and arrangement of buildings at international and minor exhibitions are, indeed, of the most grave and greatest importance.

Parochial rooms, rooms attached to places of worship of all denominations, the "iron" room, Sunday-school rooms, are all at one time or another used for public assembly-rooms. In institutions, polytechnics, asylums, and hospitals are to be found other variations of the public-hall, while vestry buildings would now be considered incomplete without the large concert-hall and assembly-room, which, indeed, is never used for vestry purposes, and which some may doubt whether the local authorities are within their rights in erecting out of the public funds to compete with private enterprise in providing entertainments for the people. However, that is not a point which need concern us in these papers.

At most of our seaside watering-places are to be found concert-halls constructed upon the piers. Some of them are of such a size as to hold many hundreds of people. Many are fitted with a stage and all the accessories of scenic display for theatrical performances, while others are arranged for orchestral music only, as at Southsea. Another variety of the seaside place of amusement is the "Spa" buildings, as at Scarboro', the casino, or kursaal, notably found in townships abroad which are summer resorts and bathing-places. In the hydropathic establishments, and even in the large boarding houses of later days, are to be found the large "common" room for dancing, concerts, and theatricals.

We must, however, look abroad to see what can be done in the way of making the public assembly-room veritable palaces; while even whole townships are proposed to be erected on the Continent solely for pleasure resorts, the casino, the assembly-room, the concert-hall, the theatre, and the racecourse being the centre round which the hotel and boarding-houses are to be erected. There are already two such projects on foot, Mayville, on the French coast, and Farnoe, in Denmark. Other Continental watering-places are noted for their buildings devoted to public "play" and gambling, as at Monte Carlo, and the Spa at Ostend, closed last year by the police. In Switzerland and Germany we find the Ton Halle, notably a Swiss institution, a kind of people's palace, containing a large number of assembly-rooms, and examples of this class are the building erected in Zurich by Messrs. Fellner and Helmer, as well as the Albert Palace at Leipsic, which also contains a circus. The People's Theatre at Worms is closely connected with this class, for it contains an assembly-hall as well as a theatre.

Of the group of buildings erected for other purposes than public assembly-rooms, but adapted at some time during the year for music and dancing, the swimming-bath may be considered most important. These, during the winter, have the bath or tank floored over, a platform erected at one end, and, instead of having the revenue stopped when the bathing season is over, the exchequer is enlarged by "lettings" for concerts, lectures, *soirées*, dances, &c.

The Baths and Washhouses Act will not permit premises to be licensed which have been erected under the commissioners; that is to say, it forbids a bath having a license for music or dancing, but says nothing about it being deprived of a stage-play license. It is legal to turn such a bath into a theatre, but not into a concert-room or ball-room, for which it is far more suitable. This is one of the strange anomalies of our out-of-date licensing laws which everybody would gladly see amended.

My long list of classes of building to be considered in these articles from an architect's point of view would be incomplete without a brief mention of the conservatoires, schools of music, public schools, and even private schoolrooms which are used for public performances. The skating-rink, with its latest development, the natural-ice rink, must also be mentioned.

The purpose of these papers is to consider what are the best methods of arranging the many buildings enumerated so as to adapt them to the many purposes they have to be put to, and to plan and construct them with a view to the safety of the public frequenting them. There is often very great danger to many of these buildings because of the bad arrangements of the plan, great danger from panic, inadequate exits, and fire. The risk from fire arises from many sources, not seen in the room or hall itself, but which, upon careful examination of the premises from an architect's and fireman's point of view, can be seen to exist in other portions of the building, in the surrounding building, or from the temporary arrangements made in the hall itself for private or other theatricals, bazaars, and varied entertainments.

At one time or another nearly every architect is called upon to build one or other of the kind of buildings I have mentioned; not like theatres, which are built by the few, the concert-hall or assembly-room is incorporated in one form or another in such a very large number of buildings, that its arrangement and planning must be the work of every architect.

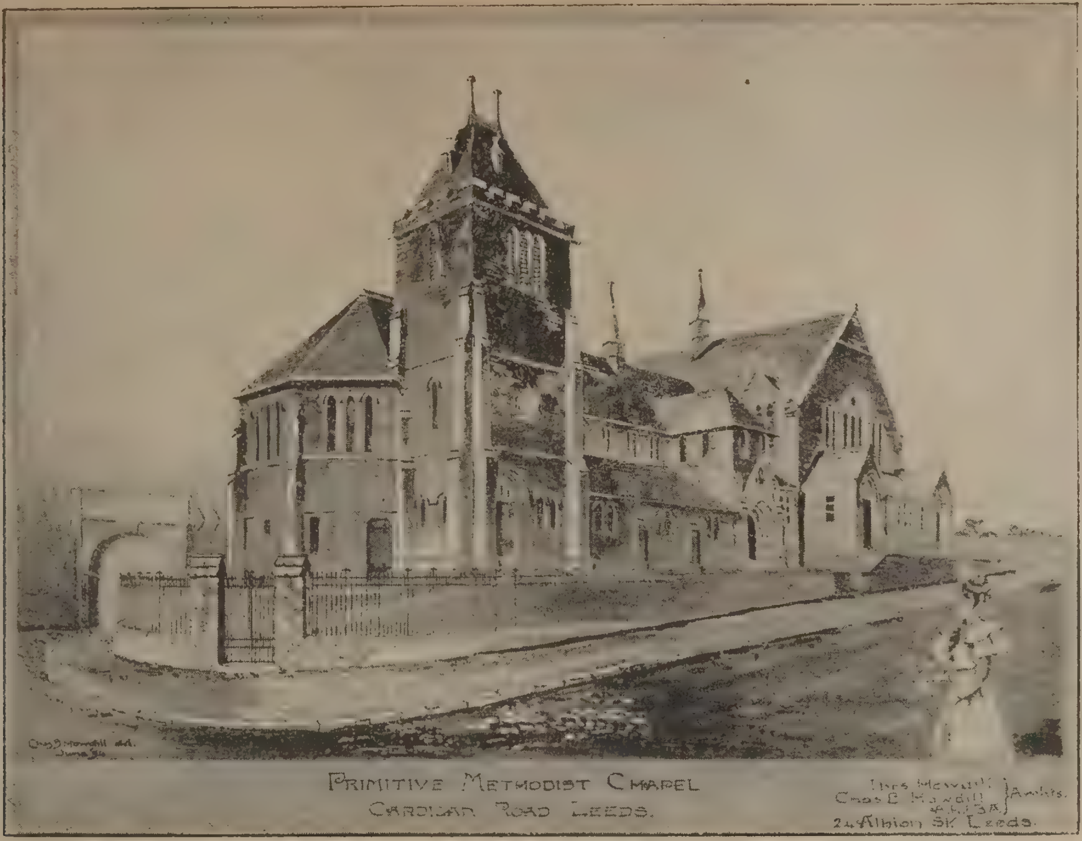
After dealing in these columns at some length with the planning and construction of the most important of all public buildings—i.e., the theatre—it is but natural that I should now turn my attention to the subject before us. It has fallen to my lot, during some years past, to examine plans and visit buildings intended for one or other of the above-mentioned usages of the concert-hall and assembly-room. Some of the points which have been forced thereby under my notice may, I hope, be of service to my readers. To design a building suitable to be used for so many purposes is no easy matter; to make a hall fit and safe alike for theatricals, bazaars, concerts, lectures, flower shows, political meetings, industrial exhibitions, and balls is indeed a task. Many of the defects which become evident in these buildings are due to the fact that, when they are first built they are not intended for the complex usage to which they are subsequently subjected; the architect may, therefore, not be so far to blame for the defects, not seeing the inventive mind of his client, or conceiving the use to which he will put his hall or room. But, after all, it must be remembered that these premises are built for money-making, and when there is a chance to let the hall for a few guineas—never mind for what entertainment—the owner will not hesitate or concern himself as to the suitability of the building for the purposes to which it is to be put. It is for this reason that the architect must be ever far-seeing and imaginative, and must provide for every contingency. Difficult as a successful theatre is to design, the assembly-room, as now employed, is far more difficult.

Many men intrusted with the designing of public buildings show a surprising ignorance of the primary and essential requirements of public safety; they totally ignore the rudimentary rules as to entrances and exits; they overlook the necessity of separating fire risks, and totally ignore the fact that they are building an assembly-room in the widest sense.

NATIONAL ASSOCIATION OF SLATE MERCHANTS AND SLATERS.

THE third annual meeting of this Association was held on Wednesday at noon at the Cannon-street Hotel, E.C. Mr. Charles Nicholson, of Newcastle-on-Tyne, the President for 1894-5, occupied the chair, and there were also present all the vice-presidents—viz., Messrs. C. Braby, London; T. Flewitt, Nottingham; W. Follitt, London; H. Shenton, Derby; W. R. Thompson, Dewsbury; and G. W. Wylie, South Shields; also Mr. J. Hunter, J.P., Hull, treasurer; Mr. James Townsley, of Hull, hon. general secretary; Mr. Tom Turner, J.P., Hull and Beverley, solicitor, and between fifty and sixty other members, for the greater part belonging to the North of England and North Wales.

After the transaction of formal business, the President read his valedictory address. He remarked that they were gathered together as business men having one common interest at stake. They had now completed the third year's work as an association, and their achievements thus far could not be considered otherwise than highly satisfactory. The work had been going on apace in a silent and unostentatious manner, and while the executive pursued their present policy, he saw nothing but success before them. There were, he regretted to observe, still a few engaged in the slate business who did not fall in with the movement. In the interests of all that was good in the trade, he hoped that their indifference towards the Association would develop into a desire to know the actual facts about its work, for with such knowledge he could not understand that any right-minded man would separate himself from them. He would candidly confess that three-and-a-half years ago, when the National Association was first mooted, he received a circular and list of questions; he replied most emphatically that he did not believe such a scheme as the present one was possible, and he would not aid the movement until he knew more about its objects, its management, and its promoters. Out of curiosity he attended a meeting, when he was so favourably impressed that he joined the Association, and had since done his best to assist in the consolidation of the North of England branch, which is now about the largest and most complete branch in connection with the Association. What was possible in one district was equally practicable elsewhere, and he therefore urged all members of weak districts to work energetically to increase the membership. If a member called on his neighbours, asked their co-operation, and showed them that he did not want to monopolise all the trade of the neighbourhood, but was prepared to deal faithfully by all, depend upon it such a man would meet with success. The president spoke in high terms of the work being done by their honorary secretary, and urged members to support Mr. Townsley's efforts by extending the scope of the Association. There were one or two local associations which had not yet affiliated them-


PRIMITIVE METHODIST CHAPEL
CARDIGAN ROAD LEEDS.
Thos Howdill
Chas B Howdill A.R.I.B.A.
Archts.
24 Albion St Leeds.
Chas B Howdill del.

selves with the Association, though there was perfect harmony between them, and he appealed to such to throw in their lot with the general body. In conclusion, he heartily welcomed the non-members who were present.

On the motion of Mr. Starkey, of Leicester, seconded by Mr. A. B. Partridge, also of Leicester, the President was thanked for his address, which it was decided to print and circulate among the members.

The hon. secretary then read his annual report, which stated that the Association had made rapid strides, not only in membership, but in influence for good during the year. The organisation was becoming more consolidated, and there was a growing desire manifested by the branches to be more closely allied to each other, and for the federation of smaller bodies. Their register had been largely augmented during the past year, and 24 new members had been elected, 10 fresh towns previously without members being represented. The number of firms or individual members at the end of last year was 144; three had been struck off, owing to withdrawal from business, but 24 had been added, making the present total of *bonâ-fide* paid-up members 165. This was pretty satisfactory seeing there were only about 400 firms in the trade all told; but it was evident that there were still several firms whom they would all welcome to the register. He had to announce the deaths of three members—Messrs. Haigh, of Rochdale; Capes, of Grimsby; and James Season, of Leeds. Branch meetings had been held in various parts of the country, and he appealed to them to use their influence to induce all in the trade to co-operate by joining the association.

The report was adopted on the motion of Mr. John Wharton, of Darlington, past president, seconded by Mr. T. Mandle, of Maryport.

Mr. Hunter read his report as treasurer, which was of a satisfactory character, there being a balance in hand. The report was adopted on the motion of Mr. Davies, of Portmadoc, seconded by Mr. S. Addison, of North Shields.

The election of officers then took place, the following being unanimously elected, seriatim:—President: Mr. A. B. Partridge, Leicester. Vice-presidents: Messrs. C. Braby, London; T. Flewitt, Nottingham; W. Follitt, London; R. Mascall, Middlesbrough; D. Nelson, Sunderland; and H. Shenton, Derby. Past presidents: Messrs. Jn. Wharton, Darlington; S. Worsnop, Leeds; C. Nicholson, Newcastle. Central Board: S. Addison and Son, Shields; J. Atkinson and Son, Leeds; E. Beck and Sons, Newcastle; Davies Bros., Portmadoc; Evans and Co., Accrington; Fergusson and Starkey, Leicester; W. Frost and Son, Derby; J. Hardgrave, York; J. Harrison, Middlesbrough; Benj. Hewitson, King's Lynn; Hollis Bros. and Co., Leicester; W. E. Jowitt, Huddersfield; J. B. Johnson and Son, Liverpool; T. Mandle, Maryport; J. E. Nelson, Sunderland; J. Rushton and Son, Bacup; J. Shepherd, Harrogate; Jas. Smithies, Bradford; W. R. Thompson, Dewsbury; J. G. Tuxford, Deganwy; and Woodward, Clark and Co., Nottingham.

The only alterations from the original "house list" of nominations were the substitution of Mr. Jowitt's name for that of Mr. James Season, of Leeds, deceased, and the withdrawal of Mr. Wylie, of Shields, who declined re-election.

Mr. Nicholson then vacated the chair in favour of Mr. Partridge, who expressed his thanks for the honour done him, concluding by moving a vote of thanks to the late president for his loyal services during his year of office. This was seconded by Mr. J. G. Tuxford, carried by acclamation, and suitably acknowledged by Mr. Nicholson. A similar vote of thanks was accorded Mr. Townsley, the hon. secretary, on the motion of the President, seconded by Mr. T. Flewitt, of Nottingham, and closed the proceedings.

PRIMITIVE METHODIST CHAPEL AND SCHOOLS, CARDIGAN-STREET, LEEDS.

THE schools were built in 1883, and have a central hall for 460, with infants' school, band-room, and eleven classrooms, with conveniences. The cost was £2,200. The chapel is built in 13th-century English Gothic style, of Yorkshire pitch-faced stone with Bramley Fall stone dressings; covered with best Bangor slates; windows glazed with cathedral glass in leaded lights; pews are circular, and of pitch-pine. The nave is divided from the aisles by stone arcading, and the roofs covering both are open-timbered and boarded. The minister's vestry, lavatory, and heating-chamber are under the choir in the apse at the south end. The heating is by low-pressure steam. The chapel is ventilated by numerous inlets, the foul air being extracted by a large slated wood ventilator on the ridge of nave-roof. The whole of the site is surrounded by boundary walls and wrought-iron railing. Sitting accommodation is provided for over 600 persons, at a total cost of £2,500. The buildings have been erected from the designs and under the supervision of the architects, Messrs. Thos. Howdill and Charles B. Howdill, A.R.I.B.A., 24, Albion-street, Leeds. The chapel was opened three weeks ago by the Rev. J. Watson, principal of the Theological College, and President of the Conference.

THE INCORPORATED ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS.

THE twentieth Voluntary Pass Examination of candidates for the offices of municipal engineers and surveyors to district councils, carried out by this association, was held at the Town Hall, Manchester, on Friday and Saturday, the 4th and 5th inst. Thirteen candidates entered themselves for the examination, the written portion of which was taken on the first day; the greater part of the second day was occupied with the *viva voce* portion of the examination. The examiners were: (1) For engineering as applied to municipal work, T. De Courcy Meade, M.Inst.C.E., past-president; (2) for building construction, E. Pritchard, M.Inst.C.E., past-president; (3) for sanitary science, J. Lemon, M.Inst.C.E., past-president; (4) for public health law, J. T. Eayrs, M.Inst.C.E., past-president.

CLUNY.—IV.

By May Morris.

CHESTS AND FURNITURE.

I HAVE several times alluded to the mixture of simplicity and luxury that characterised the house-fittings and furniture of the Middle Ages. Yet the widespread conception of the life of these our forefathers—that it was gross and lavish in exterior pomp and ceremony, but rough and miserable and wanting in refinement in all domestic details—is a mistaken one: mistaken twofold—mistaken in *fact*, and also because the standard or ideal of comfort and refinement, as it is almost forced upon us now from the sheer superabundance of modern resources, is apt to be superficial, if not often wrong or vulgar. The hard life our Mediæval forefathers lived was not necessarily a gross or an unintellectual one—indeed, it is one of my objects in these papers to insist upon the pre-eminence of the thoughtful and intellectual qualities as expressed in the domestic art of the 13th, 14th, and 15th centuries. To distinguish between true and false luxury would be to go into the matter too deeply here. There was certainly very little in those times of the superfluities and caprices of fashion, which are often confounded with luxury; the great feasts we read of were occasional, and were affairs of pomp and politics. Even in the richest households the fare was habitually simple and often rough. But a rich merchant of the City of London might have been rather scornful of the dull and mean aspect of the suburban residence of his modern prototype. The forced strawberries and roses glowing on the table, while the snow lay on the road outside, would possibly strike him less than the poor and ugly dishes and bowls in which they were placed; he would comment less on the comfort of soft chairs and luxurious window-curtains, than on the lack of rich detail in the furniture and of colour in the hangings themselves. Let us call up before us the 14th-century merchant's living-room, with its cupboard or dresser fitted with flagons and cups of silver, of parcel-gilt and of laton, all of elegant shape and finely worked. The dresser itself was a noble piece of furniture, though simple in its construction. The few seats besides the dining benches were freely carved, and the long settle before the fire covered with gay cloths and abundant cushions. The stone above the hearth was carved and painted with devices and pious or hospitable legends, while across the room the sun strayed in broken lines through an arched and traceried window, with its slender columns and lightly-moulded capitals. I do not pretend that the Mediæval man of business had sensitive artistic perceptions far beyond any such possible to a man in the same position to-day; within certain limits, his household goods, interesting and beautiful as we think them, may not have afforded him more pleasure than their solid, costly substitutes do to his modern prototype. But the fact that such goods, common every-day things then, are now museum specimens (valued more, I am sure, for their beauty than for their rarity), shows that the standard of life was in many ways universally higher than people are inclined to allow. Does it not say something for the refinement and luxury of a people when they cannot make their common kitchen utensils, their workmen's tools, arms, &c., and all the little odds and ends for personal use, except in comely shapes, and with something fanciful added to their utility? Not to know how to make an ugly or an awkward shape; just think of it! No wonder we find it difficult to put ourselves inside the skins of these forefathers of ours, their habit of thought, their habit of life, their surroundings being so different from our own.

The carved chest illustrated this week is one of the rarest and most interesting possessions of the Cluny Museum. It dates from the earliest years of the 14th century or the end of the 13th century, and every inch of it is covered with elaborate ornament. It is singularly elegant in form and proportion; the lid and top lines of the chest are very slightly curved, and the base is cut away in the centre in two bold curves forming a wide, flat arch; all this arrangement of the lines gives grace and lightness to what is in reality a very solid piece of furniture. The locks, chains, and fittings are contemporary, and it is interesting to note that there are traces of painting about the ironwork of the fastenings. On the front are carved the twelve peers of Charlemagne, each in his little niche, his arms displayed on his shield. This part of the carving is interesting for the armour, which is executed with precision. Three of the knights wear their crossed helmets, another is in the act of extinguishing himself in his, while some wear merely a round steel cap over their hauberk of chain-mail. They are all clad from head to foot in flexible chain-mail, with a loose, flowing coat over it—a really graceful costume. This is the only period, to my thinking, when armour can be said to have constituted a beautiful attire. The lid on this side is carved into a rich border of rosettes and long, crawling, dragon-things, while the supporters on each side at the base of the chest are griffons with curly tails. The corresponding back side is simpler, but no less decorative. Note the beautiful arrangement of double arches, resolving themselves above into quite a woodland grove, with birds and griffons flying about and preening themselves in the niches and among the crockets grown into waving branches. The four little groups (see illustration) represent games and sports. The little man on the left plays on the bagpipes, while the lady dances; the next, I think, is stone-throwing; next wrestling, pick-a-back, and, lastly, a hawking scene (the man has just unhooded his falcon). One of the end panels represents, according to M. Viollet-le-Duc, a scene from the "Quatre Fils Aymon," though I cannot myself locate it in the story; while the other end has a curious piece of grotesquerie, which together with the lid—a very rich network of quatrefoils filled with little domestic subjects—has not been photographed, owing to modern notions of seemliness—considerably altered since the 14th century.

These carved and painted chests, with their beautiful locksmith's work, were important pieces of furniture in the Mediæval living-room. They contained the best clothes—furred and embroidered, and bequeathed from father to son and mother to daughter—jewels and money and family papers. A well-to-do man would have several of them; one was usually placed at the foot of the bed and served the double purpose of "locker" and seat. You sat on your box, you took your lunch on it, you wrote a letter on it, you raised its lid and caressed your little possessions that lay in it; no wonder such chests were built with two or three stout locks and fitted with a good substantial key, so that no man could steal or meddle with the contents. The furniture of the chamber or parlour was scanty as aforesaid, though it was the room in which the master or mistress of the household might receive in more privacy than in the hall or "house." There was a bed with its hangings, one or two chests, a settle before the fire, a handsome carved chair, two or three stools besides the seats or niches in the walls themselves, a cupboard or dresser; a chandelier or candlestick hung, perhaps, from the roof with a pulley, and there were the fire-irons, the great dogs, or "chenets," for holding the fire together, tongs, &c., on the hearth. This sounds poor enough, but in reality the aspect of the room was distinguished, and even gay. Bright-coloured stuffs and embroideries lay about the settle and over the big bed; cushions there were to lean against, and the woodwork was prettily painted or carved in crisp ornament; the dresser shone with its burden of silver, silver-gilt, and pewter; the walls were either hung with cloths, or painted roughly but skilfully with subjects and ornamental work in flat colour, or covered with mere line-drawings in black, filled with red and yellow. The floor was often tiled with rugs or cloths, laid here and there, but oftener laid with rushes—a custom I frankly, wholly, and utterly condemn, even though on feast-days and holidays the fresh rushes might be strewn and mixed in sweet herbs and flowers. And a people that loved the woodlands and the sweet scents and the fresh blossoms so dearly never failed to adorn their chambers with flowers in summer and evergreen boughs in autumn and winter. But the fireside was the centre of the little home-circle; beyond it, in the long winter evenings, lay the chill twilight of another world. Here warmth and geniality spread from the great hearth, with the strong red glow that lay across the tiled floor, overpowering the uncertain flicker of the torches and candles that stood above the carved chimney-piece, or hung from a beam in the centre of the room. The furniture of this oasis of light and warmth received a great deal of attention; the fire-dogs were often beautifully-wrought iron-work, covered with grotesques or with the arms and device of the family interwoven with graceful leaf-tendrils. The settle before the fire, too, was sometimes ingeniously constructed with a movable back (like the garden-seat of a tram-car), so that the company who had toasted and scorched their shins sufficiently or too much could face round, screening themselves by a cloth hung over the back of the seat, through which only a gentle warmth would penetrate. Long baskets, too, stuffed with hay were provided, funny as it sounds, to protect legs from the fierceness of the fire.

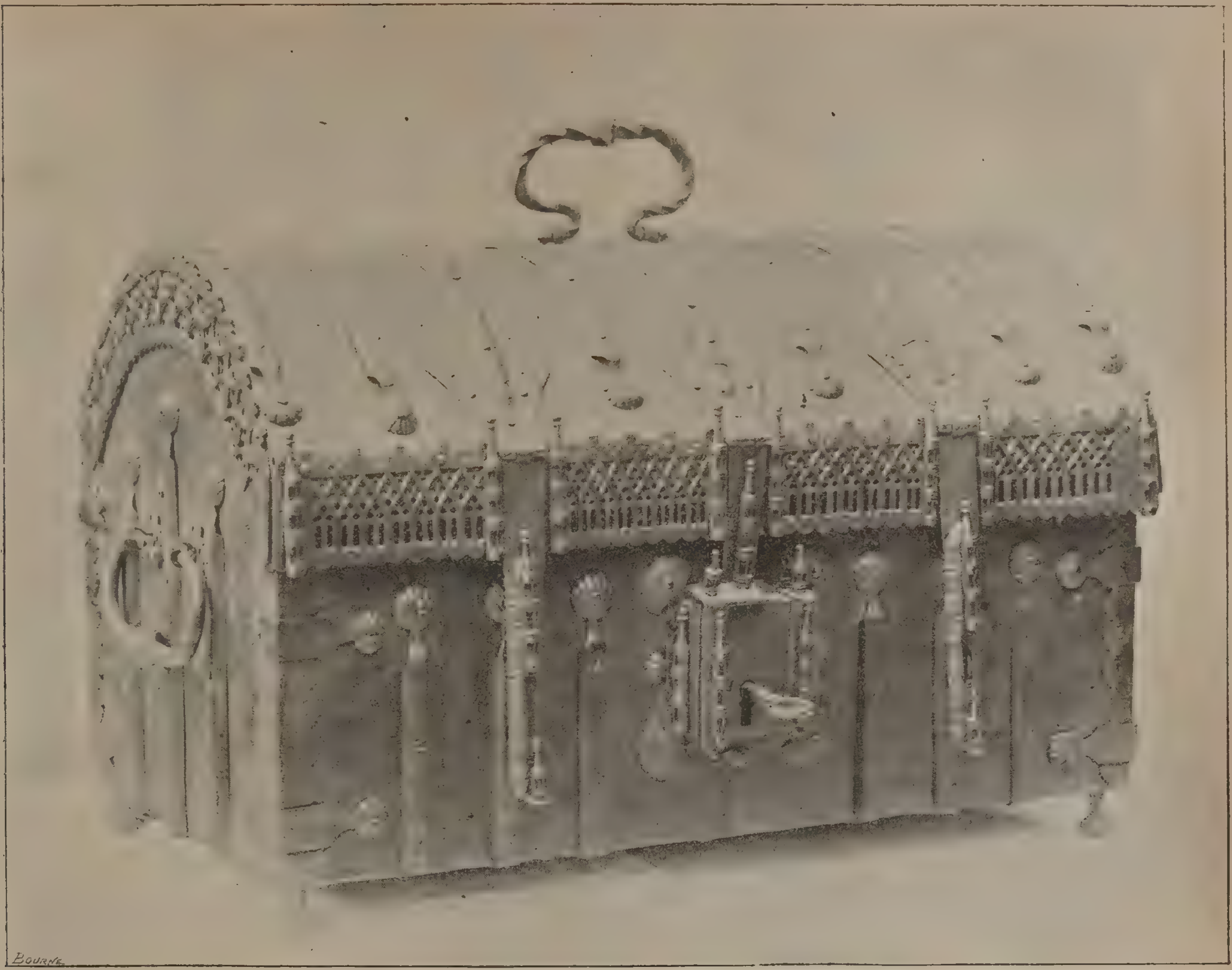
I have said little about mediæval beds, partly because I am trying—not with great success, I fear—to confine these notes on the life of the times within the precincts of the Cluny Museum, and the Museum possesses no bed of an early period. But it was the important piece of furniture in a living-room, with its display of costly hangings and cushions and counterpoints. Curiously described, too, are the old beds and their furniture by many a scribe and romance-writer. In the accounts of the Kings of France in the 14th century, the following picturesque paragraph occurs:—"For seven thousand trefoils of silver, of which the counterpoint, the *ciel*, and valences, and eight pieces were sewn between the parrots and butterflies; for silver and silk of which they were made, 4 deniers for the piece, making 116 livres 13 sols 4 deniers, &c., &c." This is for the Embroidered Room prepared for the coronation of Philip the Fair's wife at Reims, in 1317. For the same, the following item appears:—"For the making of 1,321 parrots, done in embroidery with the arms of our lord the King; for the work of three parrots, for gold, for silk of which they were made, and bread for the workers, 6 sols for the piece, making 396 livres 6 sols."

To judge by the minute and affectionate way some of the household goods are described in old wills and inventories, their owners had a considerable idea of their value, and entertained the thought of leaving them behind with some regret. Thomas Bath, a burgess of Bristol, probably a cloth-maker, gives a very pretty list of his personal treasures in 1420 when he makes his will. His godson comes in for a silver beaker with a knob on the top of it enamelled with blue. To him also a girdle of black silk lined with red leather, with a good buckle and pendant, which bears an image of St. Christopher, and "in the gurdill be xlvj. studs of silver." Item half-a-dozen silver spoons with acorn tops, over-gilt. A pair of andirons he gives him, too, the best he has. And mediæval andirons were no trifle, as I hope to be able to show you, from the Cluny collection. Katherine Lewis, his servant, comes in for a score of good things: a bowl that weighs 16¾oz., a silver beaker, a silver spice-dish over-gilt of xj.oz., a bowl of vij.oz. A girdle of silk also, black, green, and red, with a buckle and a pendant, and a chain in the pendant with a knob; "23 studs in the girdill all of silver." Basins and ewers and pans he leaves to Katherine, and four gold rings; quart pots, andirons, and iron broches or spits, chafers, a dozen pewter vessels, and four candlesticks of laton, of the best. Kate has also all his bankers and cushions and a hanging of "tamsery" worked with a hart in the middle. Somebody else gets a silver chalice cup and some other silver, also a "beam that I weigh with, and ij levys, also 3 hundred leaden weights." Then he returns to Katherine, who is to have three blue curtains, the best he has, to hang round a bed; and therewith the scribe wanders absent-mindedly into dog-Latin, and notes a "petit brase morter, a pestell de ferro." A priest, leaving his worldly goods for things celestial, bequeaths a bed of green silk, with tester and canopy of red and white-striped tartarin; a bed of green worsted, a blue bed "with the lion curtanis," hall-hangings, silver cups and pots, and other handsome pieces of silver, while all his personal goods, except for the legacies, were to be allotted to the Church in various ways for his soul's sake. One man bequeaths the contents of his chest, which must have been a large one, for it contains as many heterogeneous goods as the bag which Fairy Blackstick left with Prince Giglio; napery of all sorts, a white gown with a red hood, a blue gown with hood of red and black, a blue coverlet, a dagger, a bow, four purses, a pair of green hose, four nobles, and a cope. A wax-chandler's servant, of London, has a fair collection of pretty things—napery, silver, a furred gown and hood, cushions and hangings, crucifix beads, &c. He leaves, too, a little painted trestle-table, a little jointed stool for a child, and another, large enough for him to sit on, "whanne he cometh to mannes state; also a prymmer for to serve God with; also a litel cofur to putte in his smale thynges." This same child, his godchild, receives his painted chest. And certain neighbours witness the signing of the will: a grocer, a brewer, a hosier, and a tallow-chandler.

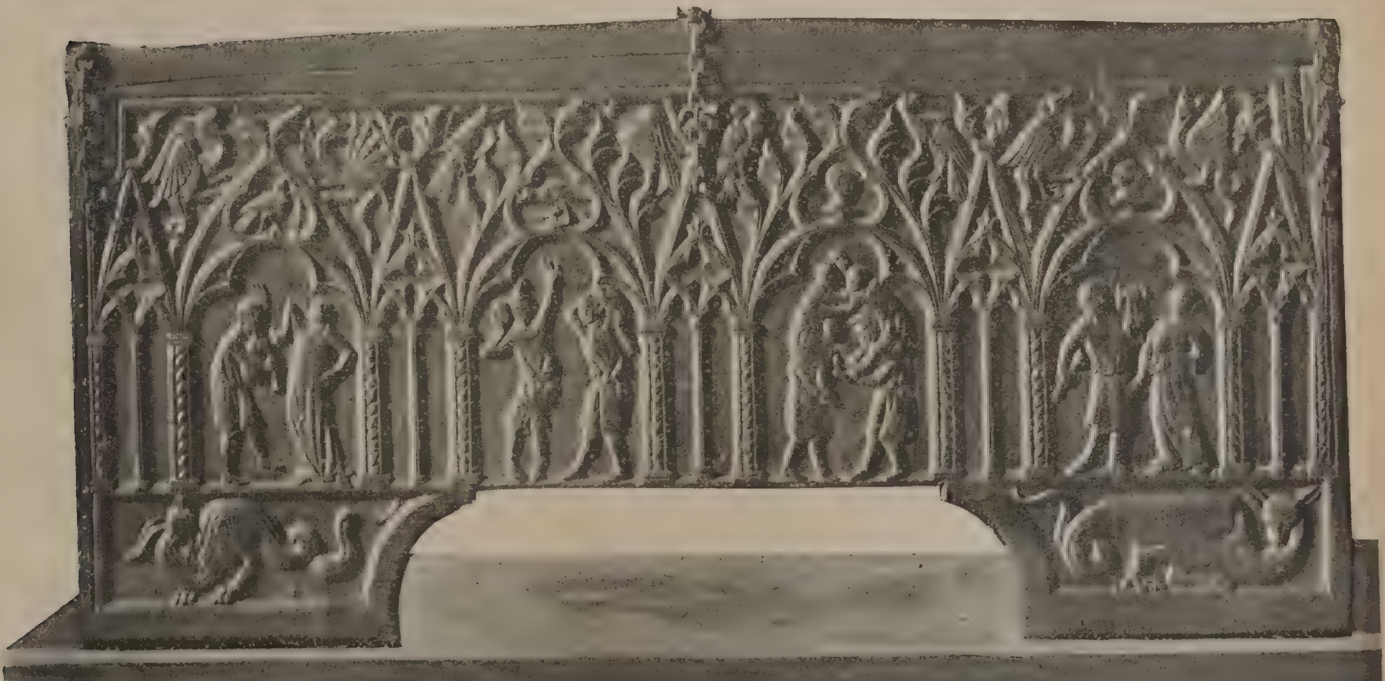
* * *

New church schools for St. Andrew's parish, Lincoln, were opened last week. Mr. William Scorer was the architect, and Messrs. H. S. and W. Close, also of Lincoln, were the contractors. The cost of the school, which provides accommodation for 250 children, was £1,150.

Messrs. John Sumners and Sons, of the Globe Ironworks, Stalybridge, have purchased upwards of 43 acres of land adjoining the new Hawarden Bridge and the River Dee, for the purpose of constructing extensive works for the manufacture of galvanised corrugated iron roofing-sheets, steel nail strips and sheets, and nails. The works are to be proceeded with at once, the contracts having been let. This is the commencement of an important industry, due to the construction of the Manchester, Sheffield, and Lincolnshire Railway, and the Dee and Birkenhead Railway from Hawarden Bridge, and it is expected that before long the whole river frontage will be taken up by similar works requiring large areas of land.



FIFTEENTH-CENTURY LEATHER CHEST, FROM CLUNY.



EARLY FOURTEENTH-CENTURY CARVED CHEST, FROM CLUNY.

KING'S COLLEGE CONVERSAZIONE.

On Friday, October 4th, the prizes at King's College were distributed by the Master of the Worshipful Company of Carpenters, Dr. Wace in the chair. Professor Banister Fletcher, being called upon by the chairman, said it was a great pleasure to be able to report continued progress, not only in the building construction lectures and classes, and in the studio, but also in the day and evening wood-carving classes. He gladly bore testimony to the earnest desire to learn by the students, and the thoroughness of the work done. The exhibition of some of the drawings shown that night would, he believed, convince those present as to this part of the work. The number of students are:—

	1894-5.	1893-4.
Professor Fletcher's Lectures	42	23
Constructional Drawing, under Demonstrator	42	24
Quantities, under Demonstrator	39	21
Architectural Studio, under B. F. Fletcher	12	6

Total number of students in above classes: 1894-5; 75; 1893-4, 42. The numbers in wood-carving were, in the day classes 20, in the evening classes 21, also showing a marked improvement. One of the professional papers has recently said, while praising the work which is being done there: "These classes form almost a college in themselves." To give some idea of the activity of the classes, the Professor mentioned that the number of drawings prepared in the constructional drawing classes was 273. The prizes, medals, and scholarships about to be distributed would also indicate some considerable exertion among the students, as also will the exhibition of the students' work in wood-carving. How, then, is this work, it may be asked, accomplished? The reply is, that the Worshipful Company of Carpenters helped with an annual endowment and prizes. That all the remainder of the expenses on the wood-carving classes is generously found by the late Master, Mr. Henry Harben. "It may interest you to know," the Professor said, "that no portion of the expenditure is found by the ratepayers. Lord Beaconsfield, in one of his clever sentences describing life, &c., dividing it into three periods, mentions that youth is a mistake, and doubtless he will continue to be right if youth is spent without utilising the great advantages it *now* has spread before it. Let it cheerfully avail itself fully of the splendid free technical museum and library, of the lectures, classes, and studio *here* provided. Then, I venture to think, it will prove youth is no mistake, and may enter its further stages with bright spirits and earnest hopes, being fully armed for the battle."

SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.

The inaugural meeting of the session of this society was held at the Cutlers' Hall on Wednesday evening, when there was a large and representative gathering of members and visitors, including many ladies. The rooms were filled with the pictures brought together by the Sheffield Society of Artists for the annual art exhibition, and there was also shown a valuable collection of prints and engravings of Renaissance art, lent by Mr. B. Bagshawe, and also the original draught of Fairbank's Map of Sheffield, *circa* 1771, and a fine copy, in three folio volumes, of Leon Battista Alberti's "Architecture," with other interesting books lent by Messrs. Ald. W. H. Brittain and J. B. Mitchell-Withers; the last named likewise lent the unique collection of engravings of Sir Christopher Wren's works, which belonged to the late Professor Cockerell, R.A.

The chair was occupied by the President, Mr. Charles Hadfield, F.R.I.B.A., who reviewed in brief the work of the year that has gone, and further indicated the more important aims of the forthcoming session. Mr. Hadfield remarked:—The recently-issued annual report shows the society to be in a sound condition. It has a substantial balance in the hands of the treasurer. It numbers 35 Fellows, 32 Associates, 15 students, and has, moreover, strengthened its ranks by the admission of five honorary members—viz., the Dukes of Norfork and Devonshire, the Earl of Wharncliffe, Mr. John Daniel Leader, F.S A., and Dr. H. C. Sorby, F.R.S. The ranks of the Society have also been strengthened by a newly-formed class of lay members, gentlemen outside who are interested in architectural pursuits. The lectures given during the session were of a high standard of excellence. One, by Mr. William Dickie, on "Wentworth House," was illustrated by a unique and valuable collection of 18th-century architectural drawings, many of which bore the signatures of H. Flitcroft, who was Sir W. Chambers's predecessor in the middle of last century as H.M.'s Surveyor of Works at Whitehall. Another lecture, by Mr. John Holden, President of the Manchester Society of Architects, on "Ancient Lights," was a singularly lucid and exhaustive contribution on this difficult subject. The classes of design, conducted by my predecessor, Mr. E. M. Gibbs, with so much zeal and thoroughness, have induced a feeling for work and study amongst the rising generation of architects, while the history and sketching classes, under Mr J. R. Wigfull's able guidance, are doing untold good to the students. During the past session the council has not forgotten the interests of the members in their relations with public bodies. Friendly correspondence and interchange of opinion have taken place with the Sheffield School Board, the late lamented town clerk, and others, on the vexed topic of "competition," and these interchanges of opinion have had due consideration given to them by the parties addressed, who have received them in the spirit which dictated them. The library list grows from year to year, and would grow much faster had the society a room of its own. This matter has not been overlooked, and is postponed solely for prudential reasons at present. During the past year, the eighth of the society's existence, the primary objects for which the society exists have been kept steadily in view—*i.e.*, "The acquisition of a knowledge of the various arts and sciences connected with the architect's and surveyor's craft; the education of the junior members thereof; and the consideration of questions of general practice." At the same time, let us not forget the motto of the society should ever be "Excelsior." Let me urge on younger members in all their pursuits to aim at a lofty ideal: ever to bear in mind the position and responsibilities they may have one day to bear, and by making use of the advantages they come across, to qualify themselves for the part they may have to fill. Vitruvius lays down "that an architect should be ingenious and apt in the acquisition of knowledge. He should be a good writer, a skilful draughtsman, versed in geometry and optics, expert at figures, acquainted with history, somewhat of a musician, and not ignorant of the sciences—both of law and physics." These ideas of Vitruvius clearly point to the exalted and responsible position of the architects of antiquity, and there is no doubt that in the 16th, 17th, and 18th centuries, men such as Brunelleschi, Alberti, Bramante, Peruzzi, Michael Angelo, Palladio, and Vignola, in Italy; Le Pautre and others in France; and our own Inigo Jones, Wren, Vanbrugh, and the like, lived up to much the same high standard. The present is an age of marvellously advanced draughtsmanship, and severe competitive examinations in every calling; but let me remind the young architect that brilliant draughtsmanship and the passing of examinations are but a means to an end. I have examined the drawings of some of the above-mentioned masters, and doubt if any of them would have passed muster at a South Kensington Science and Art examination in freehand or building construction; nevertheless, their authors immortalised themselves for all time by their works in marble, stone, and brick. They were workers and students to the end of their lives, and I hold them up as your pattern. You have well-organised classes for sketching and the measurement of old buildings, for land surveying, for historical study; the first and last named under a leader, whose achievements in measuring and delineating the north transept of Lincoln Cathedral brought him the well-earned and coveted distinction of the R.I.B.A. silver medal some two years ago. Let me suggest also, for your consideration, a work that ought to be no longer delayed – i.e., that of carefully drawing and measuring old local buildings and any architectural detail of interest they may happen to contain, with a view of issuing the drawings in book form to subscribers. This has been successfully done elsewhere. The German societies of architects make it one of their chief duties, and issue complete records of the buildings in their own immediate district. The Sheffield Guild of Arts and Crafts, through its president, Mr. C. Green, have already drawn attention in the Press to the lamentable destruction that has for some time and must necessarily continue to take place in this city of much that is worthy of record. Let us join hands with them before it is too late. There is now, at the eleventh hour, plenty of material to work on, and in gathering it in, you will be garnering rich stores of old decorative and building types, and at the same time cultivate your designing faculties. The 19th century has been a century of artistic and notably of architectural revivals in England and her colonies. A Frenchman thinks far more about the charm which his imaginative faculty teaches him to impart to his work, and its inherent character and interest, than of all the wretched shibboleths about historic style we are eternally proclaiming in this country and in America. Cannot we, once for all, delegate to the shades of oblivion the regulation phraseology of the day as to our buildings being designed in "Free Classic," "Early Gothic, freely treated," or "English Renaissance," or as to Mr. Jones being a Classic, and his rival, Green, a Gothic, man? To the architect who has learned the grammar of his art, the whole thing should be exquisitely absurd. Let the young architect in his hours of recreation go into the fields and woods with his colour-box and sketch-block, or scour the hills and dales of England with knapsack on his back. Let him make good use of his cycling powers, and he will find plenty of material to enable him to invest his own efforts with something of the charm and character that were inseparable from all periods of our old English architecture. When he has to undertake a building, such a course of study will tend to strengthen his faculty for original and artistic design. This is a commercial age, and an architect must train himself up to habits of system, hard work, and punctuality in his appointments. We have heard it asked lately if "Architecture be a profession or an art?" But there is little good to be gained by a parade of high artistic to the exclusion of commercial or professional ability, or *vice versâ*. The British public, as a rule, are quite shrewd enough to read between the lines, and say "A plague upon both your houses!" nor are they likely to value such attempts at transparent self-advertisement one wit more than those of the architect, who, posing as a sanitary specialist, adorns the front of his building with ventilating pipes and other interesting sanitary requirements, which a little trouble or forethought might have relegated to a less obtrusive position, without injury to efficient working. Do not take to heart the disappointments and the failures, the anxieties, the rebuffs, and the wearinesses that come to each one of us—to the most successful, as well as to the young struggling architect or student. Persevere! Use your thinking faculties, and lose no opportunity of attaining knowledge and experience, and you will find that, as a rule, the man who rises to his opportunity when it presents itself, and does his best, is the man who "goes in to win." To one, it comes in early life; to another (and he is often the more fortunate), during years of ripe knowledge and maturity; to a third, after long waiting and disappointments, when life's meridian is passed. Michael Angelo Buonarotti was fifty years of age when he put his hand to the gigantic task of shaping the Vatican Basilica. You may depend upon it that hard work, culture, practical knowledge, and skilful handling of difficulties will tell in the long run. The great moralist, St. Ignatius of Loyola, the founder of the Society of Jesus, was wont to inculcate in his disciples that heroic deeds performed were not necessarily to be more highly valued than the ordinary everyday work of life done extraordinarily well; and Longfellow has embodied the like sentiment in his "Psalm of Life."

CAST IRON IN BUILDER'S AND CONTRACTOR'S WORK.—VI.

By Joseph Horner.

I propose to indicate in the papers immediately succeeding the differences between good and reliable castings and those of an opposite character, and I will preface that subject with an object-lesson in moulding and casting which all can understand.

An engineer's specification for the quality of cast iron runs substantially as follows:—

"The castings shall be clean and sound, both externally and internally, and shall be carefully fettled and smoothed. They shall be free from scabs, blow-holes, honey-combing, cold shuts, draws, and other defects. No stopping up or

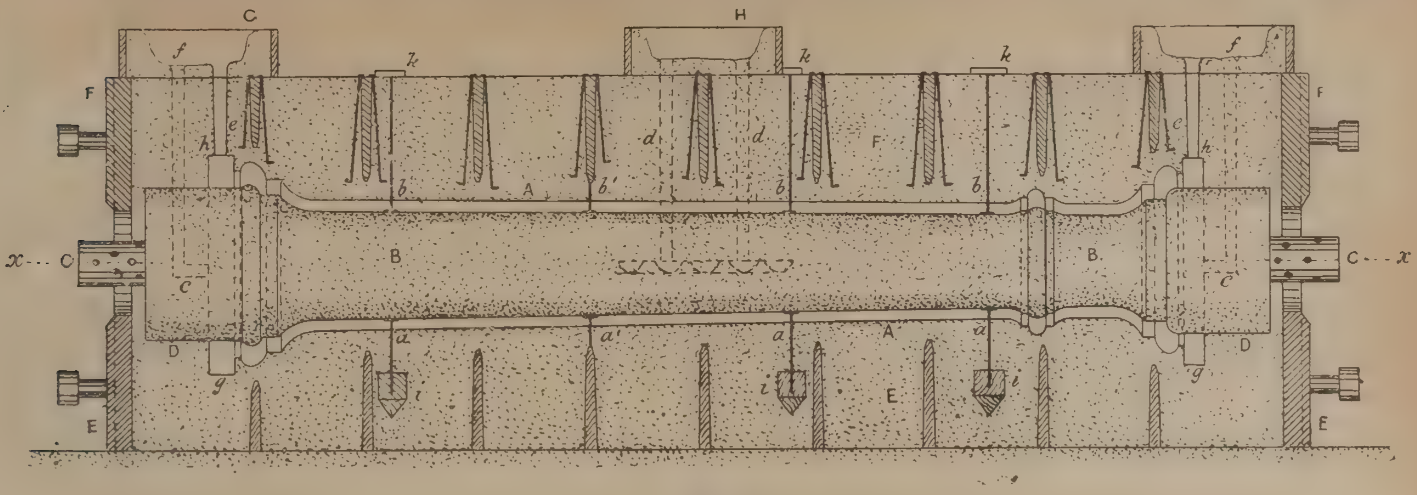


Fig. 15.

plugging is on any account to be permitted. No castings shall be made in open sand. Cores must be cast in accurately. No more than five per cent. variation in weight will be allowed on either side. The metal shall be remelted once in the cupola, and free from any admixture of cinder iron, or other inferior material. It shall be uniformly tough and close-grained. It shall be of such strength that a turned bar having an area of two square inches shall bear a tensile strain of not less than 16,000lb. to 18,000lb. per square inch without breaking. A test-bar 3ft. between supports by 2in. deep by 1in. thick shall bear a cross breaking strain of not less than 28cwt. to 30cwt., with a deflection of not less than ⅜in. or ½in. before breaking." There will be special clauses in some classes of work for engines and pumps, which do not concern us. It is to the consideration of these conditions that I wish now to invite attention, conditions which result from the nature of the material, the properties of which we have been studying.

The illustration, Fig. 15, represents a longitudinal section through a finished mould of a column, having a plain shaft and ornamental capital and base, which column is to be cast as it lies, namely, upon its side, as is the usual practice. The principal portions of the mould are the body of the mould, or the mould proper, A; the core, B, which forms the hollow interior, which core is struck upon a hollow core-bar, C, pierced with vent-holes. The core is laid in print impressions, D, at the ends, which completely encircle and confine the core at those localities in a position concentric with the mould. Along the body of the core, away from the ends, assistance is given by means of chaplet-nails, *a a′*, *b b′*, which are themselves variously secured, as we shall note presently. F and E are the two halves of the moulding box or flask, which are jointed along the plane *x—x*, coincident with the centre of the column, and of the core. They are guided into and kept in perfect alignment by means of round pins on E, fitting into holes in lugs in F; compare with Fig. 16. Cottars passing through the pins secure E and F together during the pouring of the metal into the mould. G H I are the basins for pouring, or for risers; but in the one figure I have indicated alternative methods of pouring, so that this portion of the illustration would not be correct for any one mould. Thus columns are poured in two ways at least, either at the ends in G and I, the runners being shown dotted at *c c*, to run into the flange faces, the two volumes of metal meeting at the centre of the column. This method would be the one generally adopted with long columns. With short columns, a usual plan is to pour at H, and not at the ends at all. The metal will enter by one, or two, runners, *d d*, and be distributed along the side of the column by means of a spray, shown dotted, having, say, from three to half-a-dozen entrance runners into the mould. Long, light columns are sometimes poured at G, H, and I, because it lessens the risk of the metal becoming chilled during its passage through the mould, and forming cold shuts. Usually, in either case, risers or flow-off gates are set over the highest parts of the mould. In this mould they should be set over the flanges, the positions of the risers being indicated at *e e*. Of course, risers and runners have their distinct basins. I have indicated this sufficiently by the full lines in the one, and the dotted in the other, the basins for the latter not appearing in the figure. I need not say more than this respecting these details, because all we are concerned with in this place are those broad influences which produce good or bad castings.

Such a casting as this may be faulty, due to unequal thickness of metal between the core B and the mould A, or to scabs, or to sponginess, or to blow-holes, or to cold shuts.

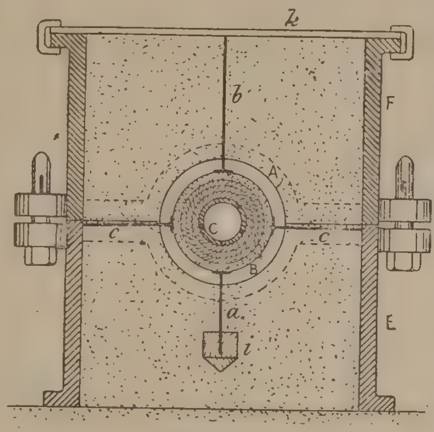


Fig. 16.

Unequal thickness of metal is caused by the liquid pressure shifting the core B in relation to the mould A. This hydrostatic pressure is very considerable in a mould. In specially deep moulds very great precautions are taken to counteract it. I have seen results that would have appeared almost impossible if they had not been seen. The tendency of a long core is always to rise in the central portions under the pressure of the liquid metal, and if this is not prevented by the use of stops, the casting will be weakened proportionately. If the metal should be, say, 1¼in. thick, and the core rises ½in., then it will be only ¾in. on the top side—the more open, or spongy side, too—and if this happens to come in tension, fracture is likely to occur. In this long column the pressure would be sufficient to raise and curve the core, spite of its stiff iron bar C, up to the top surface of the mould, leaving no room for metal. Hence the reason why the chaplet-nails are employed. Fig. 16 shows a cross section of the core confined by chaplets, *a*, *b*, *c*, *c*. Those marked *c c* are not visible in Fig. 15. They confine the core from movement sideways. These chaplet-nails consist of pieces of sheet-iron, bent in this instance to the curvature of the core, and riveted to stems. Fig. 17 shows two such nails enlarged. One, A, is of the kind used in cylindrical cores, the other, B, is for flat surfaces. The stems are prevented from moving by giving them a bearing against any suitable point of resistance. The side ones C C, in Fig. 16, are made to bear against the flask-sides E. The bottom ones are often driven into chaplet blocks of wood, *i*, Figs. 15 and 16, rammed in the sand. The top ones either take a bearing against a bar as at *b′*, as *a′* also does below; or they bear against a return-bar, or against plates *k* clamped across the flask, as at *b b*. If these chaplet-nails are properly secured by these methods, the core cannot move unless the nails melt out, which seldom happens in metal of average thickness. When metal is very thick, other methods are adopted, as solid cast stops; but these do not concern us. Fig. 17 illustrates the stops used in columns, and they are sufficient. So that when a core is out of centre, it must either have been set inaccurately, or have become moved by reason of the insecure fixing of the chaplet-nails, and this does often happen.

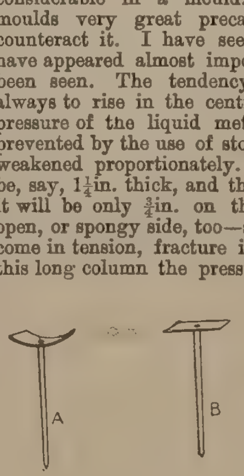


Fig. 17.

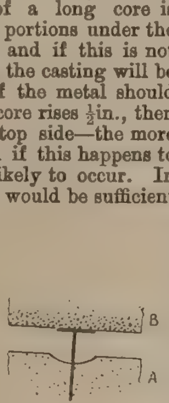


Fig. 18.

There is no objection to the use of chaplets in columns, as there is in hydraulic cylinders, and if the work is securely done there is no risk of the cores rising, and if the chaplets are tinned there is no risk of blowing. If chaplets are not used, a very stout core-bar that will not spring must be employed, as is done in hydraulic cylinders.

In connection with the subject of chaplet-nails there is a little dodge, the reason for which I have been sometimes asked by people—viz., the presence of the tiny swells or bosses which occur at intervals on the bodies of many columns and pipes, Fig. 18. These are made by the moulder in order to slightly increase the thickness of metal around the stems of the chaplet-nails, and thereby lessen risk of porosity there. When the metal in the body of a pipe or column is thin, it cools quickly, scarcely giving time for amalgamation of the hot metal with the cold stem of the chaplet. Slight blowing, too, is apt to occur, causing the metal to be porous there. So the moulder just presses the rounding end of his trowel-handle into the sand previous to the insertion of the chaplet-nail, and thus increases the thickness of the metal by from $\frac{3}{16}$in. to ¼in. there, causing the slight swell, or boss, in the casting.

In reference next to scabs, blow-holes, and general sponginess, these have a family relationship. The pressure due to the distance from the top, *f*, of the runner *c* to the lowest part of the mould, *g*, is much greater than that from *f* to *h*, the highest part of the mould. The consequence is that the metal is always more dense at *g* than at *h*. Also, all the lighter metal and air-bubbles, and scurf, or dirt are buoyed up, and carried to the highest parts of the mould. If there are no risers, the dirt cannot come out, but will remain in the casting, and general sponginess will result on the upper side of the casting.

If the sand of the mould is not sufficiently pierced with ample vent-holes for the escape of gas and air, this, too, will collect along the top face, and cause blow-holes. If the mould is also rammed too hard, and insufficiently vented as well, flakes of sand will be washed away from the surface of the mould, and, being washed about, will become entangled in the metal, producing hollow spaces, leaving extra metal at the parts flaked off, termed scabs.

We are now in a position to understand the reasons that produce these graver faults in castings, the appearances of which I shall endeavour to illustrate.

SEWAGE PURIFICATION WORKS.

A DESCRIPTION of the Eccles Sewage Purification Works at Grange Farm, by H. Leonard Hinnell, F.C.S., A M.I.C.E., engineer, of Manchester and Bolton, is before us. The works have been in progress since 1893, and are now completed. They provide the borough of Eccles with a system of sewage treatment, which has been devised by Mr. H. Leonard Hinnell, F.C.S., the engineer. Many sewage works and various systems of treatment were inspected, and at length a site of twenty-eight acres at Salt Eye was offered—a low-lying site. The engineer approved of the situation. He observes: "The level of the land above Salt Eye Brook and outfall sewer was so very slight that only one system of treatment was feasible, unless the sewage was backed up in the sewer or pumping resorted to. This was the international system of sewage purification, and consisted of treating the raw sewage with chemicals in precipitation tanks, and then subjecting the resulting effluent to pass through artificial filter-beds 3ft. deep, before discharging into the river; the alternative system suggested being chemical treatment in tanks, with subsequent filtration through land specially drained." The Barton Grange Estate was acquired at a low cost for the more complete treatment and purification of the sewage by establishing a sewage farm with settling tanks. The Local Government Board inspector considered the purification of sewage on land the best, and on his recommendation the Grange Farm was purchased by the Eccles Local Board. He also proposed that all storm and surface waters should be diverted into the streams and water-courses, instead of allowing it to enter the sewers, and increase cost of pumping. Plans were prepared for a scheme, the cost of which was estimated at £13,794. A sewage farm, consisting of a pumping station to raise the sewage into settling tanks, from which it would pass to the land; a destructor to consume the refuse and sweepings, the heat from which to be utilised in generating steam to provide power for pumping the sewage, were contemplated. The Local Government Board approved of the sewage farm scheme, and sanctioned the borrowing of a sum of £13,560. The Council proceeded with the sewage farm works, Messrs. Bentley's tender of £10,449 being accepted. Plans were prepared and tenders received for the sewage farm buildings, and that of Messrs. J. Gerrard and Son, of Swinton, was accepted; also a tender for machinery for pumping-station by Messrs. Nasmyth, Wilson, and Co. These works have been executed and the purification scheme completed, and full details are given of the several parts of the scheme. The works are about a mile from the town, and the land obtained is over 71 acres. The sewage flows to these works. The main outfall sewer is 4ft. diameter, and daily discharges from a population of 32,000 an average volume of sewage of 1,000,000gal. Any excess of storm water is discharged direct into the streams. The sewage passes through a screen into the catchpit; thence the pumped sewage passes into conduits and flows through side openings into detritus tanks, where the sand and heavy matter will be retained. It then passes slowly through trapped outlets into the settling tanks, in which sills and weirs are provided to assist precipitation. From the end of these tanks the supernatant effluent falls in a thin film into a discharge conduit to a series of underground carriers. The process operates thus:—The organic matter is decomposed by the action of micro-organisms dissolved and carried in solution into the soil, where it is converted by bacteria in their life processes into nitrates and nitrites, and in which state it is assimilated by vegetation. The detritus passes into pipes which convey it on to the sludge filter-beds, and soon becomes fit for spreading on the farm land. The carriers conveying the effluent from the tanks to the land are glazed stoneware socketed pipes, 18in. to 24in. diameter, jointed with caulked gaskin and Portland cement, and these supply 35 distributing chambers, 3ft. 9in. square each, from which by valves and sluices the effluent can flow into the land which has a subsoil of sand and loam, thence after being purified into the brook.

CHIPS.

The city council of York received at their meeting on Monday a report stating that the payments for recently-completed works of sewerage and sewage disposal amounted to £190,350.

A stained-glass east window has been erected in the parish church of Kirk Smeaton, to perpetuate the memory of the late rector, the Rev. R. Hicks. The subject is the Ascension.

The additions to the Newark Town Hall, consisting of new municipal offices, hall-keeper's residence, and justices' retiring room, are now completed, and heating apparatus has also been added. The town council obtained a loan of £990 to enable them to carry out these improvements, and application has been made to the Local Government Board for sanction to borrow a further sum for furnishing.

In the monthly report to members, Mr. F. Chandler, the secretary of the Amalgamated Society of Carpenters and Joiners, states: "From the returns to hand we incline to the belief that employment is fairly good in all branches of industry in which our members participate, and although experience has taught us not to be too sanguine of being free from troubles even in the last quarter of the year, yet, so far as we can foresee, there are no indications of any serious disputes occurring in connection with our trade."

The directors of the Exeter Electric Lighting Company have decided to accept the City Council's offer of £7,500 for their works.

Messrs. George Lawson and Son, of Glasgow, have secured the contract to construct a new aqueduct in connection with the Glasgow water supply from Loch Katrine. The tender is £40,450.

At a meeting held at the Masonic Hall, West Bromwich, it was decided to take steps to build a new permanent church near St. Philip's mission room. Mr. Kendrick (Messrs. Wood and Kendrick, architects) presented plans of the proposed church, which, when erected, will provide accommodation for 988 persons, and altogether will cost about £7,000.

The death is announced of Mr. John Booth at his home, 60, Bank-street, New York. He was born in Aberdeen in 1839, and before going to the States in 1867 he carried on an extensive insurance business in his native city. After reaching New York he soon entered into partnership with his brother William, and built up a large trade in granite under the name of Booth Brothers and the Hurricane Gale Granite Company. Mr. Booth, who was unmarried, has left an estate of about 100,000 dollars in personal property.

A special meeting of the Margate Town Council was held on Tuesday week, to receive the applications for the post of assistant borough surveyor. There were 101 applications sent in, and these having been read and considered, it was decided, by nine votes to four, that Mr. F. Latham, the son of the borough engineer, be appointed.

The annual exhibition of students' drawings at the Royal Female School of Art will take place to-day (Friday) and to-morrow, at 43, Queen-square, Bloomsbury. This collection includes the works of the recipients of the Queen's Gold Medal and Scholarship of £60, the Scholarships of the Mercers', Clothworkers', the Brightwen, and National Gilchrist, the National silver medal, the National bronze medal, and other prizes.

The official inspection of the electric tram line from Old Market-street, Bristol, to Kingswood took place on Wednesday in last week, when Major Marindin, R.E., and Major Carew visited the city on behalf of the Board of Trade. They were met by Mr. Joseph Kincaid, the company's engineer; the British Thomson-Houston Company, who have carried out the equipment, being represented by Mr. W. R. Blackwell, C.E., Mr. Philip Dawson, C.E., and Mr. James Devonshire, the general manager. Major Marindin proceeded over as much of the road as is in the city, in company with Mr. Yabbicom, the city engineer, subsequently inspecting the St. George portion with Mr. Lewis, the surveyor to the St. George District Council, and that in the Kingswood district with Mr. Powell, the surveyor to the Kingswood District Council. The formal opening took place on Monday.

At the last meeting of the Belfast Corporation the efficiency of the main drainage scheme, now in course of completion, was the subject of discussion. Mr. Bretland, the borough surveyor, expressed the hope that the additional storm overflows provided in the Shankhill district would greatly minimise, if not altogether prevent, flooding there in future. He also gave some general explanations as to the working and effectiveness of the scheme.

OBITUARY.

Mr. William Wetmore Story, the well-known sculptor, poet, and author, died on Monday, in his 76th year, at the country house of his daughter, the Marchesa Peruzzi, at Vallambrosa, near Florence. Mr. Story was the son of the celebrated Judge Joseph Story, Chief Justice of the Supreme Court of the United States. In early life he practised at the Bar, but abandoned that profession on the death of his father, and went abroad to study sculpture. His first successes in his art were the marble statues of Cleopatra and the Libyan Sibyl which were exhibited at the London Exhibition of 1862, and are now prominent features in the decoration of the hall of the Goldsmiths' Company. We illustrated both figures, together with the grand staircase of the hall where they find a permanent home, in the Building News for April 5 of the present year. Among his many public commissions were the Peabody statue in front of the London Royal Exchange, the statue of his father for Cambridge, Massachusetts, and that of Colonel Prescott for Bunker's Hill. He was art commissioner at the Paris Exhibition of 1878, and was an officer of the Legion of Honour. In 1887 he received the honorary degree of D.C.L. at Oxford. He had four children, one of whom died in early life. His eldest son, Waldo, is likewise a sculptor, and his second son is Julian, the well-known painter. For the last 40 years he has lived in Rome.

Mr George Culley Ashmead, who for more than half a century carried on the business of a land surveyor in Bristol, died on Wednesday week at his residence, Alma Vale-road, at the advanced age of 94. As far back as 1850 the deceased was appointed, with the late Mr. Wm. Armstong and Mr. R. S. Pope, to make a valuation of city property in Bristol for assessment purposes; in 1860 he was associated in similar work with Mr. R. S. Pope and Mr. W. Sturge; and in 1870 he acted in a like capacity with Mr. Sturge and Mr. Josiah Thomas. As a land surveyor, he had business connections with assessment authorities in many prominent cases, and he purchased for the Midland Railway Company the land which they required for constructing the branch to Thornbury. All his life Mr. Ashmead had been connected with the Baptist denomination, was identified with the work of the Baptist Itinerant Society, and frequently preached at some of the chapels in the district. He retired from business some years ago, leaving it in the hands of his two grandsons. Mr. Frederick Ashmead, late borough engineer of Bristol, and now consulting engineer to the Bristol Sanitary Authority, is a son of the deceased.

On Michaelmas Day there was dedicated at Shifnal, Salop, a reredos, given in memory of the Rev. Henry Cunliffe, for 32 years vicar of the parish. The reredos is a triptych of oak, richly gilded. The three panels are occupied by paintings on a gold ground. The central panel has as its subject the Crucifixion, with the figures of St. Mary and St. John. In the north panel are the figures of St. Peter and St. Andrew; in the south panel are St. Chad, first Bishop of Lichfield, and Bishop Selwyn. The reredos was designed by Mr. J. Oldrid Scott, F.S.A.

Two new board schools were formally opened in the Water district of Rossendale on Saturday. The cost of the new buildings has been £4,500. One is at Water, and will accommodate 390 children, inclusive of 153 in the infants' department. The other school is at Waterfoot, and will accommodate 448 children, inclusive of 120 in the infants' department. The buildings have been designed and carried out under the personal supervision of Mr. Thomas Bell, architect, Burnley. The chief contractors were:—Excavators and masons, Mr. W. Coupe, Waterfoot; carpenters and joiners, Mr. J. Greenwood, Bacup; and slaters, Mr. O. Whitaker, Burnley, and Mr. H. Tomlinson, Rawtenstall.

The work of preparing the new park at St. George, near Bristol, is in progress. The site comprises about forty acres, and it is situated between the St. George main road and Whitehall-road. The land was purchased from the Ecclesiastical Commissioners by the district council for £12,000, and about £6,000 will be spent in laying it out. A portion of the work has been done by local labour, under the superintendence of the council's surveyor, and subsequently a contract was entered into with Messrs. Thomas and Webb for levelling. The excavations for the lake, the area of which will be two acres, have been let to Mr. F. Martin, and the tender of Mr. S. C. Harrison, of Milk-street, Bristol, has been accepted for the wrought-iron fencing, with which the park is to be inclosed.

CONTENTS.

The Street We are to Wait For ... 507
Vague Specifications ... 507
Model Dairy Competition ... 509
The Building Operations of the London School Board 509
Classic Details and their Application ... 510
Concert Halls and Assembly Rooms.—I. ... 511
National Association of Slate Merchants and Slaters 512
Primitive Methodist Chapel and Schools, Garden-street, Leeds ... 513
The Incorporated Association of Municipal and County Engineers ... 513
Cluny.—IV. ... 513
King's College Conversazione ... 516
Sheffield Society of Architects and Surveyors ... 516
Cast Iron in Builder's and Contractor's Works.—VI. 516
Sewage Purification Works ... 518
Obituary ... 518
The Building News Directory ... IX.
Our Illustrations ... 519
Competitions ... 519
Architectural and Archæological Societies ... 519
Building Intelligence ... 538
Engineering Notes ... 539
Correspondence ... 539
Intercommunication ... 540
Legal ... 540
Water Supply and Sanitary Matters ... 541
Statues, Memorials, &c. ... 541
Our Office Table ... 542
Meetings for the Ensuing Week ... 543
Trade News ... 544
Tenders ... 544

ILLUSTRATIONS.

VARIOUS DRAWINGS OF THE FIRST, SECOND, AND THIRD PREMIATED DESIGNS FOR THE NEW WEST HAM TECHNICAL INSTITUTE AND PUBLIC LIBRARY. — ROOD LOFT AND CRUCIFIX FROM A FRENCH CHURCH.—WAREHOUSE AND BATHS, RUSHDEN, NORTHANTS.

Our Illustrations.

WEST HAM TECHNICAL INSTITUTE AND PUBLIC LIBRARY.

To-day we devote the whole of our lithographic plates to the further illustration of the premiated designs in this public competition. The view, plans, and detail of the selected design were published in our issue of last Friday, and now we print corresponding reproductions of the three elevations, thus giving our readers practically a complete set of Messrs. Gibson and Russell's chosen drawings. The second prize design by Messrs. Clark and Hutchinson, and the third premium design by Mr. Thomas Davison are both represented by views, elevations, and plans, affording ample material for a ready comparison of their relative merits, and enabling the reader to study these schemes to which Mr. MacVicar Anderson, the professional adjudicator, awarded the posts of honour from the 75 sets of plans submitted. It is not necessary to enlarge upon these designs here, as we have already remarked upon their leading characteristics, and it is to be noted that special care has been taken in reproducing the architects' drawings to carefully render their work in such an adequate manner as to insure justice to their originals, and that in a way not to be found elsewhere.

ROOD LOFT AND CRUCIFIX.

The lower portion of this sheet of sketches illustrates the two inclosures once forming staircases to a rood-loft in an old French church. The work is panelled and richly carved, and belongs to the period about 1500, and as such examples are rare, the interest attaching to them is correspondingly great. The arcading connecting the two staircases did not originally form part of the design, although of much the same date. A fine specimen of the carver's skill is the crucifix, with emblems of the four Evangelists, which, with the exception of damage to the delicate tracery on the arms of the cross, and some of the crockets, is in an excellent state of preservation. Accompanying this rood are the two figures of SS. Mary and John, the hands being missing from both statues. These objects are some of the most valuable amongst the recent acquisitions made by the Museum authorities at South Kensington.

WAREHOUSE AND PROPOSED BATHS, RUSHDEN.

The warehouse at the angle was finished some time ago for Messrs. Lilley and Skinner, Ltd., as a leather store. The building to the left shows a scheme for a proposed swimming-bath, the site being on a "quick" slope. The entrance to the bath is on the extreme right at the level of the first floor. The architect is Mr. A. Sykes, A.R.I.B.A., of 34, Walbrook, London, E.C.

COMPETITIONS.

Belfast.—The committee for the erection of a cathedral for Belfast have decided to request the President of the Institute of British Architects to nominate an assessor, whose fee shall be 100 guineas, and who will draw up the conditions. Six architects, to be selected by the assessor, will be invited to send in competitive designs for a cathedral, and will be paid a fee of £50 each. In addition, premiums of £75 and £50 will be given to the authors of the designs placed first and second. A singular provision is that other architects than those selected will be at liberty to send in designs, but such will not be allowed any expenses; but if an outsider's design is placed first or second, the author will be dealt with as if he had been invited to compete. The cathedral, which is to be built in sections as funds allow, is not to exceed in cost £100,000, exclusive of foundations, and the nave and its aisles are to seat 1,500 persons.

Bowness.—The united committee of the Bowness and Windemere District Councils have selected the plans sent in, in open competition, by Mr. Robert Walker, F.R.I.B.A., architect, Windermere and Lancaster, for a joint hospital for the district.

Derby.—The Special Purposes Committee of St. Thomas's Church, Derby, have selected the design of Mr. F. W. Dixon, of Guardian Buildings, Manchester, and Union-street, Oldham, submitted in open competition, for proposed new parish hall and Sunday-school. The selected design shows a Late Gothic treatment in red brick and terracotta, with a rich tracery window in terracotta towards the main road. The coping to gables, &c., will be in Matlock stone, while the inside joiner's work will be in selected pitch-pine, and the windows glazed with leaded lights. A combined system of heating and ventilation will be adopted upon a low-pressure basis. A caretaker's house is also included in the scheme.

Scarborough.—In the competition for a proposed new infirmary and additions to the Scarborough workhouse buildings, at an estimated cost of £7,800, the assessor, Mr. Keith D. Young, F.R.I.B.A., of Southampton-street, Bloomsbury, W.C., has selected the designs submitted by Mr. William E. Barry, A.R.I.B.A., of Wimbledon, and it is proposed to submit the plans to the Local Government Board for approval.

York.—At Monday's meeting of the city council, the markets committee reported that after careful consideration of the designs submitted for an improved market stall, they had awarded the premium of £10 10s. to Mr. H. Woodhouse, M.I.C.E., of Liverpool. The report was adopted.

* * *

A new Liberal club, built at a cost of £4,500, was opened at Kingston, Halifax, on Saturday. In addition to that part of the building let off for business purposes, there are a lecture-hall, billiard-room, and ante-rooms.

The Lord Provost's Committee of the Edinburgh Town Council have accepted tenders for the work in connection with the erection of a dome on the Calton Hill for the accommodation of the large telescope and other astronomical apparatus belonging to the city. The cost will be a little under £2,200. Mr. R. Brownlee, of Colinton, Edinburgh, will execute the builder's work, and Sir Howard Grubb will supply the fittings.

A residence for students of divinity at Edinburgh University is about to be opened at No. 14, George-square, Edinburgh, which has been adapted for its new purposes from designs by Mr. James Jerdan, architect, of that city.

The First Sea Lord of the Admiralty, the Controller of the Navy, and Sir Evan Macgregor, Permanent Secretary to the Admiralty, examined on Friday the plans and inspected the site of the extension at Keyham, near Devonport, to provide docks for the largest war vessels afloat, and in connection with which a quarter of a million sterling is to be spent this year.

The memory of Mr. William Bolitho, of Ponsandane, West Cornwall, who died about ten months ago, will be handed down in Gulval by several mementos. The whole of the seating of Gulval Parish Church (new not long since, and now presented to Tregony Church) is being replaced by carved oak seats; a memorial pulpit of marble and alabaster will further perpetuate the name of a churchwarden for many years; and the piece of mosaic pavement, given a short time since by Lady Fitzgerald, is to be extended throughout the sacred edifice. An altar-tomb is also to be constructed for the Bolitho chapel at the same church.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

The Institution of Junior Engineers.—The annual general meeting of this Institution was held last Friday (Oct. 4) at the Westminster Palace Hotel, the retiring chairman, Mr. H. J. Young, taking the chair at eight o'clock. The principal business was the presentation of the council's report on the proceedings of the past year, and the election of officers for the ensuing session. The report showed that steady advancement had been maintained. The membership roll had increased by 45, the total at the present time being 418. At the seven monthly meetings the average attendance had been 78, and at the 13 "London and neighbourhood" visits the average was 82. The Belgian summer meeting was highly successful. The Institution Premium for the best paper read by members during the session had been awarded to that on "The Warming of Buildings by Hot Water," of which Mr. E. King and Mr. Kenneth Gray were joint authors. The library had been well used, but its utility could be greatly increased by the provision of a reading-room, which, together with an office, the council were hoping they would soon be able to secure. An office fund had been opened for the purpose. The total receipts on general account had been £487 1s. 2d., and expenditure £474 3s. The result of the election was:—Chairman, H. J. Young; vice-chairman, H. B. Vorley; hon. librarian, H. Kempster; hon. auditors, W. H. De Ritter and B. H. Joy; members of council, A. Anstruther Thomson, G. F. Buret, B. H. Joy, and E. King. Remaining in office, H. G. Church, W. B. Clarke, S. Cutler, and A. H. Dykes.

CHIPS.

At the Darlington Town Council, on Friday, Dr. Manson stated that the amount of the accepted contract for building the Technical Institute was £9,328 13s., some hundreds below the architect's estimate. The tenders had been secured by Darlington tradesmen. The total cost, including furnishing and architect's commission, would be £11,321 18s.

An appeal is being made by the Vicar of New Shoreham for £2,000 for the repair of the fine tower of the parish church. Mr. Benjamin Ingelow, F.R.I.B.A., recently reported that the condition of the tower was most insecure. This was confirmed by Sir Arthur Blomfield, A.R.A., who urged that no time should be lost in making it temporarily secure. This has been done, and the committee have given instructions to Mr. Thompson, of Peterborough, to proceed with the work of underpinning forthwith.

Mr. James A. Campbell, M.P., opened, on Friday the St. James' Public School, which has just been erected in Green-street, Calton, East-end, by the Glasgow School Board. The new school is designed in a Classic style, and is three stories in height. It gives accommodation for 1,400 scholars, and has, in addition to the ordinary schoolrooms, accommodation for the teaching of cookery, washing, and laundry work. Its cost, including the site, was £28,000.

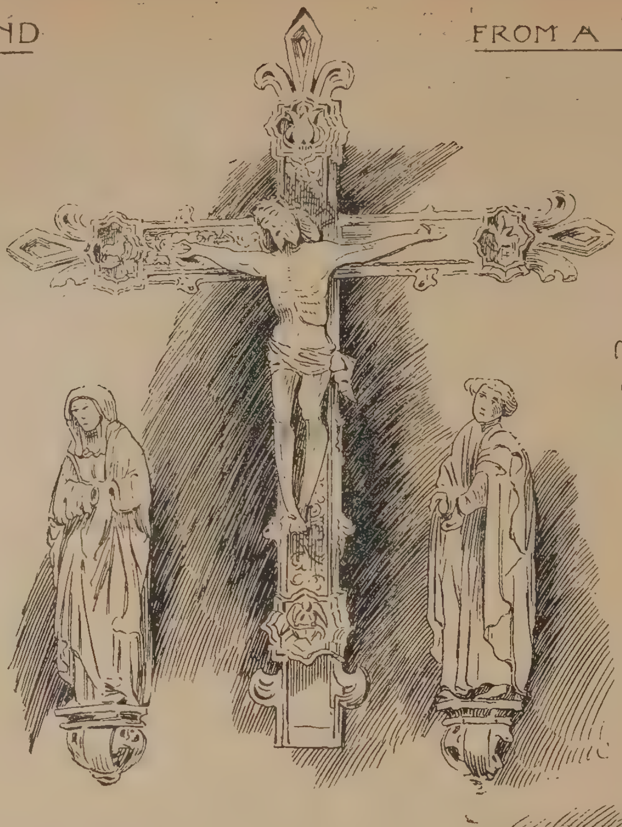
At the Tonbridge Police-court on Tuesday week, Mr. George James Jones, builder, of Waterloo-road, Tonbridge, and a member of the Tonbridge Urban District Council, was summoned by Mr. Frank Oldfield Hartley, Tunbridge Wells, assistant district auditor, of the South-Eastern Counties Audit District, for not attending an audit of which he had notice, as an allotment manager. A nominal fine of 10s. and 9s. costs was imposed, it appearing that defendant, who kept the accounts gratuitously, had objected to the short notice given of the proposed audit.

Mr. A. S. Barnard, electrician to the Lancaster Corporation, has been appointed from a list of 57 applicants to succeed Mr. Gibbings as electrical engineer to the Hull Corporation, Mr. Gibbings having moved to Bradford. Mr. Barnard's salary is £250.

The new echo-organ erected in the triforium of Westminster Abbey, and connected with the main instrument by electric wires, will be opened at the Purcell bi-centenary service in the Abbey on Nov. 21. The proceeds of the service will be devoted to a fund for providing a case for the great organ, towards which the Dean and Chapter have already voted £500.

The memorial-stone of the north aisle, which is about to be added to the parish church of Walsall Wood to supplement a southern aisle which was added to the church some few years ago, was laid on Monday. The work is being carried out by Messrs. Cresswell, from designs by Mr. H. E. Lavender, and additional accommodation will be provided for 130 persons. The cost will be £800.

ROOD LOFT AND CRUCIFIX FROM A FRENCH CHURCH



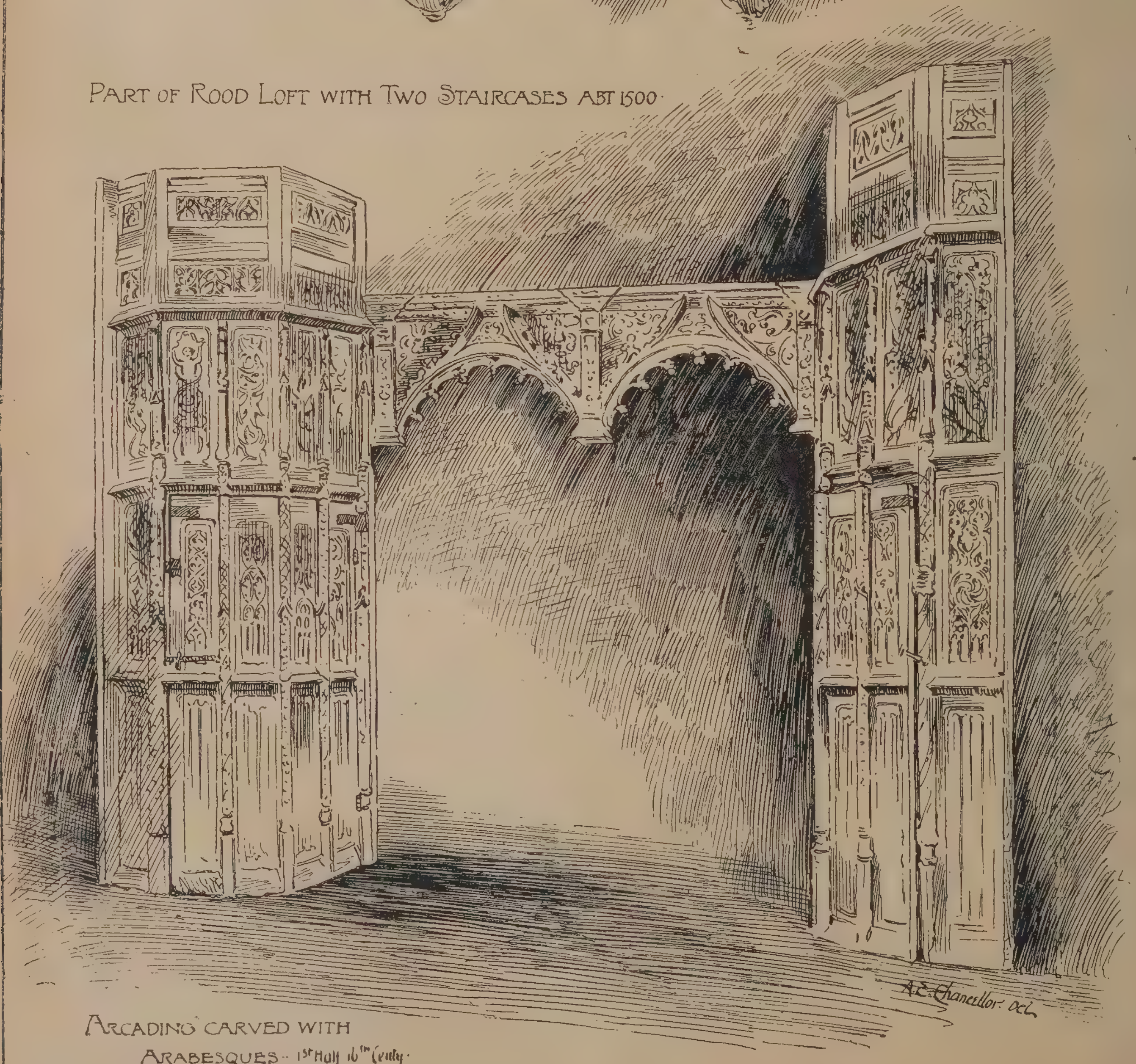
NOTE the emblems of the four Evangelists at the ends of Cross

CRUCIFIX ABT 6'0" HIGH AND 5'6" WIDE

SAINTS ABT 3 FT HIGH

OAK CRUCIFIX & FIGURES OF S.S MARY & JOHN 15TH CENTY

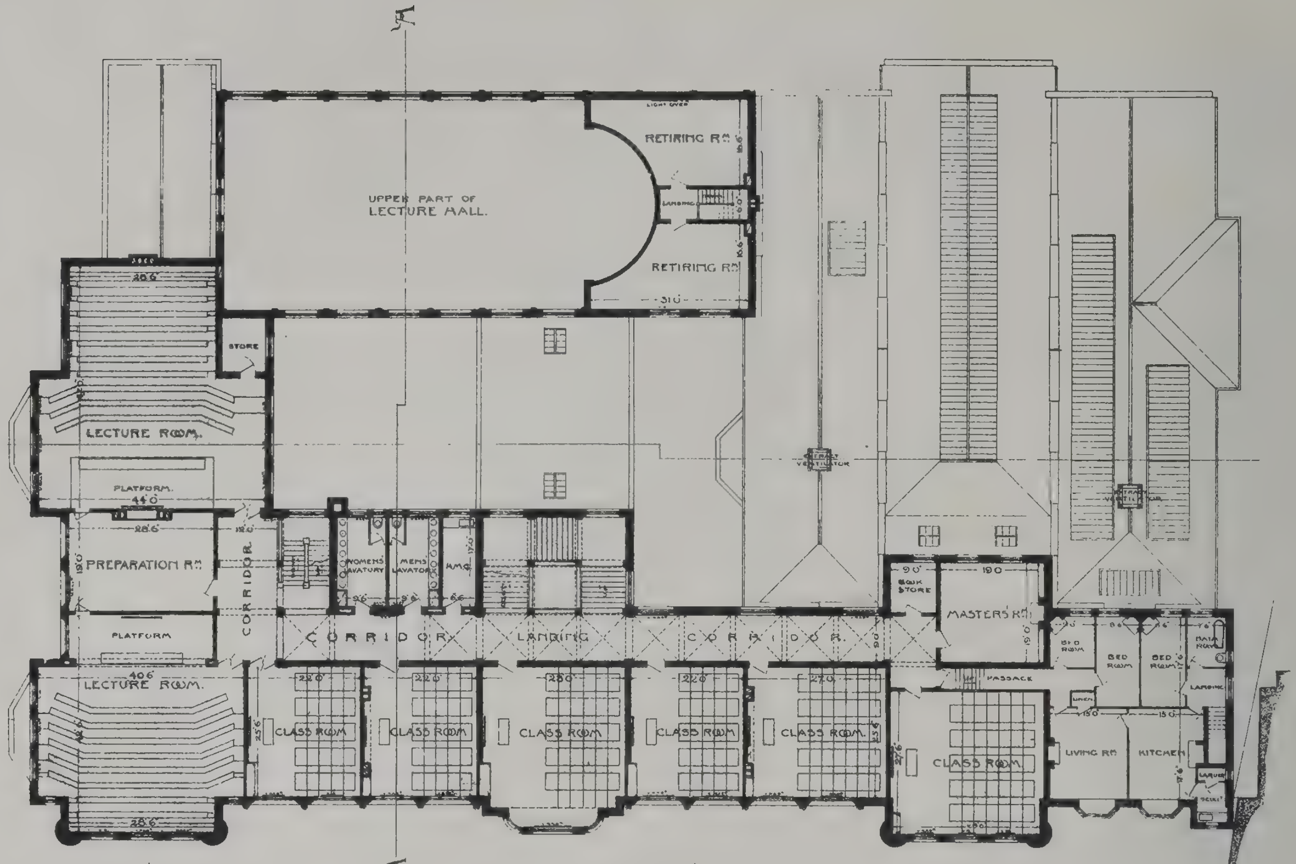
PART OF ROOD LOFT WITH TWO STAIRCASES ABT 1500



A.C. Chancellor del.

ARCADING CARVED WITH ARABESQUES — 1st Half 16th Centy.

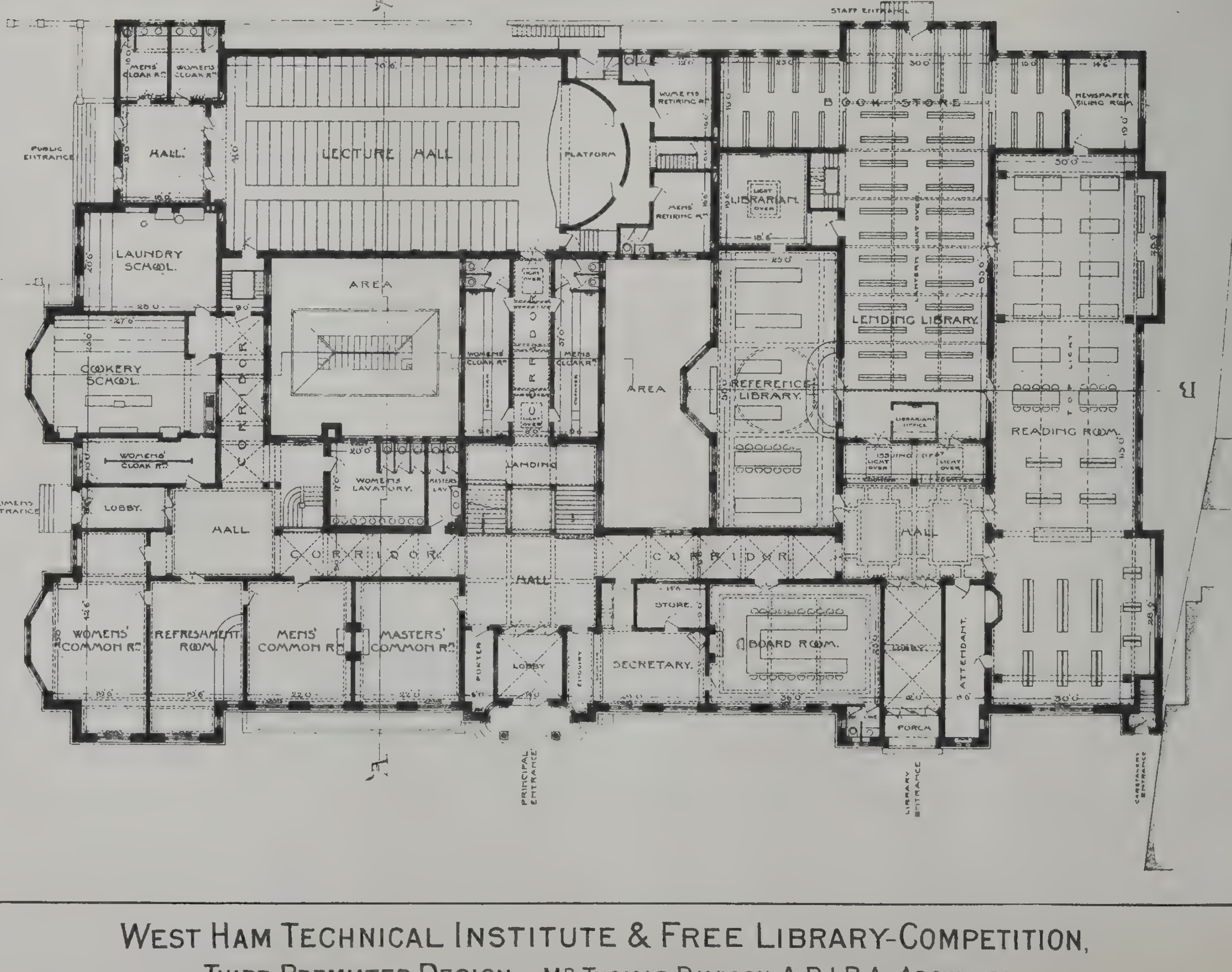
LIBRARY
OF THE
UNIVERSITY OF ILLINOIS



FIRST FLOOR PLAN

Scale 1 inch to 10 feet.

GROUND FLOOR PLAN.



WEST HAM TECHNICAL INSTITUTE & FREE LIBRARY-COMPETITION.

THIRD PREMIATED DESIGN. MR. THOMAS DAVISON, A.R.I.B.A., ARCHITECT.

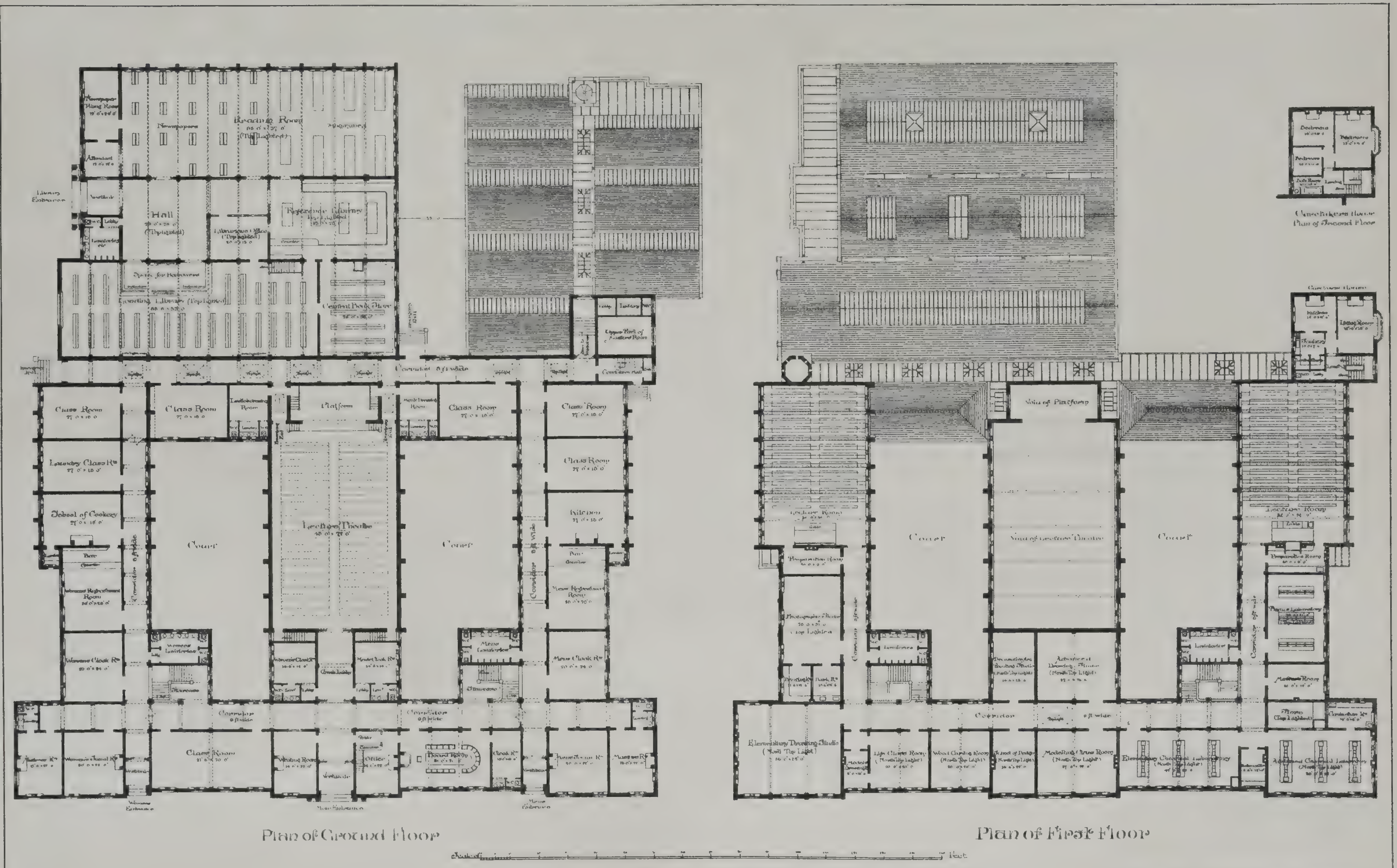


Photo Lithographed & Printed by James Akerman

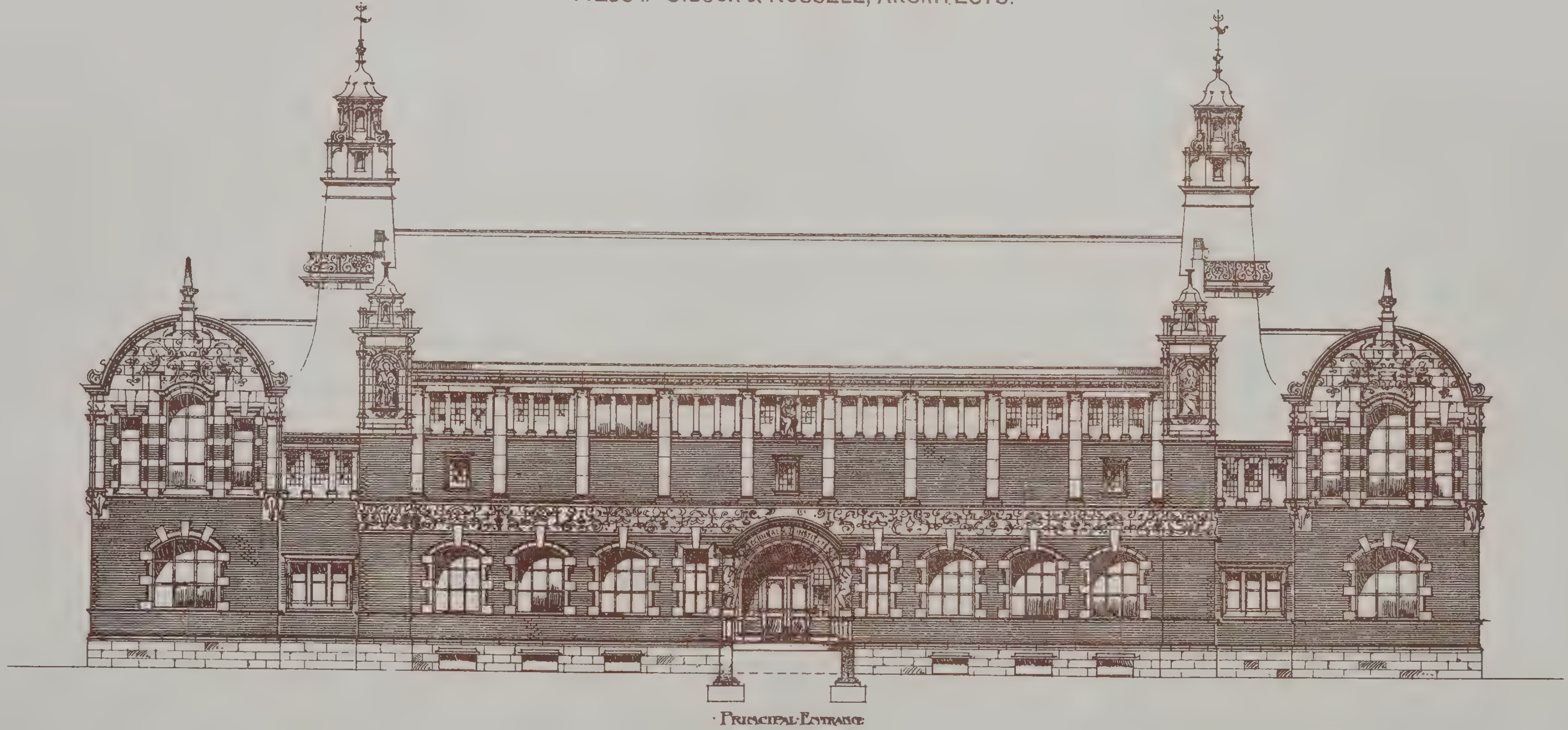
WEST HAM TECHNICAL INSTITUTE & FREE LIBRARY-COMPETITION,

SECOND PREMIATED DESIGN. MESS^RS CLARK & HUTCHINSON, ARCHITECTS.

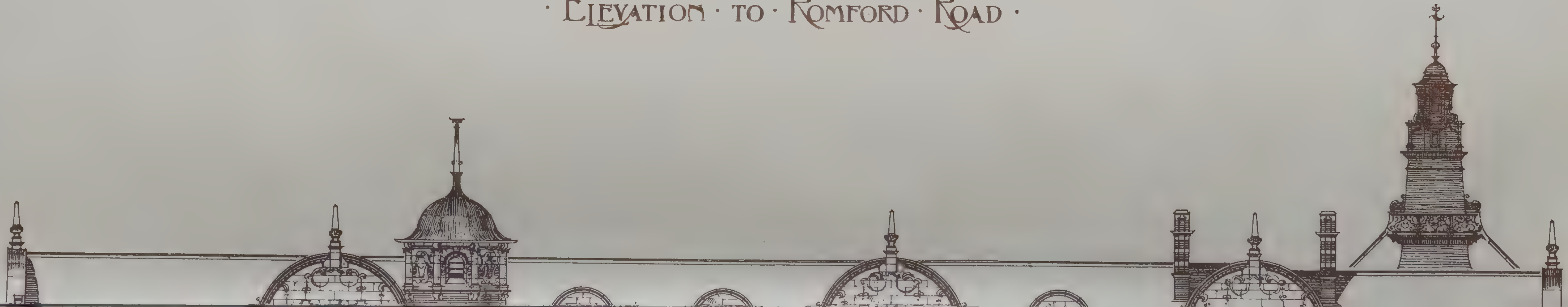
WEST HAM TECHNICAL INSTITUTE & FREE LIBRARY-COMPETITION,

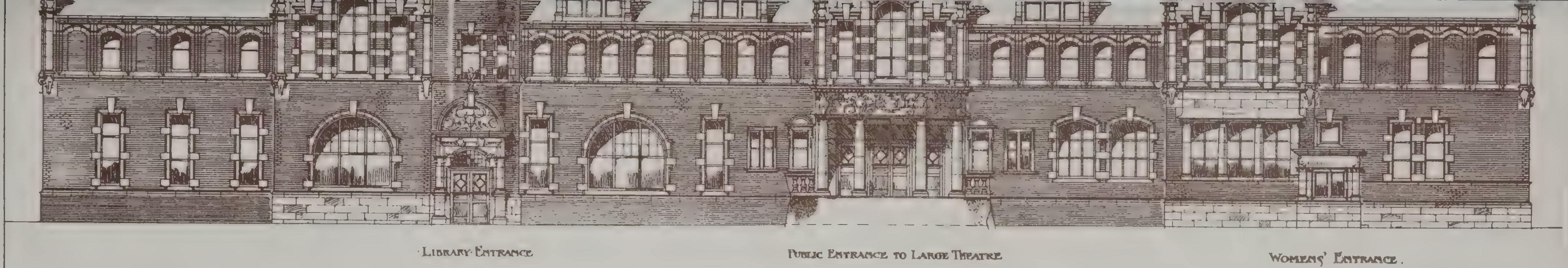
SELECTED DESIGN.

MESSRS GIBSON & RUSSELL, ARCHITECTS.

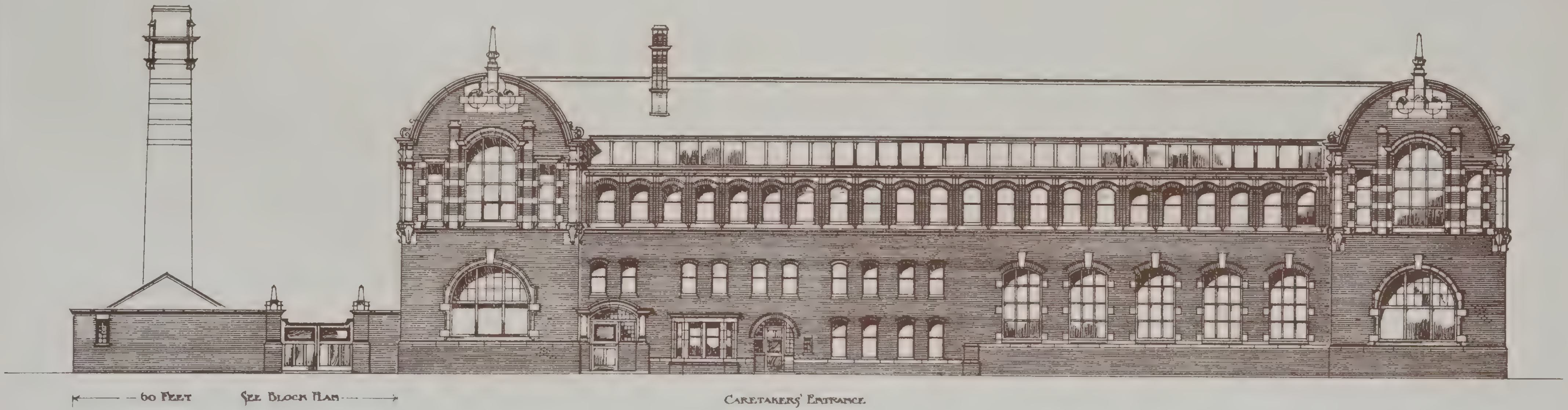


· ELEVATION · TO · ROMFORD · ROAD ·





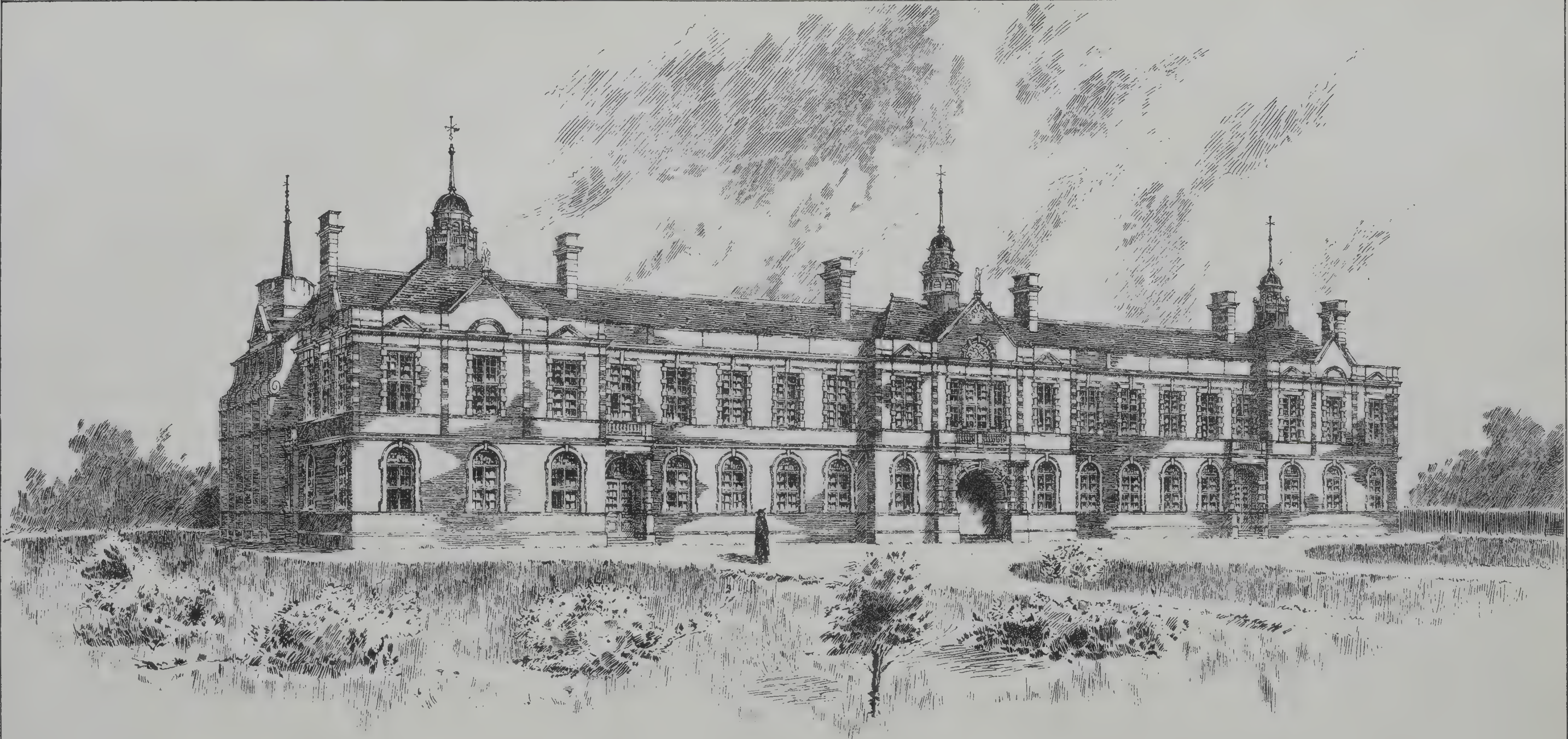
ELEVATION · TO · WATER · LANE ·



· ELEVATION · TO · THE · GREEN ·

Scale of 10 5 0 10 20 30 40 50 60 70 80 90 100 Feet

Photo-Lithographed & Printed by James Akerman. 6, Queen Square W C

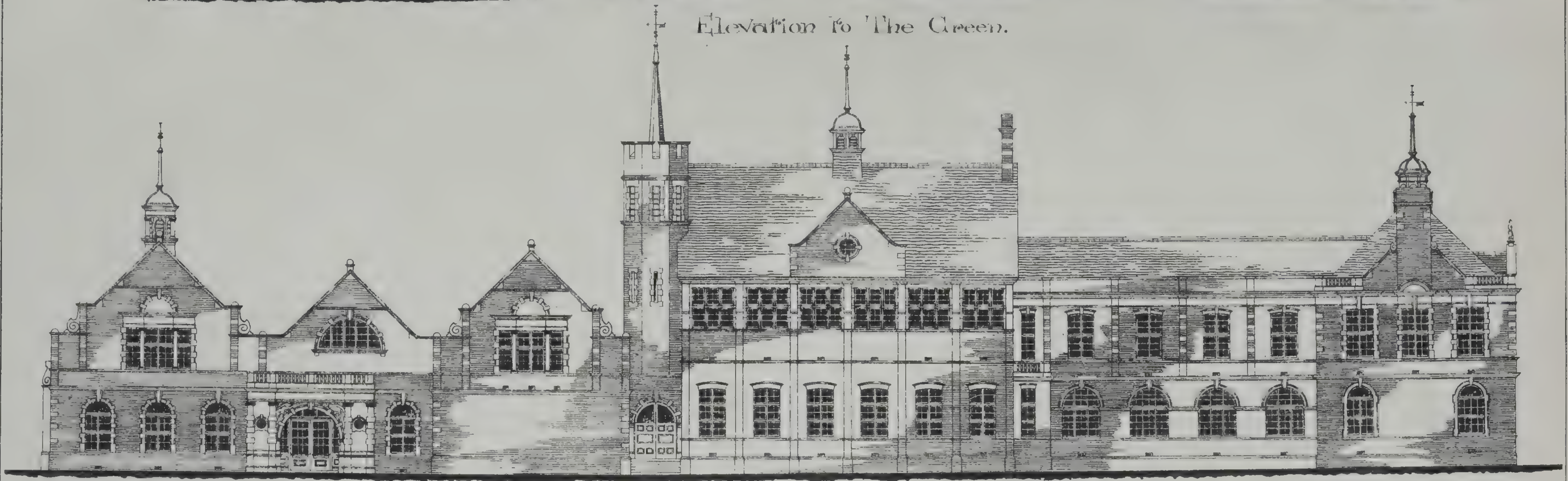


WEST HAM TECHNICAL INSTITUTE & FREE LIBRARY-COMPETITION.

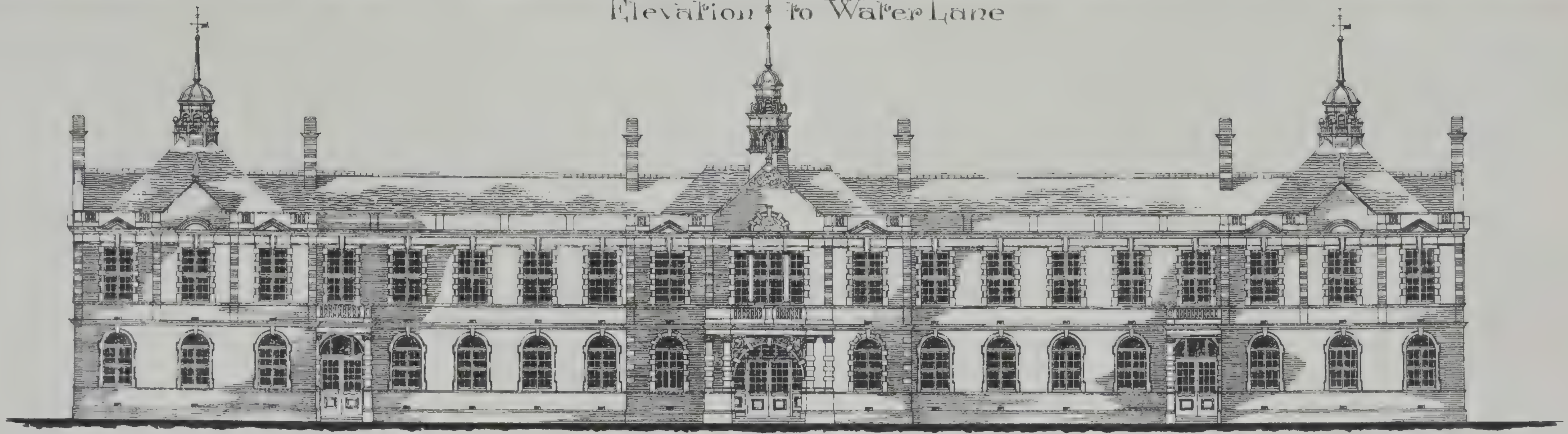
SECOND PREMIATED DESIGN.

MESSRS. CLARK & HUTCHINSON, ARCHITECTS.

Elevation to The Green.



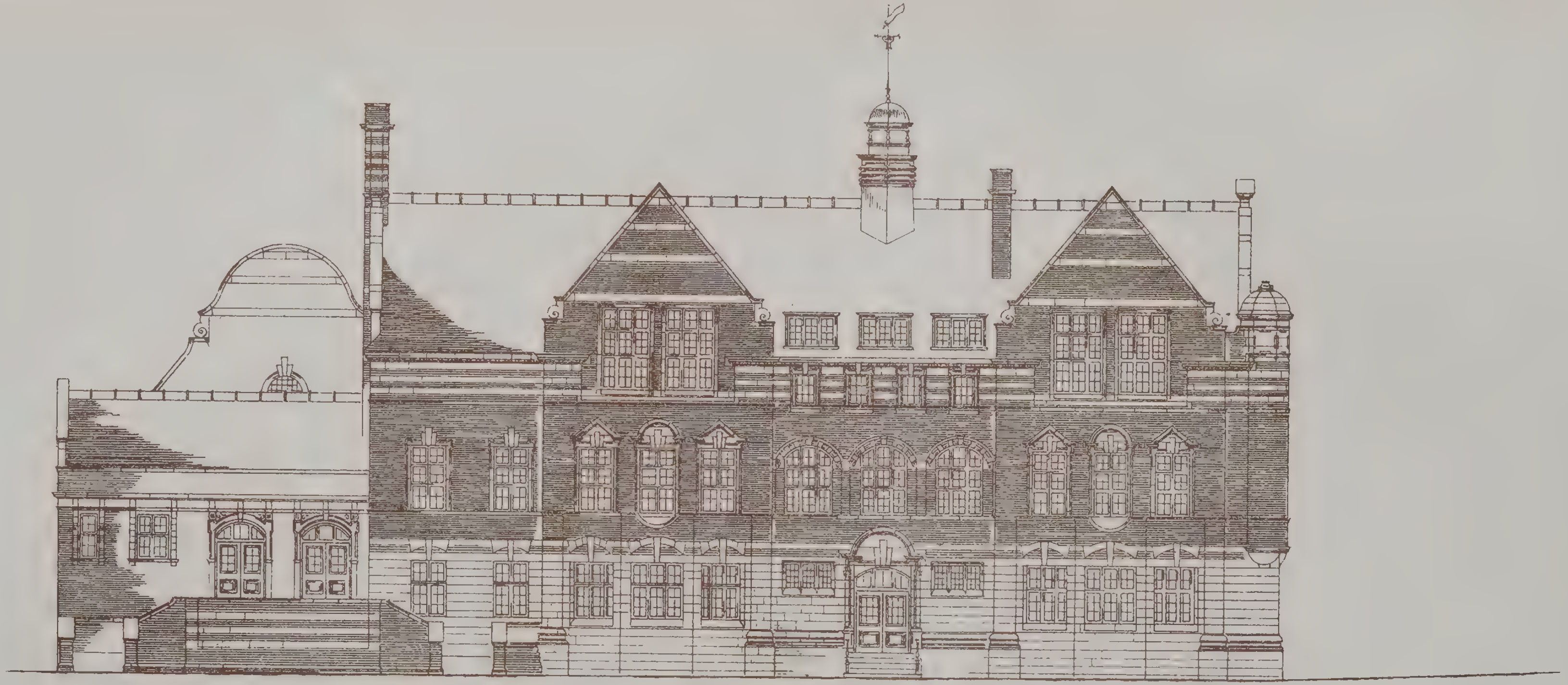
Elevation to Water Lane



Elevation to Romford Road

Scale of 10 5 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 Feet

Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.

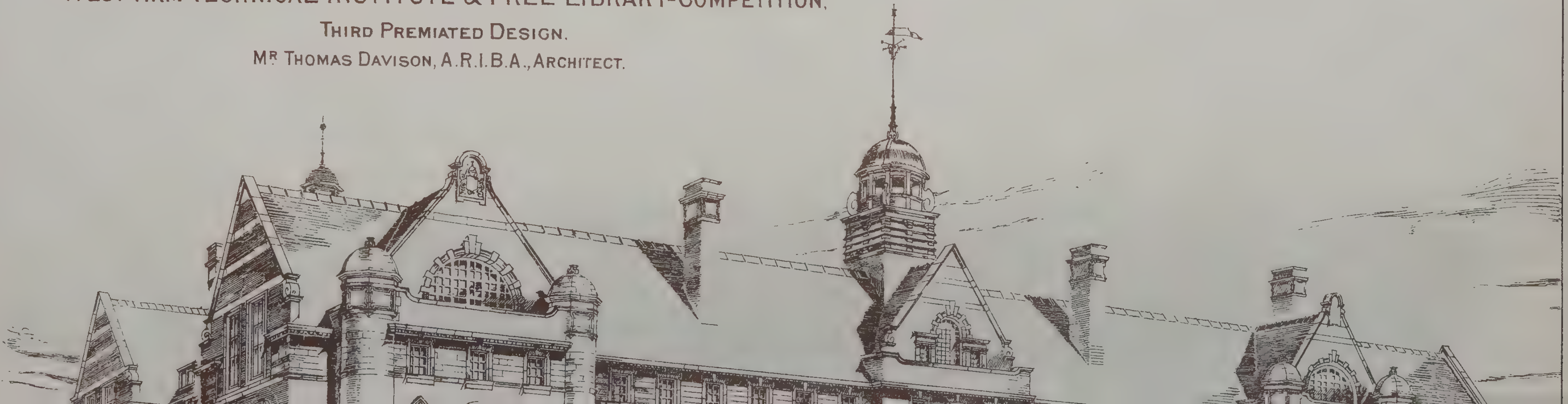


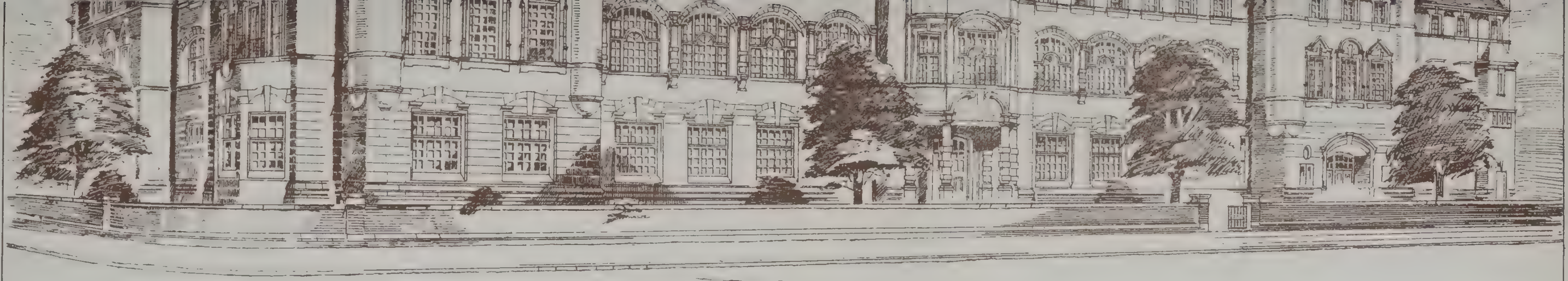
ELEVATION to WATER LANE.

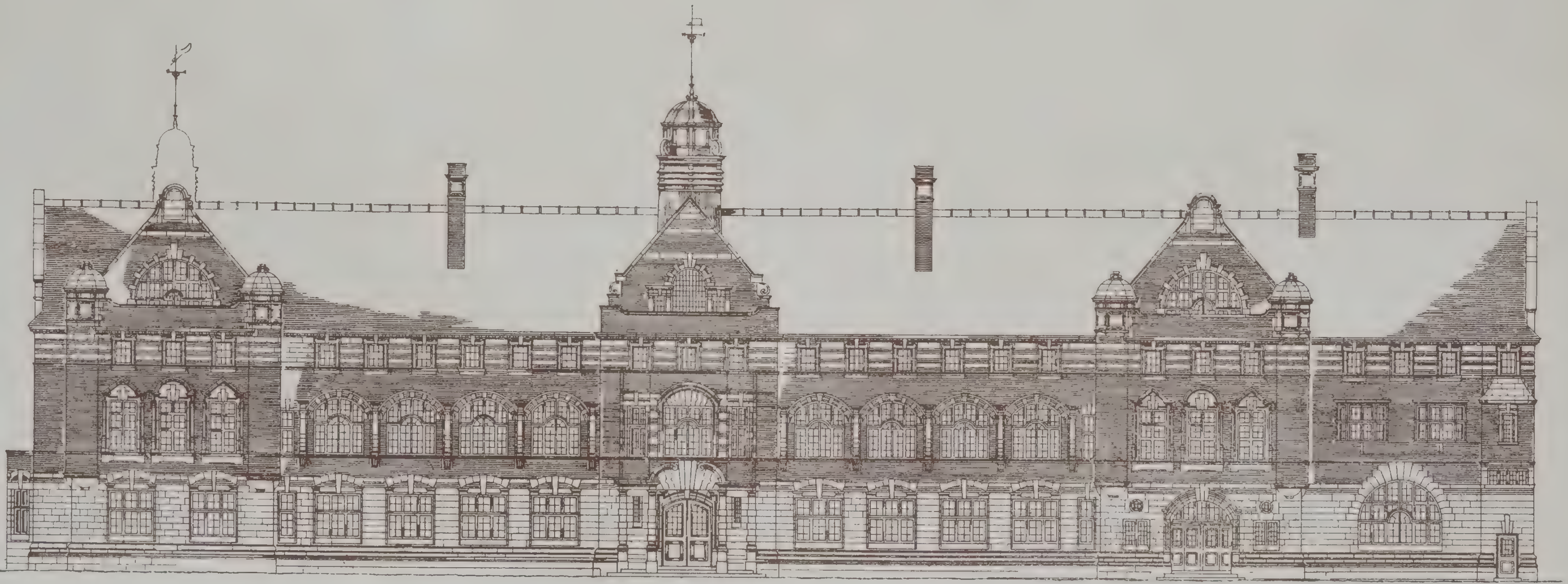
West Ham Technical Institute & Free Library-Competition.

Third Premiated Design.

Mr Thomas Davison, A.R.I.B.A., Architect.





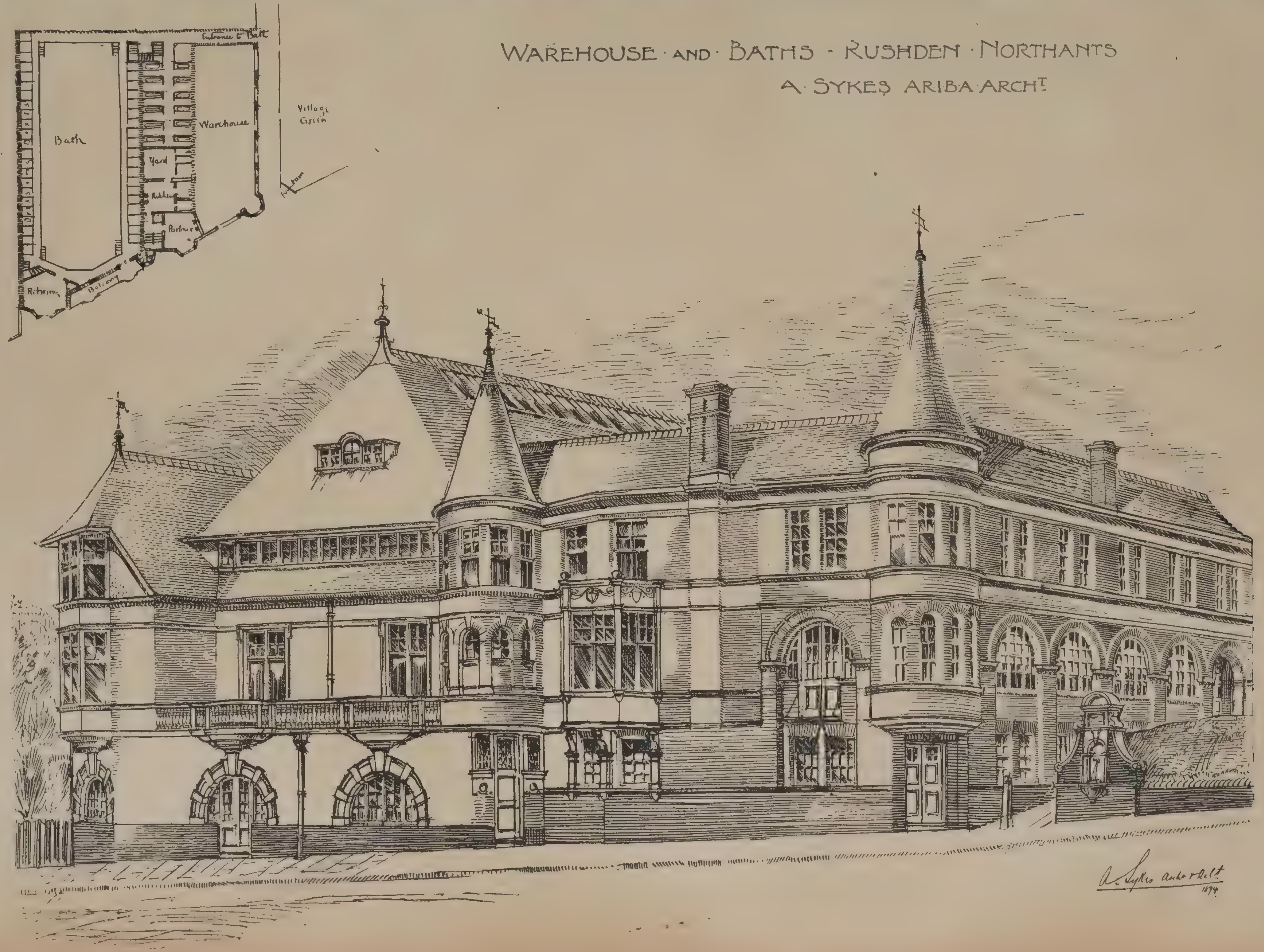


ELEVATION TO ROMFORD ROAD.

Photo-Lithographed & Printed by James Akerman 6, Queen Square W.C.

WAREHOUSE · AND · BATHS · RUSHDEN · NORTHANTS

A · SYKES ARIBA · ARCHT.



Building Intelligence.

Aberdeen.—New police-offices for Aberdeen were formally opened on Friday. The site is in Lodge Walk, and on the spot occupied by the Aberdeen prison, which is now located at Craiginches. Communication between the Municipal Buildings and the police offices is provided by a passage carried over the courtyard. The principal entrance to the premises is in the centre of the main building, and it gives access, through a vestibule, to the charge room. The cell block is divided into two portions and constructed on the gallery system. There are twenty-four cells in the male division and twelve in the female. The officials' and magistrates' rooms are well appointed, while the system of electric bells and telephonic fittings is complete. The muster-room measures 40ft. by 80ft., and is 18ft. high, and the court and stable yards are provided with a stable, coach-house, mortuary, and lavatories. Reading and recreation-rooms are provided for constables, and there is a gymnasium on the second floor of the muster-room wing. A bagatelle table and other forms of recreation are provided, and adjoining the gallery are lavatory conveniences and a bath-room for the policemen. The architect of the new offices was Mr. John Rust, jun., the city architect, and the outlay has been £13,000.—The new buildings for the Sailors' Institute have just been opened. The expense of the additions amounted to about £3,000. The building consists of three blocks, one with frontage to Mearns-street, another to James-street, and a central block. The style of the Mearns-street front is Renaissance. It is faced with Kemnay granite. The chief feature of the James-street elevation are a large overhanging window and the entrances to the mission, bank, and Navigation School. The building contains dining, lounge, and smoke rooms, bank and meeting room, also keeper's apartment on the ground floor. On the upper floor, a hall seated for 250, a chapel seated for 100, with retiring-rooms and board-rooms. On the second floor are twelve sailors' bedrooms and two officers' bedrooms, and on the third floor are two large dormitories for shipwrecked crews; lavatory and bath accommodation is provided. The large rooms are heated by hot-water pipes. The masons were Alex. Milne and Son; the carpenters, Watson and Robb; the slaters, Alex. Adam and Co.; the plasterers, J. Stephen and Son; the plumbers, John Blaikie and Son; the painters and glaziers (including stained-glass windows), Gordon and Watt; the heating engineers and ironmongery, James Laing and Co.; furnishings, Pratt and Keith, J. and A. Ogilvie, and J. Allan and Sons. The whole buildings have been designed and superintended by Mr. James Souttar, architect, Aberdeen.

Bangor.—At the University College of North Wales a lecture hall for the normal students was opened on Tuesday. It stands on the west side of the main building, and covers an area of 80ft. square. The large lecture-room is 50ft. by 30ft., and when the partitions are removed so that the corridor and the two classrooms, each 22ft. by 24ft., can be utilised, a lecture-hall is provided. The flooring is concrete, and the walls are built of 5in. timber, the felting being intermediate between the boards and the outside slating. The walls are plastered inside, and there is a boarded ceiling. It is to be heated by Musgrave's coke and gas stoves; the gas fixtures were furnished by Mr. T. Powers, Manchester; the Educational Supply Association and Messrs. W. and T. May, Sheffield, being intrusted with the internal fittings. The contract was let to Messrs. Jones and Williams, Hirael, Bangor, at £967, and the works have been carried out from the designs and under the superintendence of Mr. Richard Davies, architect, Bangor.

Beverley.—New casual wards and porter's lodge have just been completed at Beverley workhouse. They have been designed in a similar style to the new infirmary erected last year, and adjoin the workhouse. The principal elevation faces Union-road, and comprise the porter's lodge (which has the female receiving room and wards behind) and male wards to the right, between which and the porter's lodge is the entrance archway (over the main road to the workhouse). The casual wards provide accommodation for 41 vagrants, 29 males and 12 females. They consist of an associated ward affording sleeping accommodation for 20 males, and nine sleeping cells, eight of which have stone-breaking cells attached. There are also six covered stone-breaking bunks in the yard. On the female side is an associated ward for eight females, and sleeping cells for four. There are also receiving rooms, bath-room, and drying-rooms for clothes for both male and female divisions. The administrative department, which consists of the porter's lodge and office and the female attendant's room, is to the left of the entrance gates. The cells are approached from a central corridor; each cell and associated ward has communication by means of gong with the attendants in charge. The premises are heated throughout with Perkins's high-pressure heating apparatus. At the end of the male wards is the stone yard. There is also a disinfecting room and apparatus. The architects are Messrs. Hawe and Foley, and the contractor Mr. J. R. Foley, all of Beverley.

Ipswich.—At the meeting of the Ipswich board of guardians held on Friday, it was decided to adopt the amended plans prepared by Mr. W. Lister Newcombe, of Newcastle-on-Tyne, and Messrs. S. Salter and Percy D. Adams, of London, acting conjointly, and to whose design when submitted in the recent competition the first premium of £100 was awarded on the recommendation of Mr. Charles Barry, F.S A., of Westminster, the assessor. The several plans were ordered to be submitted to the Local Government Board for their sanction, and Mr. J. Sidney Parminter was appointed as quantity surveyor at a commission of one per cent.

Kelvinside, Glasgow.—The memorial stone of Kelvinside United Presbyterian Church was laid on Saturday by Lady Bell. The style of the new church, which occupies a site at the corner of Queen Margaret Drive and Kelbourne-street, is Late Decorated Gothic. A lofty gable forms the principal feature of the front. The gable is flanked by angle piers, which are carried up in plain masonry to 40ft. from the ground, above which the surface is enriched with cusped panelling up to the cornice, terminating with crocketed angles and carved finials, the total height being about 60ft. Between these piers the whole space is filled by a mullioned window of seven lights recessed under a deeply-moulded arch. Internally, the church is planned for over 750 sittings, of which about 500 are on the area floor. The limited site necessitated both side and end galleries; but these have been kept narrow, and the roof has been designed in a single span, avoiding obstruction from columns. Above the coved ceiling the roof is of open construction, the wood principals being moulded. The western end is divided into three bays by stone piers and arches, in front of which is the pulpit platform, with the organ chamber beyond. The choir will be arranged in front of pulpit, where the organ console will also be placed. Behind the church are vestry and other accommodation. The estimated cost of the church is about £5,000. The work has been designed and is being carried out under the charge of Mr. John B. Wilson, A.R.I.B.A. and I.A.

Ocle Pychard.—The foundations of the interesting church of St. James's, Ocle Pychard, Herefordshire, having developed signs of failure, the committee have consulted Mr. F. R. Kempson, architect, of 138, Widemarsh-street, Hereford, who has recommended that the whole of the foundations should be reconstructed. This is being done by day-work under the architect's directions, Mr. Bufton, of Ocle Pychard, acting as clerk of works. The vestry walls, which showed grave signs of settlement, have been carefully underbuilt, and a heating chamber constructed below. The greatest care is being taken to preserve all the ancient work.

St. Alban's.—The parish church of St. Peter, at St. Alban's city, was re-opened on Friday, having been reconstructed at the sole cost of Lord Grimthorpe, who, as in the case of the neighbouring cathedral church, stipulated for being granted absolute and undisputed control, and acting as his own architect. The central tower fell in 1801, and five years later £6,000 was expended in rebuilding it in brickwork, with wooden windows, in sweeping away the transepts, and in recreating the chancel; the nave of six narrow bays, built in Late Perpendicular days, remained till the present time. Lord Grimthorpe has rebuilt the north aisle 4ft. wider, and the west front 15ft. farther west, adding a seventh bay to the nave; and the chancel about as much farther east, and adding 45ft. long of vestries, with a new entrance to the church between them. The whole length inside is now 142ft., the width of the nave 52ft., and the height 40ft. The chancel and the new Lady chapel are 23ft. 4in. in width. The church will now hold from 700 to 800 adults, instead of 500. All the walls have been rebuilt of mixed bricks and flints, like most of those at the cathedral. The tower alone is repointed, with the addition of square buttresses at all the corners, with Ancaster stone quoins, and a new crown of pinnacles and parapets, making it 108ft. high, and somewhat overtopping the much larger cathedral tower, by reason of being on higher ground. All buttresses and refacing have been built in cement, to avoid the risk of the new work shrinking and splitting off. The interesting monument of Edward Strong, Sir Christopher Wren's foreman during the 36 years rebuilding of St. Paul's Cathedral, remains undisturbed at the east end of the north aisle. The roofs are all new, the old ones having been condemned as ruinous. The main ridge is raised sufficiently to make it visible outside, and the clerestory windows and most of the wall, which had perished through long admission of wet, can now be partially seen over the aisle parapets, kept down for the purpose. The new west window is circular, replacing a Perpendicular one. The pattern of the new wheel window is unique in having 14 divisions in the outer ring, and therefore seven in the inner, which admits of more variety than numbers divisible by four, which prevailed in most, or all, the old large "rounds" everywhere. The chancel fittings are all new and massive. The pulpit, said to be Flemish, has been renovated, and the nave fittings are the old ones re-made on a plan much easier for sitting and kneeling, as far as they would go, and new ones added in the aisles. The organ has been re-made and enlarged by Messrs. Kirkland, of Holloway-road, and formerly of Wakefield.

Sheffield.—The vacant land in the central streets at Sheffield is being rapidly taken up. Two more plots have been disposed of in Pinstone-street, and there is now only one remaining unsold. The experiment of Mr. Reuben Thompson, of providing artisan dwellings at the top of his new premises, has been attended with so much success as to be speedily imitated. Similar provision has been made in the new buildings now being erected by Messrs. Laycock in the same street, and in new premises about to be put up close by flats of a better description will be provided. It is hoped to have most of the new property in this street completed by the time the new Town Hall is ready for opening. The remaining vacant plots of land in Church-street have gone off very rapidly at the last moment. Messrs. Bush and Son are putting up a fine block of buildings next to the Reform Club, as auction and show-rooms and offices. On the next site Messrs. Maxfield, solicitors, are erecting an imposing block of offices. The two plots at the top have just been secured, one by Messrs. Holmes and Watson, architects, and the other by a firm of solicitors. The work of widening High-street is proceeding, and when that is complete the centre of the city will have undergone a complete change.

CHIPS.

The town council of Birkenhead have resolved to adopt the Baths and Washhouses Acts.

Mr. Rienzi Walton, an inspector to the Local Government Board, held an inquiry at the Scarborough Town Hall on Wednesday week relative to the application of the town council for sanction to borrow £5,865 for street and other improvements, sewerage, &c.

Canon Barnett, of Toynbee Hall, has offered to raise twenty thousand pounds towards the cost of a town hall and art gallery at Whitechapel, provided the district board takes up the scheme and holds half-yearly picture exhibitions.

Mr. Robert Nightingale, a well-known Essex artist, died in London on the 3rd inst. in his 81st year. He exhibited at the Royal Academy as far back as 1846; and he was subsequently a frequent contributor to the Academy and the Suffolk-street galleries. His best works were horses and dogs, but he also enjoyed some distinction as a portrait painter. He was an intimate friend of the late Sir Edwin Landseer and of Mr. T. Sidney Cooper, the veteran Academician, and others.

The directors of the London and South-Western Company are about to make important alterations at Basingstoke station, and to widen the line from the junction upwards, to enable the Exeter traffic to be carried on without coming on to the Southampton line.

Engineering Notes.

East London Waterworks.—The Civil and Mechanical Engineers' Society visited, on Oct. 2, the new and old works of the East London Water Co. at Walthamstow. The existing reservoirs belonging to the company cover an area of 220 acres and the line of shore is 10 miles in length. The new works of the company, under their Act of 1894, consist of—(1) the construction of two large reservoirs; (2) the raising of the old Racecourse Reservoir 9ft. in height, so as to enable the depth of water to be increased to 20ft. (the water area will then equal 65 acres); (3) the construction of a road; and (4) the construction of filter-beds and high-service reservoirs. The two new reservoirs are being constructed by Messrs. John Aird and Sons, the water area of which will equal 80 acres; the depth of water in these reservoirs will be about 20ft The reservoirs will be connected with one another by means of tunnels, and the flow of water between them will be regulated by valves. The additions to the Racecourse Reservoir are being carried out by Messrs. Kirk and Randall, and this latter work will be completed in about a month's time, the contractors executing the work two months under their contract time. There are three filter-beds at this station; also a deep well into the chalk, the water from which is lifted by a differential pumping engine. A new triple-expansion pumping engine and a new centrifugal pump and engine will be erected here, the latter pump being capable of lifting 50,000,000 gallons a day. Other works are designed, and will be carried out as early as possible.

Lancashire, Derbyshire, and East Coast Railway.—The work of constructing the Langwith and Beighton branch of the Lancashire, Derbyshire, and East Coast Railway has made great progress during the last few months. The Langwith and Beighton branch commences in the parish of Langwith Basset, terminates near Killamarsh, and is about 11 miles in length. From Langwith to Clowne the line is practically finished. The Langwith Colliery branch, which is one mile in length, will be completed in a few weeks, and coal will then be put on the railway for conveyance to the Lincoln districts. A branch to the Staveley Colliery, which is also about one mile in length, is finished. Work on the Chesterfield section is in a forward state. The Bolsover Tunnel is over two miles in length, and about two-thirds of it is completed. The line is finished from Langwith Junction to the Warsop Main Colliery.

Rattray Head, N.B.—On the evening of Monday last a light was shown for the first time from a lighthouse which has been erected on the Ron Rock. This tide-covered rock lies about a quarter of a mile off Rattray Head on the east coast of Aberdeenshire, nearly midway between Buchanness and Kinnairdhead lighthouses. Kinnairdhead was built in 1787, being the first lighthouse erected by the Northern Lighthouse Commissioners, and Buchanness, which was lighted on May 1st, 1827, showed the first flashing light exhibited from any lighthouse. The new Rattray Head tower, as designed by Mr. David A. Stevenson and erected by Mr. David Porter, Aberdeen, is in two stages; the lower portion is 50ft. in diameter and 42ft. in height, constructed of heavy granite blocks outside and Portland cement concrete inside. Above this, the tower, 44ft. in height, is of composition brickwork, surmounted with a coping of granite, the total height of the structure being 86ft. On the granite coping is fixed a light-room of cast-iron plates, and a lantern with diagonal astragals of gunmetal. The lower tower has two stories; the under one contains the engines for compressing the air for actuating the siren, and in the upper floor are placed the air-receivers and siren. The foghorn is placed on the seaward side of the roof of the lower tower. The upper tower is divided into four stories—the coal and water store, the dry store, the third the kitchen, and above it the bedroom. Mr. Porter began operations on the rock in April, 1892, and before the end of July, 1894, the tower was completed. When the masonry was completed, Messrs. Milne erected the light-room and lantern. This allowed the internal fittings of the tower to be proceeded with. During the present season the optical apparatus and machinery for causing it to revolve have been erected, the former being made by M. Lepante, Paris, and the latter by Messrs. Steven and Struthers, Glasgow. The optical apparatus consists of nine panels of refracting prisms, the focal distance of the lenses being 3ft. The lenses subtend an angle of 80° vertically, this large angle being attained by using Mr. Charles N. Stevenson's bi-convex equiangular prisms above and below the lenses. These prisms render unnecessary the use of flint-glass, which causes great loss of light. The introduction of these prisms is novel, and results in a saving of from 15 to 20 per cent. of light. The height of this optical apparatus is $5\frac{1}{2}$ft., and the diameter 6ft. The panels show a group of three flashes in quick succession every half-minute; the power of the beam of each flash is equal to over 39,200 standard candles. The siren will give two blasts in quick succession every three minutes. The dwelling-houses for the keepers and their families are erected on the mainland, near the Head.

Railway Improvements in Birmingham.—Extensive structural changes have been in progress on the lines of the London and North-Western and Midland Railways where they converge on the southern side of Birmingham, for the past twelve months. When the joint station was enlarged a few years ago by the construction of a new station for the Midland Railway, side by side with the old one built by the London and North-Western Company, substantial improvements were effected in the northern tunnel approaches where the congestion of the traffic had been most conspicuous; but the south tunnel remained unaltered, except for the construction of a wider bell-mouth opening towards the Midland station. Up to the present, therefore, the twin stations, having together six main platforms and fourteen sets of metals, were dependent upon their south, or London side, on an outlet consisting of a single tunnel with one up and one down line, and beyond the tunnel the number and arrangement of the converging lines have been a source of constant anxiety. About three years ago the present scheme took practical shape, the London and North-Western Company undertaking the work, and the cost being apportioned between the companies. The first step was to do away with a level crossing where the Grand Junction line and the Curzon-street sidings intersected one another. A viaduct, for which Messrs. Nelson and Co. were the contractors, has been built for this portion of the passenger line, to carry the passenger traffic overhead until it is clear of the goods lines. The viaduct is built partly of brick arches and partly of iron girders, at a cost of about £35,000. The Midland trains, as they come in from Saltley, will pass under the North-Western line and gradually rise until they run level with and side by side with the London main line. The Midland suburban line will also be brought into direct connection with the new Midland loop. By the making of the new tunnel through the heart of the city these new independent approaches will be continued into the station. The new section when completed will consist of a double set of rails running through a tunnel 280 yards long, and about 10ft. to the south of the old line. The extensions have involved heavy work in the widening of bridges, the lowering of roadways passing under them, and the building of strong retaining walls at various points. The new system will be in full operation next Easter. The work is being done under the joint plans of Mr. Francis Stevenson, of the North-Western, and Mr. J. A. M'Donald, of the Midland Company, Mr. E. M. Smith being the resident engineer. For the work of widening between Gloucester Junction, where the Midland suburban line comes in, and the point at which the tunnelling under the city begins, Mr. J. T. Firbank, M.P., has been the contractor; while the new tunnel is being constructed by Messrs. Holme and King, of Liverpool. The cost of the actual excavating, with the building, platelaying, and other constructional work, will amount to over £100,000; but the total cost of the scheme, including compensations and other incidentals, will not be less than a quarter of a million.

◆

The Great Northern Railway of Ireland invited tenders for the glazing of the new station at Londonderry and Belfast arrival and departure platforms, and the tender of Messrs. W. E. Rendle and Co., of Westminster Chambers, has been accepted.

The members of the Sanitary Institute inspected the Wimbledon sewage works on Saturday, and on Tuesday evening Professor Wynter Blyth lectured before them on the subject of the "Sanitary Laws and Regulations Governing the Metropolis."

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to The Strand Newspaper Company, Limited.

TERMS OF SUBSCRIPTION.

One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India, £1 6s. 0d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front-page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No Front-page or Paragraph Advertisement inserted for less than 5s.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page Advertisements and alterations in serial advertisements must reach the office by Tuesday morning to secure insertion.

Situations.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., LI., LIII., LIV., LVIII., LIX., LX., LXI., LXII., LXIII., LXIV., and LXV. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Received.—F. G. Lewin.—M. J. R. and Co.—Subscriber.—C. F. (Ashford).—C. J. W.—F. Langdon.

Correspondence.

ELEVATIONS OR PERSPECTIVES AT THE R.A.

To the Editor of the Building News.

Sir,—With reference to your leader on the above subject in your issue of Sept. 27, I shall feel much obliged if you will allow me to observe that architectural designing is a graphic art, and that poetry, music, and the drama are not graphic arts.—I am, &c.,

Llanelly, Oct. 1. R. F. Chisholm.

PROPOSED COUNTY INTERMEDIATE SCHOOL, WELSHPOOL.

Sir,—I received some two weeks ago a letter from one of the governors inclosing the advertisement inserted in your paper, and suggesting that I should compete for the above. In my reply, I pointed out that no promise of employment was made to the selected architect, and that the £20 premium would represent only part commission on a cottage, and I therefore declined. I had a reply, in which it was stated that the governors could not think of binding themselves to the employment of the architect placed first, as they might not like his design, and that the £20 was offered to prevent his being *disappointed in such a case!*

In replying, I pointed out that in competitions we risked a good deal, and it was just to expect a building committee to bind themselves to something satisfactory to us; that if the conditions were fair and reasonable, the result would probably please them; but as they stood now, it was very probable that they would be disappointed.

Now, Sir, it seems highly advisable to let the public see that we are resolved to safeguard our interests in these matters by not competing unless it is laid down that the architect whose design is selected shall carry out the work, and if it falls through, shall be paid a sufficient premium to pay him for his trouble. Can we blame the public for holding in very low estimation men who are willing to compete under such degrading conditions? I think not.—I am, &c.,

Swansea, Oct. 6. Hrrbert W. Wills.

THE LATE MR. HENRY SMITH.

Sir,—I notice in the list of works quoted in your obituary of Mr. Henry Smith a most important omission. He acted as surveyor for the whole of the buildings for the "Fourth Middlesex Asylum" (Claybury Asylum) at Woodford, Essex, for the London County Council, the total cost of which amounted to about £425,000.

Kindly make this fact known in your next issue, and oblige.—I am, &c.,

James W. Macey, Chief Clerk.

8, John-street, Adelphi, Oct. 9.

The Peterhead Harbour Trustees on Tuesday received a report by Sir A. M. Rendal, engineer for the Loan Commissioners, on the application of the Trustees to borrow £44,000 for extensions and improvements, in which the plans prepared by Mr. Shield, Harbour of Refuge Works, who was employed as engineer to the Trust, were largely modified. It was unanimously agreed to adopt the suggestions of Sir A. M. Rendal, and to restrict the application to £35,900; and, in anticipation that the loan would be granted, to prepare plans and specifications, Mr. Barron, C.E., Aberdeen, being the engineer.

The memorial stone of a new Congregational church in Stoney-lane, Sparkbrook, Birmingham, was laid on Saturday. The building, with which considerable progress has already been made, will be in the simple Gothic style, and will be capable of seating about 400 people. Provision has been made for subsequent enlargement by the addition of side aisles, which will bring the accommodation up to 600. The internal dimensions will be 55ft. by 39ft. with a transept. Land has also been reserved at the rear for future extensions in the shape of vestries and schools. Mr. George Ingall, of Birmingham, is the architect.

The theatre at Barnstaple was reopened on Wednesday week. It was built in 1835. For the past two years it has been closed, and for a considerable time previous to that it was used by the Salvation Army. The feoffees of the Barnstaple Long Bridge, who are the proprietors of the theatre, decided that the building, which had got into a most dilapidated condition, should be rearranged, and it has accordingly been almost rebuilt. It is capable of seating 600 persons. The decorations are by Mr. Martin Croot, and the whole of the furniture and appointments have been supplied by Messrs. Symons and Sons. Messrs. Sanders and Ridge carried out the alterations, the architect being Mr. F. W. Petter.

The institution which has been erected by Mrs. Priestman at New Hurst, Newcastle-on-Tyne, in memory of her husband, the late Jonathan Priestman, was publicly opened on Saturday afternoon. The building, which is situated at the south end of the village, is of red bricks, and is carried out in the Scottish Baronial style; it contains a library, reading, billiard, and general rooms. The cost of the building was £1,800. It has been built from plans by Mr. Charlton, of Ashington, by Messrs. Douglas, of Blyth.

The new cemetery for Whitchurch, Salop, at Mile Bank, was dedicated on Wednesday week. The new burial ground is three acres in extent, is about half a mile from Whitchurch, and occupies rising ground. The grounds are inclosed by a stone wall, and a caretaker's house containing a room for burial board meetings is built on an eminence in brick and half-timber. The architect was Mr. Walter Webb, of Whitchurch, and the builder Mr. Powell, Prees. Messrs. Smith and Son provided the palisading for walls, and the work has been carried out under the supervision of Mr. Baxter, surveyor to the urban council. The total cost amounts to £,150.

The Norwich Corporation, through their Technical Education Committee, have bought extensive premises adjoining the free library and school of art. The price paid was 3,000 guineas.

For the Staniland board schools, Boston, Messrs. Fambrini and Daniels, Architectural Concrete Works, Lincoln, have secured the contract for the whole of the stone dressings in their cream-coloured concrete masonry, comprising moulded sills and string-courses; bonded and moulded jambs; pediments, consoles, corbels, keystones, finials; moulded and ramped copings, &c. General contractor, Mr. H. W. Parker, Boston; architect, Mr. Jas. Rowell, of the same town.

Intercommunication.

QUESTIONS.

[11436.]—**Steel Joists and Iron Joists.**—Would some reader kindly say how one can know steel joists from rolled iron joists?—P. M.

[11437.]—**Concrete Floor.**—I am about to erect a stable on first floor of a building, and should be glad to know, in calculating the strength of floor, what weight per foot super. should be allowed. My own idea is to put 7in. by 2¼in. steel joists 2ft. apart, 10ft. bearing, filled in with coke breeze and cement concrete, 9in. thick, finished with paving bricks or granite concrete. Would a floor of this description be strong enough to allow for the weight and kicking of horses? In what proportion should cement be to coke breeze? What is the safe load per foot super. for coke breeze concrete 9in. thick, and bearings as above?—Safety.

CHIPS.

A new boys' school is being erected near the Old Porte Wall, at Chepstow, to accommodate 226 boys. The walls are built of red sandstone, with Box Ground dressings, mullions, and transoms. The plan consists of one large schoolroom, three classrooms, with corridor communicating with each. The contractor is Mr. John Linton, of Newport, Mon., and the contract price is £2,545.

The vestry-hall at Chiswick has just been renovated, and was reopened on Saturday. Messrs. T. Adamson and Sons, of Chiswick, were the contractors.

The east window of Burghill Parish Church, Herefordshire, has been filled with stained glass. The central light contains a representation of our Lord as the Good Shepherd.

A Local Government Board inquiry was held at Hull, on Thursday in last week, by Mr. Rienzi Walton, C.E., with reference to the application of the corporation for permission to borrow £8,000 for purposes of electric lighting. The amount is required to meet the requirements necessitated by the increased demand for the light.

The Godalming Corporation have decided, by the casting vote of the mayor, to acquire the waterworks, at a cost of £48,000. A resolution to obtain a provisional order for the installation of the electric light was also carried.

On Saturday afternoon Sir H. G. Reid laid the memorial-stone of a new church which the English Presbyterian body are erecting at Heathfield-road, Handsworth. The cost of the building and site is estimated at about £5,000, and accommodation will be provided for a congregation of four hundred. Mr. J. P. Osborn, of Birmingham, is the architect.

A new organ has just been erected in the West Hampstead Congregational Church, Finchley-road, at a cost of £1,446.

Mr. W. J. Bird Clerk, M.I.C.E., an inspector from the Local Government Board, held an inquiry at the Town Hall, Cowes, on Friday, into an application of the Cowes Town Council to borrow £500 for the purposes of water supply and sewerage. The surveyor explained details and plans.

The town council of Cheltenham have decided to advertise for designs for municipal buildings to be built on the Winter Gardens Estate, and to offer a premium of £100 for the best design.

Dr. Danford Thomas held an inquest on Tuesday at St. Pancras, concerning the death of Frederick Conder, 57, land and estate agent, vice-chairman of the Biggleswade School Board, of Brook House, Biggleswade, Beds, who poisoned himself while staying at the Midland Hotel. It was shown that deceased was depressed owing to financial troubles, and the jury returned a verdict of Suicide during mental distress.

On Wednesday week, a new Wesleyan Methodist chapel was opened in Percy-street, New Swindon, by the President of the Wesleyan Conference, the Rev. D. J. Waller, D.D. The chapel, which will accommodate 520 persons, has been erected at a cost of £1,085. The builders were Messrs. J. and G. George, and the architect was the late Mr. Thomas Lansdown, who died recently.

The four new forts for the defence of Lough Swilly are being rapidly proceeded with under the supervision of Captain St. John, Royal Engineers. Three of the forts are on the Innishowen side, while the fourth occupies a commanding position on Inch Island.

Sir Arthur Arnold, chairman of the London County Council, opened the new Putney School of Art on Wednesday week.

A new Wesleyan chapel is in course of erection at the corner of Pine and Shaw-streets, Pits o' th' Moor, near Bury, from plans by Messrs. Brockbank and Green, architects, of Liverpool. The chapel is Gothic, treated in brick and terracotta, and is seated in pitch-pine for 700 persons. The builders are Messrs. Thompson and Brierley, of Bury, Lancs.

Legal.

WHAT IS "AN INTEREST IN LAND"?

The defence of the Statute of Frauds still keeps cropping up whenever one party wants to get out of a contract for which the other has not taken care to provide a written and signed document. Probably the legal construction of this old statute of Charles II. has wasted more money and encouraged more fraud than any other odd hundred Acts of Parliament put together. The idea of the statute was that by requiring a written note of an arrangement made affecting an interest in land, law-suits would be prevented and fraudulent claims discouraged. But the effects have been entirely otherwise. A recent wretched little dispute from a County Court was taken up to the Queen's Bench Divisional Court, upon a point of law raised under this well-meaning old statute. The plaintiff had let a field to the defendant, verbally, for three Bank-holidays, for the purpose of its being used to set up a steam hurdy-gurdy, at the one round sum of £45. The defendant took possession of the field for the first holiday, and paid the plaintiff something on account; but for some reason or other he did not want the field on the two following holidays, and did not take possession of it, although he could have done so. Then the plaintiff sued for the balance of the agreed sum in the County Court, and the defendant set up as his defence the Statute of Frauds, contending that, as this was an agreement affecting an interest in land, it should have been in writing, and so was void.

The County Court judge overruled this far too ingenious defence, and fortunately the Divisional Court has now been able to confirm that decision. The judges held that the verbal arrangement amounted to one letting at a lump sum as rent for the three specified days. The defendant entered on one of these days and paid a sum on account of the whole agreed rent. In order to support an action for use and occupation an entry by a tenant was enough, and it was not necessary to prove his continuous occupation during the whole period. So the Court got out of the strict letter of the ancient statute by holding that the plaintiff could recover the balance owing as for the use and occupation of his field, and thus maintain his action, although there had been no such written agreement as is needed when an interest in land is affected. Still, it is better to put these things in writing. **Fred. Wetherfield, Solicitor.**

1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

W. H.—Contract.—Architect.—Deduction.—Ask him for an account, which should be furnished. If you can show that the amount deducted is so excessive as to be fraudulent or collusive, you might dispute his decision upon that ground. But you would have to prove the fact very clearly.

Puzzled.—Local Council Work.—Liability.—I consider the Council's surveyor had full authority to order this work to be done, as the need was urgent in view of the public safety, and upon that basis you should summon the Council for the money owing, and call their own surveyor as one of your witnesses.

By the death of Mr. J. T. Rodda Camborne has lost one of its most prominent inhabitants. He was for fifteen years steward to Mr. W. Cole Pendarves, and previous to his appointment to that office he was engineer and secretary to Camborne Waterworks Company, which appointment he had held from the inception of the company. The building the reservoirs, laying the mains into the town—a distance of four miles—and supplying the house services at Praze, Camborne, Tuckingmill, and Pool were done under his direction and superintendence.

At the Guildhall Art Gallery, E.C., on Monday an interesting collection of drawings by old masters was inaugurated. It will continue open during the winter months from 10 till 4. The collection, which has been lent by Sir Charles Robinson, includes drawings from the pencils of Titian, Raffaelle, Rembrandt, Vandyck, Rubens, Albert Dürer, Hans Holbein, and Michaël Angelo.

A faculty has been obtained for the erection of an oak screen at the entrance to the chancel and north chancel aisle at Penshurst, the cost being defrayed by Lord Hardinge. A faculty was also obtained for partially restoring Ruckinge Church at a cost of £550. The parish church at Wrotham, Kent, is also to undergo repairs; three dilapidated windows in the north aisle are being now restored.

WATER SUPPLY AND SANITARY MATTERS.

The East London Water Supply.—Further evidence was heard by Col. W. M. Ducat, R E., and Dr. F. W. Barry, inspectors of the Local Government Board, on Thursday, Friday, and Saturday last, as to the causes of the deficient supply of water in the East-end parishes of London from June to August last. Mr. A. R. Binnie, principal engineer to the London County Council, stated that he had prepared tables showing the total quantities supplied by the East London Water Company in 1892, and for the five months of 1895. In 1892 the average daily supply was 43,561,270 gallons; in 1893 it was 41,901,868 gallons; in 1894 it was 41,396,448 gallons; and in 1895 for the first five months it averaged 53,010,513 gallons a day. For the five months of 1895 the total excess from February to June over the preceding year was 1,501,232 gallons. The flow of the river Lea was not in any way below the average, and yielded ample supplies. The cause of the shortness of water was not from an insufficiency of supply, but arose from something which occurred in February. This was evidently the great frost, which burst the pipes, and the damage was not repaired down to the end of June. He considered that the company already possessed sufficient storage reservoirs, and he altogether condemned the river Lea as a source of supply. On behalf of the East London Water Company, Professor Symonds, Dr. W. R. Smith, and other expert witnesses were called to prove that the drought in the Lea valley had been exceptional this year, and that the failure of supply in the East-end had not affected the public health. On Friday most of the sitting was occupied with the evidence of Mr. W. B. Bryan, for the past 14 years engineer to the East London Water Company, who attributed the scarcity to the drought in the Lea valley, which had diminished the flow of the river Lea to an enormous extent. But if he had had sufficient storage there would have been no deficiency. The contention of Mr. Binnie, the engineer to the London County Council, that the scarcity was due to the shattering of mains by the frost of last winter was, in the judgment of the witness, entirely erroneous, and based on ignorance of the facts. All the company's broken mains in the London district were repaired by the 8th of April, and in the country districts all the broken mains were restored by the 19th of April. There could not possibly have been any waste to the extent of 20 per cent. from shattered mains after the dates given. In May and June there was an immense increase in the consumption of water, and that arose from the enormous number of lead pipes which burst, so that plumbers could not be found in sufficient numbers to repair all within two or three months.—The inquiry concluded on Saturday, after addresses by counsel. Mr. Pember, for the water company, threw the blame of the recent dearth of water upon the County Council for opposing, for political reasons, the increase of the company's storage. Mr. Balfour Browne, representing the East-end vestries, denounced the attitude taken up by the company as beneath contempt, and asked the inspectors to report to the Local Government Board that the real remedy for such calamities as had occurred was to transfer the water supply of the Metropolis to some public body. Colonel Ducat intimated that he and Dr. Barry would inspect the storage works of the company and some of the fittings, and then make their report.

The Relative Value of Percolation Gauges.—At a meeting of the Society of Engineers, held at the Royal United Service Institution, Whitehall, on Monday evening, Mr. W. G. Peirce, President, in the chair, a paper on this subject was read by Mr. Reginald E. Middleton, M.Inst.C.E. The object of of author was to examine into the relative value the percolation gauges situated at Nash Mills, Lea Bridge, and Rothamsted, both as regards the records of each, their reliability when compared with other sources of information, and the evidence which is afforded as to the quantity of rain water which may be assumed to pass into the underground reservoirs which supply the wells and rivers. It was shown that there are remarkable discrepancies between the records of the gauges themselves, and that the percentage of rainfall which percolates does not appear to be consistent throughout, although the water percolating follows the record of rainfall more closely than is generally supposed to be the cace. Mr. Middleton next endeavoured to produce evidence from two other sources—namely, from the varying levels of the water in two wells, and from the gaugings of the rivers Thames and Lea, confirmatory of the general conclusions arrived at from the records of the different percolation gauges. The results obtained have been tabulated, and although they do not agree between themselves entirely nor with the records obtained from percolation gauges, they yet afford some evidence generally confirmatory of the results recorded by those gauges, and the differences are probably due rather to a failure in obtaining a proper ratio of discharge in the one case and to a general rather than a particular consideration of the circumstances in the other than to any inaccuracy in the method adopted. In the case of the river the evidence obtained appears to be of value, especially as indicating that, unless the amount of water which percolates into the underground reservoirs has been very largely over-estimated, the rivers do not discharge the whole or anything like the whole of the water collected in the underground reservoirs, but that a very large volume passes away through some other channel and is available for purposes of water supply. This volume, in the case of the river Lea, amounts to some 75,000,000 gallons, and in the case of the river Thames to the enormous quantity of 697,000,000 gallons daily. In illustration of the discrepancies, it was mentioned that if the years 1860 to 1866 of the records kept at Nash Mills and Lea Bridge be compared with those from 1866 to 1873, it is found that the Nash Mills gauge passed, during the former period, 23 per cent. of the rainfall, and that at Lea Bridge 29 per cent. was passed, while in the second period the Nash Mills gauge passed 19 per cent. and the Lea Bridge gauge 29 per cent. If the two gauges at Lea Bridge and Old Ford, which are placed about 2½ miles from each other and are under the same management, be compared, it is found that the percentage of rain passed by that at Lea Bridge between the years 1875 and 1890 is 30·4 per cent., while at Old Ford it is only 25·2 per cent., and in many years the difference is far greater. Similar results are arrived at by an examination of the other gauges. The smallest percolations are, for a one-year period, about 37 per cent. of the average, or 3·37in. of rain; for a two-year period 45 per cent. or 4·10in., and for a three-year period 60 per cent. or 5·46in., the average percolation being taken at 9·10in. of rainfall, while there is a large amount of evidence to show that the average percolation is not less than 10in. of rain.

The Edinburgh New Waterworks.—At a meeting of the works committee of the Edinburgh and District Water Trust on Monday, considerable discussion arose on the question of the measurement of the new Talla works in connection with the preparation of schedules. The principal point was whether the work should be done under the direction of the trust engineer, or should be placed in the hands of an outside ordained surveyor. Ultimately it was agreed that the work should be done by the engineer, and that ½ per cent. on the total cost of the works measured should be allowed him for remuneration.

◆

We learn that Mr. Edmund Law, F.R.I.B.A., F.S.I., architect and county surveyor, Northampton, has taken into partnership his head assistant, Mr. Sidney F. Harris, A.R.I.B.A. The practice will now be carried on in the name of Law and Harris, architects and surveyors, Northampton.

A scheme for the main drainage of Borstal, which the Chatham Corporation have been compelled to undertake by order of the Local Government Board, to whom the medical authorities of H.M. Convict Prison, Borstal-hill, had appealed, resulting in a Government inquiry, is now being proceeded with, under the supervision of the sanitary engineers, Messrs. Taylor and Sons, and Santo Crimp. The consent of the Medway Conservancy Board and of the Admiralty to an outfall to the river of overflow water, after filtration, has been obtained.

The formal opening of Aberdare-hall, Cardiff, took place on Tuesday. Aberdare Hall was founded in 1885 in connection with the South Wales University at Cardiff, for the training of women students, and hitherto the work has been carried on in a temporary building. The new hall, two-thirds of which is completed, will form a square 88ft. in each direction. In the centre is the library, 30ft. square. The trustees of the late Mrs. Emily Pfeiffer have given about £2,000, over £2,000 has been raised by subscription, and the rest by mortgage of the buildings to the University College.

At Tuesday's meeting of the City Commission of Sewers, Mr. H. T. Gordon, F.R.I.B.A., presiding, £13,600 was voted towards an improvement in Whitecross-street, and it was resolved to acquire ground needed to widen the public way in Basinghall-street. A memorial from tradesmen in Bishopsgate-street Within was presented, urging the removal of certain shoring in front of premises in that street. It was stated that the "struts" had been up nearly two years. The clerk said the matter was entirely one for the district surveyor, whose duty it was to order the removal of the shorings, or "struts," when it was safe to do so. The matter was referred to the Streets Committee.

The managing committee of the British School at Athens offer to the University of Cambridge a studentship of £50, to be held at the school during the session 1895-6 by a duly qualified student nominated by the University. Students who desire to become candidates for the studentship must communicate their names to the Vice-Chancellor at Sidney Sussex College on or before Monday, October 28, together with such evidence as to their qualifications as they may desire to submit.

STATUES, MEMORIALS, &c.

Bristol.—The ground formed by the covering over of the water space above St. Augustine's Bridge, Bristol, which has been laid out as a pleasure ground from plans by Mr. Yabbicom, the city engineer, is about to be embellished with a statue of the philanthropist, Edward Colston. The statue is by Mr. John Cassidy, and cast in bronze—8ft. 3in. high—standing on a square pedestal of stone ornamented with bronze, also designed by Mr. Cassidy, 10ft. 4in. high. The four sides of the pedestal will carry bronze panels, two of them depicting scenes in the life of Colston, the third displaying an allegorical device, and the fourth bearing a short inscription.

◆

CHIPS.

Comparatively little business was done in estates at the Auction Mart, Tokenhouse-yard, last week, the total sales only amounting to £21,000.

The parish council of Gillingham, in Dorset, have decided to build a parish hall at a cost of £800. The architect is Mr. C. T. Miles, of Bournemouth. This is the first parish hall to be built under the new Act.

Mr. G. W. Willocks, a Local Government Board inspector, held an inquiry at Lancaster on Friday as to the application of the corporation to borrow £17,040 for the purpose of purchasing property and land to make a new street from Dallas-place to Carr House-lane, so as to provide direct communication north and south on the west side of the London and North-Western Company's line.

The new infectious hospital, Annan, is being warmed and ventilated by means of Shorland's patent Manchester stoves, with descending smoke flues, the same being supplied by Messrs. E. H. Shorland and Brother, of Manchester.

The Bishop of Salisbury has just dedicated a side chapel at Wimborne Minster, which was formerly a chantry, founded nearly four hundred years ago by the Countess of Richmond, mother of Henry VII. It has now been restored, and will in future be used for daily service.

On Friday evening, at Baily's Castle Temperance Hotel, High-street, Launceston, the directors of the company owning the property entertained the architect of the newly erected hotel, Mr. Otho B. Peter, of Launceston, the contractor, Mr. E. Sharland, and his workmen at dinner.

The East Riding Antiquarian Society held their annual meeting at Filey on Thursday in last week. The great parish church, the earliest part of which dates from 1190, was described by Mr. J. R. Boyle, who pointed out that the sepulchral image of a boy bishop in the church was one of two known examples, the other figure being the one in Salisbury Cathedral.

The ceremony of laying the memorial stone of a new Free church at Kelty, N.B., was performed by the Earl of Moray, on Tuesday week. The church will be seated for 500, and the estimated cost is £2,200.

The Rev. Edward Maule Cole has been chosen President of the East Riding Antiquarian Society in the place of Dr. Cox, who has removed from the district.

Mr. Alexander Fraser, engineer to the Grand Junction Waterworks Company, died on Sunday at his residence, The Mount, Ealing, in his 73rd year.

New casual wards are about to be added to the workhouse at Sevenoaks, from plans by Mr. T. Potter, architect to the local board of guardians.

Col. A. G. Durnford, R.E., Inspector of the Local Government Board, held an inquiry on Friday in the Court House, Bishop's Lydeard, relative to an application by the Taunton Rural District Council for sanction to borrow £1,200 for the purpose of securing a water supply for the parish of Bishop's Lydeard.

At a meeting of master plumbers held on Monday afternoon at St. Peter's Institute, Buckingham Palace-road, it was decided to form a local branch of the National Association of Master Plumbers. Mr. Daniel T. Bostel, of 73, Ebury-street, S.W., was appointed hon. secretary.

The city council of Glasgow decided on Monday to purchase eight acres of land on the Kelvinside Estate for the extension of the Botanic Gardens, and with a view to the purification of the River Kelvin.

Sir W. H. Flower, the Director of the Natural History Department of the British Museum, has accepted an invitation to formally open the new museum at Perth towards the end of this month.

The newly-appointed trustees of the Thames and Severn Canal have appointed Mr. Edmund J. Cullis, Assoc.M.Inst.C.E. (now, and for some years past, assistant engineer to the Sharpuess Docks Company), as executive engineer to carry out the work of restoration.

Our Office Table.

It will be impracticable to proceed with the Strand to Holborn new thoroughfare scheme next session, for at the meeting of the London County Council the supporters of the project failed to obtain the necessary three-fourths majority for the suspension of the standing orders, so as to enable the proposal to be laid before Parliament next session. When a division was taken, there were 65 votes in favour of the proposal, and 35 against it; but a majority of three-fourths being required, the motion was practically lost, and a project involving an expenditure of more than two millions has thus been disposed of by a side issue, without any discussion of its merits. It will be remembered that the proposal of three years ago for a Council Broadway, conceived on nearly the same lines, except that then it was intended to form a terrace at the Strand end of the street, had to be withdrawn on account of the unsatisfactory character of the proposals for betterment.—At the same meeting of the County Council a long discussion took place on the proceedings of the Public Health and Housing Committee with reference to the Boundary-street scheme and the Millbank Prison site. On the last subject the committee recommended that Mr. Blashill, the Council's architect, be instructed to design the laying-out of the Millbank Prison site, and that the committee be authorised, if it should think fit, to engage the services of an outside architect or architects for such of the buildings as the Council shall determine to erect upon the site. Several members thought that the proposal suggested a slur on the architect's department, and it was moved that the recommendation should be referred back. The amendment was lost; but it was agreed to amend the recommendation so that the names of the architects would be merely submitted by the committee.

The Public Health and Housing Commiteee of the London County Council have prepared a scheme for the improvement of the area behind the north side of the Strand, adjoining Clare Market and the east side of Drury-lane. It has a total extent of 3½ acres, and in some parts the present population is upwards of 800 to the acre. The number of persons proposed to be displaced is 3,308, and provision can be made for rehousing about 1,770 of these, accommodation being furnished for 500 in the immediate vicinity, and for another 1,260 on the site of Millbank Prison. It is also proposed to widen Drury-lane on its eastern side to 40ft. so far as the property taken extends. The net cost of the property to be acquired under the scheme is £214,250, and the estimated cost of paving and other works is £2,250, representing a total net cost of £216,500. The area dealt with is described by the committee as the largest and worst of those crowded collections of courts and alleys which remain to disgrace Central London.

In a letter to the *Times* the Right Hon. Sir G. Osborne Morgan, M.P., one of three surviving members of the Select Committee of the House of Commons who decided in 1869 the famous "battle of the sites" for the Law Courts, states that the adoption of the Carey-street site would never have taken place had it not been that the members of the committee were authoritatively assured that the narrow part of the Strand would at once be widened into a handsome boulevard, such as the London County Council now proposed to drive from St. Mary-le-Strand to Clement Danes. "Beguiled by these representations," Sir George Morgan continues, "several members of the committee, including myself, voted for the Carey-street site, which was eventually approved by the narrow majority of two—a decision which, under the circumstances, I now greatly regret. Most certainly, but for this assurance, the Palace of Justice would have been placed on the Thames Embankment; for, as our chairman, the late Lord Derby (then Lord Stanley), was a strong advocate of that site, and would have given his casting vote in its favour, the transfer of a single voice would have sufficed to turn the scale. More than 26 years," he adds, "have now passed since the decision of the committee. Yet the condition of the Strand between the two churches remains exactly what it was in 1869, except that, with the opening of the Law Courts and the freeing of Waterloo Bridge, the traffic over it has probably more than doubled."

Edinburgh is seeking Parliamentary powers to follow the example of Liverpool, Manchester, Southampton, and other thriving municipalities, and absorb the surrounding suburbs within its rateable area. The Bill to be promoted next session by the Edinburgh Corporation for the amalgamation of the city with the boroughs of Leith and Portobello, provides for the inclusion within the new city boundaries of districts which will increase the present area of 9⅔ square miles to 21 square miles. The scheme will include not only the boroughs of Leigh and Portobello, but the annexation of considerable areas from a number of surrounding parishes, including Colinton, Liberton, and Duddingston. Eight wards will be added to the existing thirteen wards in the city; and the new corporation, which will comprise sixty-five members, will have transferred to it the powers of the water trust and the gas corporation, both of which it is proposed should be dissolved.

The City Council of Chester adopted on Wednesday an exhaustive report from Ransomes and Rapier, of Ipswich and Queen Victoria-street, E.C., on a project for erecting sluices on the Dee, near the Chester weir. It was decided, on the recommendation of a committee, to promote a Bill in the ensuing session, authorising the construction of sluices near the weir with the object (*a*) of preventing the tides from flowing over the weir; (*b*) of preventing the flooding of lands above the weir, and maintaining above the weir a uniform water level; and (*c*) improving the scour of the navigable channel below the weir, and conferring powers for prevention of the pollution of the river above the weir. Messrs. Ransome and Rapier in their report stated that while the quantity of tidal water passing the weir at Chester is too much for admixture with the drinking water, it is absolutely insignificant as regards any influence on the tidal portion of the river. They had retained the services of a skilled expert (Mr. Henry Law), who for the past twelve months had been engaged taking observations as to the rise and fall, &c., of the tide. Mr. Law calculated the average quantity of water which accumulated at high water, when the tide overtopped the land water at the weir, beyond what was in the upper river at low water, to be 17,500 cubic yards, and that fully half of land water. Mr. Law found that the tidal water passing Connah's Quay was 558,900,000 cubic yards, so that for scouring purposes the trifling quantity of tidal water that would be shut out by the sluices was of no real value. The best site for the sluices was about 150ft. above Chester Bridge. The bottom of the sluices would be 4ft. below, and the top of them 5ft. above, the present causeway, and that would suffice to keep out the highest tide. They estimated that the cost of the work, exclusive of Parliamentary expenses, would be £21,890.

The old Mansion House near the High Level Bridge at Newcastle-on-Tyne was totally destroyed by fire on Sunday night, the 41st anniversary of the great explosion and fire in the same district of the city. The Mansion House played for many years a conspicuous part in the civic and social life of Newcastle. At a period when many of the leading Novocastrian families resided in the neighbourhood of the Close, the Sandhill, Hanover-square, and Westgate-street, and when Newcastle was amongst the richest of the old corporations, for nearly two centuries bountiful hospitality was dispensed at the Mansion House in the Close, and, to assist him to do credit to the town in this respect, a salary of £2,000 a year was paid to the Mayor, and a noble house, handsomely furnished, with choice cellar of wine, was also provided. The Mansion House was built in 1691, and cost £6,000; but from time to time afterwards it was considerably enlarged. Besides this residence, there were provided for the use of the Mayors of Newcastle a handsome state coach, a barge, a valuable service of plate, &c. When the old Close Corporations, with their many abuses, were swept away by the Municipal Reform Act, the Newcastle Mansion House did not long survive. The official residence, with its costly furniture, pictures, books, plate, and wine, was sold by auction in January, 1837, and much of the old woodwork and carving had been removed. Of late years it has been used as an oil store and timber warehouse, and the inflammable nature of its contents rendered its destruction a matter of but three or four hours.

The introductory lecture to the classes in Architecture at University College, Gower-street, W., was delivered last (Thursday) evening by Professor T. Roger Smith, F.R.I.B.A., who took as his subject "Masterpieces of Masonry." The address was illustrated with lantern views, photographs, and diagrams. Professor Roger Smith's course of lectures at the College on "Architecture as a Fine Art" will commence on Tuesday evening next at six o'clock, and his course of lectures on Construction will be inaugurated on the following evening at the same hour. These courses will be continued throughout the session weekly. They are adapted to students of architecture and architects' pupils, and to those preparing for the Institute examinations, including that for district surveyors. The evening classes, at moderate fees, established by the Carpenters' Company, for Architectural Drawing and Building Construction Drawing, were resumed on Tuesday last, and the class for Measuring and Estimating on the previous Thursday. These classes are intended for architectural pupils and assistants in offices, decorators, builders, and skilled artisans.

At King's College, Strand, on Friday evening, Mr. Edward Smith, the Master of the Worshipful Company of Carpenters, presented the prizes awarded by the company, in conjunction with the council of King's College, to the students of the architecture and building construction classes, the architectural studio, and the woodcarving classes at King's College, Great Titchfield-street, and Kensington. The awards in the college classes were:—Day classes.—First year prize, silver medal and £4 to W. A. Buyers; second year, silver medal and £4, to S. Woodfield; third year, the Arthur Cates' medal, to P. J. E. Pym, to be given when the Royal Society of British Architects' examination is passed. Evening classes.—Architecture and Building Construction: Silver medal and £4, to H. Byron. Mr. Alderman Faudel Phillips's medal for Sanitary Science, to T. A. Creaton. Quantity Class: First prize, H. H. Young. Architectural Studio: Silver medal to H. I. Triggs. Constructional Drawing: First prize, H. Byron. Wood Carving.—Day Classes: Silver medal, L. W. Clarkson; one year's scholarship to W. T. Osborn, and one term scholarships to Miss Julia Carpenter, W. Curtis, Miss A. J. B. Clark, and Miss H. Lawrence. Evening classes: First prize (two years' scholarship and silver medal) to Wm. Forth; one year's scholarship and prize medal to W. Y. Smith; and one term scholarship to J. Dunn. Kensington Branch of Lady Students: First prize to Mrs. Atkinson, and second prize to Miss E. Leadbitter. We give a report of the proceedings in another column.

At the Glasgow Dean of Guild Court on Friday, Lord Dean of Guild Brown gave some interesting statistics in reference to the abnormal activity in the building trade in the city for the year ended 31st August last. He stated that the number of linings granted during that period had been 23 more than in the previous year, and the largest for 20 years; whilst the total value of the buildings authorised was £1,467,235, being £191,700 more than for the preceding year, and the largest for 18 years. There was a marked decrease in the number of linings granted for dwelling-houses of three and four apartments; but the falling off in these was more than made up by the extra number granted for houses of one, two, five, and six apartments and upwards. Although the number of linings for public buildings had not greatly increased, being eight as compared with six, the size and design of these had been of an exceptionally large and ornate character, their estimated value being £256,500, as compared with £27,000 in the preceding year. There had been 36 linings granted for new streets, extending 7,257 lineal yards, or four and one-eighth miles.

Just twelve months since representations were made by the London County Council to the various Metropolitan water companies as to the advisability, amongst other matters, of so altering their regulations under the Metropolis Water Acts, 1871, as to increase the maximum capacity of domestic and other flushing cisterns from two to three gallons. In view of the refusal of the companies to make the suggested alteration, as well as their failure to alter the regulations in the other points indicated, the Council decided to ask the Local Government Board to appoint a person of engineering knowledge and experience to report to them on the subject, as provided for in the Act. The Board has now appointed Colonel Ducat, R.E., to hold an inquiry, which has been fixed to take place on Thursday, the 31st inst. The solicitor to the Council has been instructed to appear to conduct the case for the Council, and the engineer, architect, and medical officer have been requested to place any information in their possession at his disposal, and, if required, to give evidence at the inquiry.

The plans for the new chimney shaft for the Edinburgh gasworks, as finally approved by the Dean of Guild Court of that city, show a stalk 250ft. in height, a reduction of 80ft. as compared with the well-known landmark in the Edinburgh valley about to be demolished. It was at first thought that a chimney 160ft. in height would be sufficient, then this was raised to 200ft., and eventually another 50ft. was found to be absolutely necessary. Mr. Mitchell, the chief engineer to the Gas Commissioners, stated that it will be square in outline, and constructed of brickwork, with projections, belts, and panels executed in bricks of a different hue. As was to be expected, the Guild Court was assured that "the materials and workmanship will be of an equally first-class character."

Mr. F. C. Penrose, F.R S., F.R I.B.A., will visit the Carpenters' Company Trades Training School, Great Titchfield-street, W., early in November, to give an address to the students. The classes at this school, which was established ten years ago, include almost all trades connected with building, such as classes for masons, tylers and bricklayers, carpenters and joiners, plasterers, plumbers, painters and decorators, wood carvers, and wheelwrights. The school was reopened in the second week in September with about 130 students.

The Education Department have notified the various school boards throughout the country that they are about to make several changes in their practice as regards the term of years over which the repayment of loans may be spread, all tending to reduce the term for paying back the sums borrowed. "(i.) They will not in ordinary cases recommend a term of repayment exceeding 35 years for new buildings, or for enlargements on so great a scale as to be properly classed with new buildings. (ii.) They will not in ordinary cases recommend a term exceeding 30 years for enlargements of less extent or for considerable structural improvements. (iii.) They will, in ordinary cases, recommend a shorter term than 30 years, to be settled on the report of their architect, for inconsiderable improvements or other works of a less permanent character; in particular they will not recommend a term of repayment extending beyond the time at which the improvement will probably be exhausted. (iv.) Where the loan is required partly for new buildings or enlargements and partly for minor improvements, such a term of repayment will be recommended as appears fair and reasonable, having regard to the proportion borne by the cost of the new buildings to that of the improvements."

The *Church Times* gives a detailed report of the benediction service held last week at the reopening of the extensive stone quarries on the property of the Hon. Mrs. P. Greville-Nugent in Dumfriesshire. The office used, as sanctioned by the Bishop of Glasgow and Galloway, included portions of the Litany, the processional hymn, "Christ is Made the Sure Foundation," the collect for the Feast of SS. Simon and Jude, and special prayers. The Very Rev. T. J. Ball, Provost of the Cathedral of the Isles, Cumbrae, who was vested in a handsome cope of cloth-of-gold, was the officiant, assisted by the Rev. T. O. Sturkey, Rector of Kirkandrews, Carlisle, and the Rev. F. Coleby, of St. John's, Annan. A marquee was fitted up on high ground overlooking the quarry, as a temporary chapel, in which the first part of the service took place, after which a procession was formed, headed by by cross-bearer and thurifer in scarlet cassock and alb; and having descended into the quarry itself, the officiating priest again recited the selected collects, and sprinkled the place with holy water. The processional was *Angulare fundamentum*, sung by the choir to its ancient *Urbs Beata* melody. At the conclusion of the ceremony, the locomotive engine, steam-digger, and steam cranes were set in motion, and after a brief inspection of the works, the clergy and guests returned to the mansion-house, where they were entertained by the Hon. Patrick and Mrs. Greville-Nugent.

The Alexandria Municipal Museum, erected for the preservation of antiquities belonging to the Greek, Roman, and Early Coptic periods, was inaugurated by the Khedive on September 26th, and is now open to the public. The collection of objects has been arranged by the curator, Dr. Botti. It has lately been enriched by valuable donations of jewels and gold ornaments from the collection of the late Sir John Antoniadis, and of coins from Mr. Glymenopoulo, and the Director-General of the Antiquities Department has promised to fill up all disposable space with contributions of Greek and Roman relics now lying in the Ghizeh Museum at Cairo. The present building, specially constructed, is all on one floor. It covers an area of about 960 square yards, and is planned with a view to enlargement when necessary. The municipality and the Alexandria Archæological Society are making excavations in the city and neighbourhood, hoping to discover the exact site of some one of the famous monuments of antiquity, and so throw light upon the topography of the ancient city; but hitherto their researches have proved only negative.

It is rumoured, says the *Royal Cornwall Gazette*, that Mr. Silvanus Trevail, the mayor of Truro, has expressed a strong wish to be relieved of municipal duties with the termination of his mayoralty in November next, chiefly on the ground that he has had no real holiday since the last Paris Exhibition in 1889. Mr. Trevail is a man of unbounded capacity for public work, and the city can ill afford to lose his services. No mayor of the city has been more conscientious and painstaking in discharging the multitudinous duties that fall to the lot of the chief magistrate than Mr. Trevail has during his year of office now drawing to a close. He has attended every meeting of the city council, and has rarely missed a meeting of the city magistrates. When absent it has been accounted for by some county council committee meeting or mayoral function clashing. Socially, Mr. Trevail has always been accessible to poor as well as rich, and whether it has been the inauguration of a distress fund in a hard winter, the occupancy of the chair at a public gathering, or the organisation of the ceremonial of a reception, or a procession such as that on Sunday week, the mayor has been equally at home, and up to time, doing his part in a manner that not even his enemies (and he has some bitter ones) could cavil at. In other words, the mayoralty of 1884-95, now drawing to a close, has been a distinct success.

A ratner safe has just preserved its contents in a fire lasting 44 hours. Before the Commissioner of Police of Smyrna, Mr. Fassoula Essad Effendi, accompanied by Messrs. André Caraman, M. Pangallos, Paul Manusso, Léon Lurot, Frederic Murat, John Spiegelthal, Henry Denotovich, and Dominique P. Maïnetti, the safe was opened after the same had been taken out from the fire which took place in the premises of Messrs. Paul Nalpas and Co.'s Agency, situate in the Rue Franque, corner of the Rue des Roses. The safe remained 44 hours in a fire which was fed by oils, acids, and alcohols, and contained the sum of 800fr. in gold and bank-notes, and various shares belonging to Mr. Ernest Nalpas, and representing the sum of 500 Turkish pounds or thereabouts, which respective amounts were found in a perfect state of preservation. The only other safe in the fire was one made by a celebrated English maker, and the contents thereof were entirely destroyed.

The United Asbestos Company, Ltd., of Dock House, Billiter-street, London, have issued an illustrated catalogue, which furnishes a very comprehensive list of the many applications of this valuable material. The present company, which is an amalgamation of three concerns, are sole manufacturers of the goods they describe. One of the special features is their "Victor" metallic joints, which have borne the test for hydraulic work in use in the navy to a pressure of 2,500lb. They are used in battle-ships, torpedo boats, transports, and in merchant steamers, and have been found to resist the attacks of time, and to supersede the ordinary indiarubber joints, both as regards security and cost. The "Salamandar" joint is also a very excellent joint worth the attention of the engineer. It has two concentric rings made from the "Victor" asbestos metallic cloth; these are sustained by a copper ring of ⅂ section, the vertical web of which forms a partition between them, and prevents their displacement by steam or moisture. A double self-sustaining joint is thus made. These joints can be used for wet steam, water, and other connections, and are made in two forms.

* * *

The vestry of St. Columba's Episcopal Church, Crieff, have accepted an offer of a peal of eight bells for the tower of the church.

MEETINGS FOR THE ENSUING WEEK.

Saturday (To-morrow).—Glasgow Architectural Association. Opening of new rooms, 187, Pitt-street, Glasgow. 3 p.m.

* * *

CHIPS.

The Dean and Chapter of Winchester have appointed Mr. J. B. Colson, F.R.I.B.A., to the post of architectural surveyor of the cathedral and other buildings belonging to the Chapter. Mr. Colson has for some years past discharged the duties of this most responsible office as deputy for his father, the late Mr. John Colson, to the satisfaction of the Chapter.

The town council of Eccles have memorialised the Local Government Board for sanction to borrow £3,250 for an extension of the town hall, which was erected in 1881. The extension consists of the provision of a new council-chamber, a police-court, and additional offices and ante-rooms. The plans have been prepared by Mr. A. C. Turley, borough surveyor and engineer.

The new Wesleyan chapel and Sunday-school erected at Lund Park, Keighley, were opened on Tuesday. The new structures take the place of a school-chapel at Heber-street, and have cost, including site and furnishing, £4,500. The architects are Messrs. W. and J. B. Bailey, of Keighley, and the chapel will accommodate 570 persons and the school 550.

The untimely death of Mr. Frederick William Bennett, the eldest son of Mr. Frederick Bennett, builder and contractor, of New-street Works, Ipswich, occurred on Saturday evening, after a fortnight's illness from typhoid fever. The deceased, who was in his twenty-fifth year, married less than twelve months ago, and leaves a widow and infant son. The late Mr. Bennett had been associated with his father in his extensive business since leaving school.

Ald. William Huntington, timber merchant and builder, Lancaster, has acceded to the unanimous wish of the town council, that he should accept the office of Mayor for the ensuing year. Ald. Huntington has taken deep interest in the town's supply, which has become the greatest profit-producing investment the Corporation has taken in hand. Under his chairmanship powers have been obtained within the past few weeks for the construction of a new reservoir, to cost £60,000.

At a meeting of the Bath City Council on Tuesday, the Mayor announced the gift of Henrietta Park to the city from Captain Forester, who inherited the Bathwick Estates from the late Duke of Cleveland. The park, which was formerly a private one, belonging to the estate, is situated in the centre of the city, and will probably be laid out by the council as a public pleasure-ground.

Estate duty has been paid on £96,630, as the value of the personal estate of Mr. John Hughes, of Sefton Park, solicitor, ex-Mayor of Liverpool. Mr. Hughes bequeaths his two oil paintings by Verbockhoven and one painting by Vollmar to the Corporation of Liverpool for their Permanent Collection of Pictures.

Yesterday week the Bishop of Oxford dedicated the south-east chapel of Wantage parish church, which has been restored under the direction of Messrs. Bodley and Garner, as a memorial to the late Dean Butler, of Lincoln, who was vicar of the parish for thirty-four years. Built in the 15th century, the chapel had become very dilapidated, but has now had a new floor and roof, and new stones substituted for those which were decayed. The east window, with stained glass representing the Crucifixion, has been given by the late dean's family, and an oak screen is placed at the west end.

The parish church of All Saints', King's Langley, which contains amongst other monuments the tomb of Edmund of Langley, first Duke of York, was reopened on Saturday after alterations, which have been completed at a cost of £900, under the direction of Messrs. Gordon Hills and Son. The organ has been removed from underneath the tower to the east end, and recased in oak, besides other additions to the instrument. The tower has been paved and seated, a new panel ceiling formed, and the western doorway restored. A brass eagle lectern has replaced the old reading-desk, and the chancel has been refurnished with oak choir and clergy stalls. A choir vestry has also been built.

No claim for compensation for property compulsorily acquired by a railway company exceeding in magnitude the claim of the Eyre Trustees for land on the St. John's Wood estate, scheduled by the Manchester, Sheffield, and Lincolnshire Railway, has been brought forward in recent years. The arbitration, over which Lord Balfour of Burleigh will preside, begins next week in the hall of the Surveyors' Institution, and will take at least a fortnight to complete. There is said to be a difference of £200,000 between what the railway company is prepared to hand over as compensation and the amount the trustees are willing to accept.

Trade News.

WAGES MOVEMENTS.

Swansea.—The carpenters and joiners of Swansea, who have been on strike for fourteen weeks for an advance of a halfpenny per hour and a rearrangement of the working hours, agreed, on Monday, to resume work at the old rate of wages. At a meeting, however, on the following evening of the Swansea master builders and the committee of carpenters and joiners, after settling the principal questions in dispute, they failed to agree on minor difficulties connected with the strike. Accordingly, the whole of the negotations collapsed, and the struggle continues. A number of men, however, differ from the policy of their committee, and returned to work on the old terms.

CHIPS.

An exhibition of the arts and crafts is to be held at the Drill Hall, Southampton, this winter.

Mr. Thomas Codington, M.Inst.C.E., engineering inspector of the Local Government Board, has been appointed deputy chief engineering inspector of the board in succession to Mr. Arnold Taylor.

An interesting ceremony took place at Huntington, near York, on Thursday in last week, when a memorial window in All Saints' Church, dedicated to the Rev. J. R. Morton, M.A., was unveiled. It is one of three in the north aisle, the other two already being filled with stained glass. In the upper part is the figure of the evangelist St. Mark, whilst below is a scene descriptive of the rebuilding of the temple. The work is by Messrs. Hardman and Sons, Birmingham.

Mr. F. H. Tulloch, Local Government Board inspector, held an inquiry on Friday into the application of the Moss Side Urban District Council for sanction to borrow £4,000 in respect of public street improvements. The council propose to repave the whole of Great Western-street with granite cubes instead of the soft setts at present forming the surface of the roadway, which had become worn out.

The foundation-stone of the Rational Association's new offices in Bridge-street, Manchester, will be laid on Tuesday next. The contract for the buildings amounts to £11,590.

The Hayfield Parish Council have approved of a settlement of the dispute as to the right of way from Hayfield over Kinder Scout, recommended by the Peak District Footpaths Preservation Society. A deputation from this society attended the meeting and advised the parish council to accept a new road to which the landowners are ready to agree in place of the old disputed way from Hayfield to Mill Hill.

The Finance Committee of the Liverpool City Council have instructed the town clerk to retain the services of an eminent engineer in London to report upon the establishment in Liverpool of a system of gas supply independent of that controlled by the Liverpool United Gaslight Company.

The Fulham Vestry have adopted plans by Mr. Charles Botterill, the surveyor, for the construction of steps from Putney Bridge to Pryer's Bank, at an estimated cost of £1,350.

At Crediton Town Hall, Colonel Durnford, R.E., held an inquiry on Tuesday week relative to the application of the district council for sanction to borrow £3,000 for the repair of footpaths and carrying out a drainage scheme at Fordton.

At a meeting of the Maesteg School Board, Glamorganshire, held on the 2nd inst., Mr. E. W. Burnett, of Tondû, near Bridgend, the architect to the board, was instructed to prepare plans, &c., for central schools, to accommodate 1,000 children.

The Evesham Rural District Council has instructed Mr. J. E. Willcox, C.E., of Birmingham, to at once obtain tenders for all works in connection with the scheme for villages' water-supply, which embraces some 35 miles of mains, and the construction of four service reservoirs, and also to proceed with the water-supply to Aldington, and extensions at Hampton. Mr. Willcox has also been instructed by the council to submit a scheme for the sewerage of Great and Little Hampton.

A Local Government inquiry was held on Wednesday last by Major-General Crozier, R.E., with respect to an application by the Castle Bromwich Rural District Council for the sanction of a loan of £2,000 for works of sewerage at Water Orton. The scheme was explained by the engineer, Mr. J. E. Willcox, C.E., of Birmingham. The sewage will be delivered on to the Birmingham Sewage Farm by arrangement with the Birmingham Tame and Rea Drainage Board. After the inquiry General Crozier made an inspection of the district.

Mr. Arthur Thomas Allom, architect, died suddenly on Thursday in last week at his residence, 2, Barnes Villas, Lonsdale-road, Barnes, aged sixty-six years.

On Friday, at Newton-on-the Hill, near Shrewsbury, memorial stones were laid on Sept. 27 of a new Calvinistic chapel, now in course of erection. The chapel, which will be built in a free treatment of the Elizabethan style, will cost about £500, and accommodation will be provided for 150 worshippers. The architects are Messrs. A. B. and W. Scott Deakin, of Shrewsbury, and the contractor is Mr. Thos. Morris, of Shrewsbury.

While workmen were engaged on Friday in making excavations for roads in connection with a new cemetery now being formed at Comely Bank, Edinburgh, they came upon an old Caledonian cist measuring from 3ft. to 4ft. in length, the sides and covering being of rough, coarse stone. No human remains were visible.

The vestry of Hammersmith have accepted the tender of Messrs. Wimpey and Co., a local firm of builders, at £24,246, for the building of the new town hall. The architect is Mr. J. H. Richardson, M.S.A., of Uxbridge-road, Shepherd's Bush.

The account of Mr. R. W. Hedley, the expert valuer of the dock property in connection with the Cardiff Harbour Trust scheme, was the subject of discussion at a special meeting on Friday of the Cardiff Harbour Trust Committee. The account was for 1,200 guineas, but it was contended that it should only have been for half that sum. After considerable discussion, the matter was referred to the town clerk, who was requested to look up all the correspondence and report.

Major Marindin, the Government Inspector, went over the extension of the London and South-Western Railway from Wadebridge to Bodmin on Friday. He was accompanied by Mr. G. F. Vallance, the divisional superintendent; Mr. B. Fisher, the divisional engineer; and Mr. Relf, the contractor. The inspector expressed himself satisfied, and has reported accordingly.

Mr. T. W. Powell, of Picard's Rough, Guildford, has undertaken to provide a site and erect a gymnasium at Abertillery, Mon., for the use of the men employed at his colleries, and Mr. F. R. Bates, of Newport, has received instructions to prepare plans for the building forthwith.

A daring innovation is, says a correspondent, being made in connection with the art classes at the new polytechnic at Chelsea, which opens its doors this week. South Kensington, with its systems, examinations, and grants, is to be ignored, and the art master, Mr. C. L. Burns, a pupil under Professor Herkomer at Bushey, is to work on his own principles. It is hoped that allowances from the Technical Education Board and other sources will cover the sacrifice of the South Kensington grants.

New board schools are about to be built at King's Houghton, Bucks, from plans by Mr. J. Hall Gibbons, of Birmingham, selected in competition.

The principle of supplying cold storage for the port of Hull has been unanimously adopted by the Hull Corporation. It is proposed to erect buildings for the storage of 40,000 sheep, or their equivalent in other articles; chill-rooms for 150 carcases of beef; and cattle lairs for 300 beasts. The expenditure is estimated to amount to £40,000 or £50,000.

Messrs. Measures Bros., Limited's, latest book of sections, &c., has been thoroughly revised up to date, and considerable matter has been added. This book, being so handy in pocket size, should prove of valuable assistance to everybody connected with the building trade, and considering the amount of practical and useful information, tables, &c., it should also be found very serviceable to the engineering world.

Mr. R. W. Fraser, of the Surveyors' Department, Egremont, Cheshire, has been appointed chief assistant in the borough engineer's department, Wolverhampton. There were a number of applicants for the post, out of which seven gentlemen were selected to appear before the committee, and Mr. Fraser was finally appointed.

On his retirement from the theatres branch of the L.C.C., Mr. Ernest A. E. Woodrow, A.R.I.B.A., has entered into partnership with Mr. Edwin O. Sachs, architect, of 11, Waterloo-place, Pall Mall.

Under the new articles of incorporation the hon. sec. of the Royal Architectural Museum is required to be elected annually. On Friday last at a meeting of the council, Mr. Maurice B. Adams was re-elected by acclamation on a proposal from the chair, seconded by Dr. Garnett, of the London County Council.

St. Mathias Church, Plymouth, has lately been enriched by the addition of a handsome altar frontal. It is made of green figured silk, and the design consists of a centre cross of gold, four blue plush and silk stoles with embroidered texts, and two pomegranates in the panels. The super-frontal is of similar material in red, with the words "Sanctus, Sanctus, Sanctus," worked in gold. The producer was Mr. Alfred Stalman, of Soho, London, the design being from the pencil of Mr. Geo. H. Fellowes-Prynne, F.R.I.B.A.

LAVERS and WESTLAKE.
PAINTED GLASS WINDOWS.
MONUMENTAL BRASSES.
MURAL DECORATION.
ENDELL STREET, BLOOMSBURY, LONDON, W.C.

W. H. LASCELLES and Co.,
121, Bunhill Row, London, E.C.
TELEPHONE No. 270.
HIGH-CLASS JOINERY.
LASCELLES' CONCRETE.
Conservatories & Greenhouses.
WOODEN BUILDINGS.
BANK, OFFICE, & SHOP FITTINGS.
CHURCH BENCHES & PULPITS.
ESTIMATES GIVEN ON APPLICATION.

HAM HILL STONE.
The attention of Architects is specially invited to the Durability and beautiful Colour of this material.
Quarries Well Opened; Quick Despatch Guaranteed; Stonework Delivered and Fixed Complete. Samples and Estimates Free.
Address:—
THE HAM HILL STONE COMPANY,
NORTON, STOKE-UNDER-HAM, SOMERSET.
London Agent:—
Mr. E. A. WILLIAMS, 16, Craven-street, Strand, W.C.

WM. OLIVER & SONS,
MAHOGANY, WAINSCOT, WALNUT, TEAK, VENEER, and FANCYWOOD MERCHANTS,
120, BUNHILL ROW, LONDON, E.C.
The most extensive Stock of every kind of Wood in Planks and Boards, dry and fit for immediate use.

TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender; it adds to the value of the information.

Abertillery.—For chapel and school, for trustees of the Primitive Methodist Chapel, Sixbells, near Abertillery. Mr. D. J. Michael, Abertillery, accepted:—

Morgan, W., Sixbells	£794	0	0
Richards, A., Newbridge	750	0	0
Howe, H. W., Abertillery*	700	0	0

* Accepted.

Bayswater.—For erecting ten shops and fifteen residences in flats at Chepstow-place, Bayswater, S.W. Mr. E. J. Stubbs, architect:—

Williams, H. J.	£31,250	0	0
Boyce	30,890	0	0
Lawrence, E., and Sons	30,450	0	0
Perry and Co.	28,989	0	0
Allen	28,665	0	0

Bermondsey.—For reinstating premises after fire in Upper Russell-street. Messrs. Barnes-Williams, Ford, and Griffin, St. Thomas's Chambers, London Bridge, S.E., architects:—

Castle, W. and H.	£889	0	0
Wells, B.	778	0	0
Chalkley, J. C. (accepted)	761	0	0

Brent.—For constructing works of water supply at Brent, for the Totnes Rural Sanitary Authority:—
Veale Bros. (accepted).

Bethnal Green.—For reconstructing the heating apparatus at the school in Wolverley-street, Bethnal Green, which provides accommodation for 1,172 children, for the London School Board:—

Wontner-Smith, J., Gray, and Co.	£565	0	0
Pearson, R. H. and J., Ltd.	530	0	0
Maguire and Son	529	12	0
Russell and Co.	513	0	0
Comyn, Ching, and Co.	475	0	0
Wenham and Waters, Ltd.	430	0	0
May, J. and F.	410	0	0
Cannon, W. G., and Sons, London-road, S.E. (accepted)	398	10	0

Cheltenham.—For the construction of additional filter beds and a storage tank at Dowdeswell reservoir, for the town council:—

Collins and Godfrey (accepted)	£2,744	10	0

Crewe.—For fitting up heating apparatus at the mortuary chapel, for the town council:—

Langford, J., and Co. (accepted)	£34	10	0

Eccles.—For carrying out a scheme of electric lighting as prepared by Mr. S. V. Clirehugh, for the corporation:—

Manchester Edison-Swan Co., Ltd. (Accepted.)	£18,761	0	0

[Electrical engineer's estimate, £18,971.]

Edinburgh.—For the construction of a dome at the Calton Hill Observatory, for the reception of the large telescope and apparatus belonging to the city:—

Builders' work:—			
Brownlie, R., Colinton (accepted)	£1,095	0	0
Astronomical fittings:—			
Grubb, Sir H., Dublin (accepted)	1,095	0	0

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXIX.—No. 2128.

FRIDAY, OCTOBER 18, 1895.

ANOTHER CATHEDRAL COMPETITION.

IT is a committee at Belfast, this time, who have in hand the project for a new cathedral. We hope they may bring it to a successful issue, and put to shame the failures or the delays of Liverpool, Manchester, and Birmingham. In this matter of modern cathedral building, Ireland and Scotland have had the start of England. Cork was far advanced, and Edinburgh was in progress, before Truro Cathedral was begun. It is noticeable that all three are of modest dimensions. The vast schemes which architects have always been tempted to invent did not get completed, even in the Middle Ages. Now they do not even get started. France, as every architect knows, is full of noble attempts, never to be realised. Italy is the same. Look at Laon, with its seven beginnings of towers, not one ever perfected. Look at Florence, with its exterior left half undone, and doomed, like Cologne, to be finished off in a perfunctory way by a mechanical race. We have never aimed at anything so vast, and, therefore, we have generally come nearer to accomplishing it. At Belfast, they talk of a modest £100,000, to be expended by degrees, which is a great deal more promising than if they spoke of half-a-million, and meant to defer building till nearly all of it was subscribed.

The competition, it is said, will proceed on a new and interesting principle. Six architects, selected by the assessor (who is himself to be nominated by the President of the Institute), will be invited to compete. Each of them is to be paid a fee of £50. Outsiders will also be at liberty to submit designs, and as regards their chance of obtaining the two further premiums which are offered, will be in the same position as the invited half-dozen. We presume they will also be treated in the same way as regards the real prize to be won, which is, of course, the being appointed architect of the building itself. Committees frequently fail to realise that it is for this, and not for a premium—which often would not pay the out-of-pocket expenses of preparing the premiated design—that architects really compete. So much, however, the assessor may here be trusted to explain to them. How, then, is this composite system—a limited competition supplemented by an open one—likely to work? It is an experiment well worth trying. Church design has fallen too much into the hands of a small group of men—some of them very able, but some, also, more remarkable for the multitude of opportunities which family or other influence brings them, than for the success with which those opportunities are used. They have their groove, and they keep in it. "Content to dwell in decencies for ever," they do nothing worth notice, either good or bad. It is really time that they gave others a chance, and if the Belfast committee can only free themselves from these Tite Barnacles of the profession, they will set a good example to church committees elsewhere.

It is not to be expected that the Tite Barnacles will like it. If some of them decline to be amongst the elect six, it will be only natural, and "nobody will be one penny the worse." But it is probable also that the terms which have been named—the very small sum of £50 for working expenses—will fail to tempt the real church architects of high reputation. In that case three courses suggest themselves. One is to increase the allowance to the invited competitors, still keeping the same number. Another is to reduce their number, and to divide the sum set apart for expenses amongst three, perhaps, instead of six. And, as a final alternative, capable men might be invited who have not had opportunities for gaining what is called a high reputation. An architect's reputation, more than that of any other artist, depends on what in common parlance goes by the name of chance. He may have studied church building from youth to age, he may have a mind stored with precedents, or an imagination overflowing with beautiful ideas; and yet, for want of opportunity, all his knowledge and all his invention may be hidden away in the dark. The author can start, as Burns says, with "three goose feathers and a whittle"; the painter can make some sort of show with a few shillings' worth of colours and canvas; but the architect must stick fast for ever unless somebody backs him up by laying out certain hundreds or thousands of pounds. Clever men often stick fast so for life. Blockheads, by scores, pass them in the race, because the blockheads, conscious of what they are, have caught at every means, except the legitimate one, of helping themselves on. They have married for money or for influence; they have considered what party it would pay best to join, and have sold themselves, body and soul, to that party, right or wrong; they have toadied here, and bullied there, and have submitted to being kicked "till they know whether, A shoe be Spanish or neat's leather," and at last they get their reward. The very people who use them, despise them; but they pay them their price, and the price, when they are architects, comes in commissions which should have gone to honester and abler men. There are many such able men, deserving and neglected, and a competition like this might give one or two at least of them the chance of fame, if not of fortune, which never came to them before, and may never come again. The inner ring of church architects have had things too much their own way; it is time that outsiders were permitted to show whether they are outside by desert or only by accident.

The Belfast committee seem to be avoiding one mistake by which so many competitions are injured—namely, the concealment of the assessor's name. A low kind of suspicion sometimes induces the promoters of a new building to withhold it till the last moment; they think, apparently, that an astute competitor can somehow get in league with the professional adjudicator, and that these two dishonest persons can then work the thing together and divide the spoil. It is their own fault if committees fix on a person capable of frauds like this, and we may be sure that Mr. Pemrose will take care to prevent any such danger in the choice he advises. Almost everything, as to the character of the design, will depend on who the assessor is. When we hear his name, we shall be able to judge pretty accurately whether the cathedral is intended to be Gothic, Classic, Romanesque, or Renaissance; and we shall be able to foresee, too, whether it is or is not to be planned on strictly Mediæval lines. Is it, or is it not, intended for something closely approaching to a Catholic ritual? Is it, on the other hand, to be suitable not only for worship, but for preaching? This is a question for the promoters—and a question which lies at the bottom of the whole scheme. It is not the business of an architectural journal to advocate either the one type of church or the other; but it will be clearly the duty of the assessor, in drawing up the conditions, to say what the practical requirements are. The two cases require totally different treatment, and it is both foolish and unfair to let competitors grope in the dark, trusting that a happy accident will enable them to provide the sort of interior which the promoters have decided on. At the same time, every fresh competition teaches them more and more that statements of this nature should not be made into definite and rigid instructions. They should indicate the ideas of the committee as they are at the time when directions of architects are issued; but they should never be put forward as absolutely fixed and unalterable. Plenty of information, and at the same time plenty of freedom as to the extent to which this information is to be acted on, are the only conditions under which a contest like this is likely to turn out well.

Competitors at a distance, again, who know nothing of Belfast, ought, as far as possible, to be placed on an equality with local ones. That is, they should get a few lines of information about the materials in use there: the ordinary stones for walling and for ashlar, and other matters as to which special knowledge is valuable. And is it not time, too, at last, that assessors took another step, for want of which half the competitors commonly waste all their trouble, and the promoters fail to get anything like the number of practicable schemes they might have secured? Is it too much to expect an assessor to issue with the instructions—not only a plan of the site and its surroundings, which by itself may be utterly misleading, as it was in the case of the Sheffield Municipal Buildings—but also to send out some slight outline sketches showing the nature and height of neighbouring structures? When this is done, and not until it is done, one further step will be taken towards putting all competitors on a level; and it will then become more likely than it often is now, that the best man will win.

OPPORTUNITIES OF THE YOUNG ARCHITECT.

IN a short time the architectural societies will be again in working order. We have the inaugural addresses given or announced of some of these. Last week we published the address of the President of the Manchester Society of Architects, Mr. John Holden, F.R.I.B.A., whose position as a leading practitioner entitles his remarks to the attention of the profession, and this week it is the turn of Mr. W. D. Caröe, F.S.A., to inaugurate, as president, in like manner the session of the London Architectural Association. As usual of late years, a large part of the addresses delivered annually refer to the educational movement in the profession. The President of the Manchester Society, like others, has had to deplore the indifference shown by students to the facilities placed at their disposal. The classes, he says, arranged between the Society and the Technical School have not been so well attended as was expected, and the same neglect has been observed, as Mr. Caröe laments, amongst London students of the A. A. classes and studio work. The younger men will not respond; they hold back from all educational institutions. If they belong to a society, they seldom put in an appearance; and the Institute examinations, even when brought down to their very doors, receive scarcely any attention. Such is the case at least at Manchester, where a large number of architects' pupils and assistants dwell, and the same indifference and apathy exist in other large towns. Mr. Holden says the Institute examinations have been brought to Manchester many times at great trouble and expense; but very few of the Manchester students have taken advantage of them. During the earlier examinations held there, not one attended from Manchester, and out of fifty students in the last two examinations, only five were from that city, and only three passed—the remaining students being from small towns. How is this fact to be accounted for? Have we not here a proof that we cannot make young men studious, if they have not the inclination to avail themselves of the opportunities placed in their way? Or is the system wrong which sets before them a course of instruction which they do not think necessary? That there is a sad want of discipline amongst architectural students is too obvious to bear refutation. A young man who has a pretty fair knowledge of drawing and the routine of an architect's office believes he has no need of instruction in mathematics, science, English history, and literature and art. He thinks there is an easier way than attending classes and lectures in technical schools; successful men in his profession have won a name without. The President of the Manchester Society admits "the question of education is a serious one,—indeed, I confess I cannot understand it," and he goes on to invite communications from students on the subject which may explain the great lassitude and indifference which seems to exist. But the president appears hardly to realise the fact that the students who show this apathy and indifference are in many cases the very men who have confidence enough in their own abilities as not to require any instruction; many of them have artistic proclivities which they know cannot be fairly tested by an examination conducted on the lines laid down by the Institute; while, on the other hand, those who respond are frequently young aspirants for the profession who have little aptness for art, and who are anxious to learn architecture if it can be taught. There are, in fact, two classes of students: those who can rely on their own powers, and who are independent of educational aid; and those who are anxious to be *made* architects. The latter are always more numerous and tractable as students. This difference has yet to be learned by all who are disheartened at the disinclination of young men to join classes and studies. Some other inducement seems to be necessary to the former class to make them take an interest in education. Competitions in which their art power is evoked are more successful with this class of young men; a contest in which drawing, design, or colour decoration are concerned, will be sure to "draw," while a class lecture or examination on construction or mathematical analysis will meet with poor recognition. Will it not always be so? It is only human nature to expect that everybody will take an interest only in those subjects he knows best and shirk others, especially when there is no compulsory law. Then there is a regret expressed of a disinclination to study Classic architecture among students, and to revert to "more catching and sensational styles." Even in that stronghold of modernism, Classic has lost its hold upon the younger men, and has given place to the freer picturesque developments of the Renaissance, and students in Manchester, as elsewhere, have been losers from an educational point of view.

From a rather different standpoint, Mr. Chas. Hadfield, F.R.I.B.A., president of the Sheffield Society of Architects, in his opening address, reviewed the same aspects of the work of the student. While advocating a lofty ideal and a Vitruvian standard of attainments which were followed by the leaders of the Renaissance in Italy, France, and England, he yet drew an important distinction which it would be wise for the student to remember—namely, that it is not the nomenclature of styles the young architect has to study so much as the skill of appropriating what is good and essential in them, and of cultivating his designing faculties. Let the student take to heart the advice that "brilliant draughtsmanship and the passing of examinations are but a means to an end." Speaking of drawing, Mr. Hadfield said that he had doubt if any of the drawings of the great masters of the 16th, 17th, and 18th centuries would pass muster at a South Kensington Science and Art examination in freehand and building construction, although their authors immortalised themselves by their works in marble, stone, and brick. The aim of the modern student should be in studying and analysing building types, old and new, not in merely copying and measuring them. It is equally true that the educational system in vogue amongst us puts too much trust in a knowledge of historic styles, too little on the grammar upon which these were based. Mr. Hadfield observes with discriminating irony that we are too fond of proclaiming the shibboleths of style, of talking about our buildings being designed in "Free Classic," "Early Gothic," "Queen Anne," and what not, rather than of investing them with the charm and character that were inseparable from all these developments of which we talk so glibly. The fact is, our instruction, as we have often said, has been on the principle of learning the historic outcome instead of the methods used. Again, what has it to do with a man's ability as an architect whether he is a Classicist or a Gothicist? Nothing whatever; not a whit more than to say a painter is of this or that school when he really may be a duffer in painting. To the architect who has learned the alphabet of his art it matters nothing; he can just as well put together his materials in one style as in another, so long as he can make them his own, just as a skilled writer can embody in good English his meaning if he knows the vocabulary and grammar. It is the skill to put the thought in the best and happiest language that is the main thing—not to fuss about whether the words are derived from Latin or Anglo-Saxon. We are afraid that a good deal of the class-teaching in the styles of architecture is scarcely given in the right way, in directing the student to think for himself. The characteristics of the styles are useful to be learned as an exercise if they are accompanied or supplemented by the pupil putting his own inventive designing faculties to the test with his own materials and data. On the contrary, if this knowledge assumes the character of making drawings and details of a few historic edifices, and of filling up a few papers with terms and definitions, the teaching is of no value to the student, except to make him an imitator. The Science and Art Department sets before its students the design of cathedrals, town halls, palaces of legislature; but these exercises are only useful as competitions of draughtsmanship; they do not help him how to set about planning a building to accommodate so many people, to adapt the local materials of the district, and to impart character to buildings that have no historic precedent. These are problems that can be only solved by teaching how to plan on scientific data, and how to use materials to the best advantage. The advice given by Mr. Hadfield to the young architect or student how he can spend his hours of recreation in fields and woods in sketching, making the best use of his cycling powers in finding materials for sketching, in using his thinking faculties for original and artistic design; how by habits of system, hard work, punctuality, and self-culture he may be able to overcome the inertia of indolence, and rise to the opportunity or the occasion—is worth the attention of the rising generation of young men. Lastly, we have the admirable address of Mr. W. D. Caröe before the Architectural Association. His question, whether its course of study should acknowledge the Institute exams., and aid in preparing for them, or be independent of them, has yet to be answered by those concerned. But he entertains a hope that, before many years are out, "the most eager advocates of examination will have found that no form of diploma, no corollary of significant letters, will in any way advance the cause we have at heart; but that these degrees may prove something akin to a burden upon their bearers, and an imposition upon the public." As he truly says, "the examination is the safeguard of those only who look no further than an official guarantee of stereotyped efficiency." We must take the evil with the good, and make our education thorough and many-sided and bring our classes into line with the examinations as far as possible for those who wish to pass them. Everything the examinations can do—and they are not to be under-estimated—can do little if the student does not make an effort himself, and shake off his slothfulness and indifference; everything the classes and studio work can give will be unavailing, if he cannot, or will not, learn, or if his own efforts and aims are not in harmony with the profession he has adopted.

THE NEW GALLERY EXHIBITION.

LOVERS of portraiture will find the walls of this gallery covered with many examples of the modern art by exponents of opposite schools. The Society of Portrait Painters have brought together a varied and interesting collection, many of the painters having exhibited at the Salon of the Champs de Mars, and being espoused to Scotch Impressionism. Of these exponents of the Glasgow school, there are James Guthrie, John Lavery, MM. Duran, Gandara, and others, whose works are masterly and sympathetic. They study colour and arrangement, or technique; some affect the flat and shadowless style of Holbein; others, still, the highly-modelled and shaded portraits of the realistic school. We have, in fact, both the reproducers of models with faultless accuracy, and those who represent chiefly their own aims, colour harmonies, and idealities. The traditions of the British School of Reynolds are followed in the large full-length portraits of "The Countess of Yarborough" and "The Duchess of Portland" in the North Room, both painted by Ellis Roberts. They are queenly figures, standing in the conventional landscape, and have much grace and dignity; but the handling is rather mechanical. Very different is the flat, shadowless style seen in such works as those of Mouat Loudan in the West Room, or of M. Blanche and Prince Pierre Troubetzkoy. "The Hon. Mrs. Talbot" (2), by J. E. Blanche, is a characteristic sketch of this lady in large straw hat and blue scarf. His portrait (8) has an extremely washed-out appearance about a rather weak type of face, but it has a note of refinement in colour. Mouat Loudan's "Terence, son of Walter Philip" (3), is essentially flat in treatment, and contrasts very strongly with such a portrait as that near it of "Mrs. Lewis" (6), in which an elderly lady, seated, is portrayed with much minuteness and realistic detail. This is emulative of the Holbeinesque school. We can detect the down and texture of the skin, the kindly moist eyes, and the very grey hairs can be singled out. The painter is Frederick Sandys, the pre-Raphaelite. Again the large canvas of Prince Troubetzkoy (13), "Mrs. M. Grimshaw," is an important contribution to the same school of portraiture to which we have been alluding. The lady is reclining, and is admirably drawn, on a wickerwork chair against a flat, bare wall; there are no accessories, and the colours are a harmony of grey and drab; but there is no attempt at modelling; although this example is less objectionably advanced in its aims than some further on, in which the ideal of young Glasgow is pronounced. Arthur Melville's presentment of "Mrs. Greenlees" (5) is a clever harmony in brown, in which there is decided character expressed in the face. S. J. Solomon's study of a little girl dressed in white, holding a pet rabbit in her arms, is very truthful and tender. The face is of a true Italian type, dark hair, and sallow complexion. "Miss Cissie Loftus" (14), the well-known actress, in white tea-gown enriched with lace, and her hair hanging loose, is depicted in one of her best-known characters. Hon. John Collier has been successful in his personification and treatment. Arthur Hacker, A.R.A., in his portraits of two gentlemen (15 and 22), has expressed not only lineaments but character. Another portrait or standing figure of "Mr. G. W. Robinson" (18), by H. A. Olivier, is strongly naturalistic. That gentleman is portrayed in a front garden, gathering white roses in light tweed suit and straw hat. A harmony in black of a lady, entitled "Dreams" (19), in low black dress, standing before a piano, one hand on the keys, and her head turned up in a thoughtful mood, is by Ernest Oppler. The drawing is graceful. G. F. Watts, R.A., sends two portraits, both refined in composition and colour. The first model is "Mrs. Edward Ellice" (27), a charmingly refined face, and "Sympathy" (29) is a portrait study of a lady, in tones of brown and grey. In a central position in this room is a very dignified and dramatic presentment of "Madame Sara Bernhardt" (28), by Ant. Gandara, a full-length study, seen from behind, of the great French actress. It is full of grace and refined lines, the head and face turned a little, displaying the profile. She is attired in a rich robe of satin of a delicate peach shade. As a study of pose and drapery, the work is a highly-successful one of this eminent contributor to the Salon. The work of John Lavery (1 and 33), the first an attractive woman, and a young lady in black cape and dress, are studies of interest, and not going to the length of sacrificing portraiture to the artist's individuality, but the handling looks hard; and we must pass hurriedly by the Hon. John Collier's portrait of himself (40); the nice grey tone in S. G. Enderby's harmonious study of "Miss Kitty Jollie"—a very natural and broadly-painted portrait of a little girl in grey frock, and hoop in her hand; Mouat Loudan's group of children (43), in a low tone; G. Nicolet's very natural and child-like attitude of a young girl reading on a chair (49), and Julian Story's study of a lady, a loose cloak thrown over one shoulder, the other bare.

In the North Room several noticeable portraits are hung. Carolus Duran, of French fame, sends a rather ordinary type of portraiture in "Fritz Thaulow" (59); J. H. Bentley, a pretty face (58); Arthur Hacker, A.R.A., has a portrait of a young lady, sober and natural (69); and we must also notice a group of children's portraits in the centre of room. J. Hanson Walker has a pleasing child-study, "Dorothy, the Daughter of Viscount Hood" (67), and other studies of a similar kind by J. J. Shannon, Fred Yates, Jas. Guthrie, and others. Mrs. Lily Delissa Joseph's portrait of herself (75) is perhaps a facetious, certainly a grotesque, mode of representing character—a white, ghost-like lady carrying a pair of lighted candlesticks. The portraits of "Mrs. Kennedy," by herself (77), in a reclining position, in blue dress, and the standing portraits of "The Countess of Yarborough" and "The Duchess of Portland," already noticed, are works of meritorious realism. Against these we must set the impressionist portrait of a young lady by John Lavery, a harmony in white, grey, and black. T. Blake Wirgman has a capital portrait of Sir Henry Doulton, seated at a table reading, a beautiful Etruscan vase before him. Next, the Hon. John Collier's dramatic-looking, full-length, and superb study of Miss Julia Neilson, in rose-coloured garment, holding back a crimson curtain, we have seen before. The colour is overpowering. Very admirable refined studies of ladies are those of "Miss Maud Hobson," by F. Markham Skipworth, and "Mrs. W. Llewellyn," by herself. The former is in a fashionable costume, large black hat, and low-cut dress, set off on a yellowish ground; the latter in steel-coloured satin dress with large puff sleeves. Miss B. Gibbs's model (100) is in a bright canary yellow. The eager, stooping position of the lady rather spoils the work, which is cleverly lighted. Gustave Courtois's "A Portrait" is rather a statuesque study in profile. The influence of the fashionable toilette of ladies is marked in many of their portraits. The fair model is not always willing to be painted in classical dress, or æsthetic 18th-century gowns with high waists and clinging skirts, and hence the correctness of the latest tea-gown, the amplitude of the puff sleeves, the cut of blouse, and the size and style of hat and its loops of silk ribbon, are necessary studies of the portrait painter. T. Graham shows a pleasing scheme of maze colour in portrait (118), and Francis H. O'Connor (117) a sympathetic portrait of a lady, on a light background; the face is slightly turned. Miss Sophie Stern (112) paints herself "as in a looking-glass"—a pretty study of a light print dress with puff sleeves, dexterously handled in the reflection, and we have some other studies of pretty women and toilettes in Miss Ethel Wright's "Mrs. Hardy," in white; "Mrs. Benett" (121), by W. R. Symonds; "Mrs. Fergusson," by Hugh de T. Glazebrook. The portrait of the late Professor Huxley, by the Hon. John Collier, is an excellent likeness of the great physiologist, painted many years ago. George Clauson, A.R.A., has a characteristic portrait of Mr. Mark Fisher. One of the leading studies in the South Room is that of "Madame Severine" (146), by I. W. Hawkins, who in this presentment of the great Parisian writer, in full face, her arms resting on a table covered with papers and letters, shows clever technique, and decided French mannerism. Near it, W. W. Ouless, R.A., has an excellent portrait of "Mr. A. J. Aubertin." The massive, picturesque face in white beard is set off by a brown cloak and scarlet necktie. His other model is "Sir John Bridge," a good likeness of the worthy magistrate. E. A. Ward (150) has an idealised subject of a fair lady in a salmon-coloured dress, exhibiting charm of colour contrast; but we can only find space to mention other studies—some in pastel. P. Wilson Steer (155) has a vigorous sketch in strong pigments of a lady. Herman G. Herkomer sends a full-length figure study of Mr. H. Beerbohm Tree as "Gringoire" (136), in a centre-piece full of power and dramatic action, and Miss Octavia Peill a simple and attractive portrait of a lady (132). McNeill Whistler has a "Study in Red," a woman's head, strongly accented in his own vigorous style. Many of the portraits here have been seen in former exhibitions and at the Champs de Mars, as one or two of Mr. Guthrie's. Another Scotch impressionist, Mr. Lavery, sends a large number of ladies' portraits, all of them chiefly schemes of colour and arrangement, and only in a secondary sense portraits. One or two painters, like W. Schlobach, in the Balcony, have subordinated all other considerations to the scheme of colour, and to a sort of grotesque characterisation which astonishes, if it does not create admiration.

CLUNY MUSEUM.—V.

By May Morris.

IRONWORK.

WHILE wandering through the "iron-room" in the Cluny Museum, one's attention is arrested by endless tools, kitchen utensils, weights and measures, and all those odds and ends which help to build up for us that picture of the past about which we have so vivid a curiosity. There is one case here which is full of such things as box-irons (prettily ornamented, of course), fish-moulds, gridirons, gaufre-irons, wafer-moulds, and various kitchen contrivances which remind one that the Mediæval household pursued the "art of life" with considerable ingenuity and refinement. Anyone who has seen a Mediæval kitchen—there are some left with their old fittings, especially in France—with its great fireplaces, its hot-plates, ovens, &c., will understand the importance of this part of the Mediæval dwelling-house or castle, and the attention bestowed on it with all its appurtenances. To begin with, every well-built kitchen (often a building apart, and of great architectural beauty) was designed with careful provision for effective ventilation, so that our forefathers had, at any rate, opportunity for genuine roasting, a form of cookery, in its perfection, not understood by cooks who surround and choke their roasting viands with a thing called a meat-screen. With their fresh air, therefore, and their great open fires of fragrant wood for roasting and boiling, and a hot plate for made dishes, the Mediæval cook started better equipped for his work than might be supposed. Let me give an idea of the contrivances and conveniences as far as they went, necessary for the purveying of a dinner of the 14th-century house, it might be of a rich burgess or of a manorial lord. On the hearth was an iron tripod, which stood well surrounded by the flames, and held the big *pot-au-feu* which, to provide broth for a large household, was no trifle in size. Then the fire-dogs. which held the burning logs together, were not merely dogs, but had at the top a round rim contrived to serve as plate-warmer; on hooks up and down the tall columns were hung iron spoons and forks, pincers or tongs conveniently to hand for the cook's use, while across the front of the fire, attached to the dogs at each end, was the long turning-spit, sometimes two or three of them, which could be fixed at different levels to modify the heat on the cooking joints and birds. I have seen the same arrangement with a clockwork turn-spit in full going order in a little country inn in France, and it is to be seen, of course, in the big *rotisseries* in Paris. The following is a condensed list of the kitchen furniture that had to be laid in on the occasion of a wedding-feast in a Parisian burgess's family at the end of the 14th century. There were to be two squires of the kitchen with two helpers for the dresser where the victuals were prepared, and the one squire was to see to the purveying of the following: two great copper pots, two cauldrons, four colanders, a pestle and mortar, six thick kitchen cloths, three large earthenware wine-jars, a big *pot-au-feu,* four bowls, and four wooden spoons, an iron shovel, four shovels with handles, two trivets, and an iron spoon. Of tinware: 10doz. small bowls, 6doz. little dishes, 2½doz. big ones, eight quarts and 2doz. pints and two alms-pots. The alms-pots were an important institution: they were great vessels placed in the dining-hall as well as in the kitchen at all the great dinners, into which a portion of each dish was supposed to be placed, in reality the fragments of the feast collected for the poor. Those in the hall were often of silver and richly decorated like the rest of the equipment of the tables, and were as much a manifestation of pride and riches as of charity. To return to the wedding-feast, the arrangements for the hall were as follows: there were two squires to attend to the dresser in the hall where the dressed food was brought from the kitchens before being placed on the tables; they attended to the serving of wine also; two squires who delivered the wine to the dresser; two of the most honest and trustworthy to attend the bridegroom; two *maitres d'hôtel,* and for each table a taster and two servers. The *maitres d'hôtel* look after all the silver, the great salts and cups, &c. There was, of silver, 4doz. cups, four covered goblets gilded, six ewers, 4doz. silver spoons, four silver quarts, two alms-pots, and two spice or sweetmeat holders. Note that a garland-maker or flower-girl is ordered to deliver fresh wreaths on the day of the feast, with which the guests are garlanded. She will also, doubtless, provide flowers and herbs to mingle with the fresh rushes that are to cover the floor of the hall, though I doubt whether there will be much sweetness left upon the floor when the feast is over, and the guests have thrown about their fragments and bones. The women of the house are to make provision of tapestry and hangings, and to see that they are hung, and especially to see after the decking of the marriage chamber, and to see that the bridal bed is properly blessed beforehand.

This dinner is arranged "for 20 bowls or *escuelles,*" which means for 40 guests, as they dined in pairs, two sharing the same bowl. For plates, trenchers of common bread would be used, most likely thrown into the alms-basket when done with. Many are the directions in books of good manners for cleanliness and courtesy in eating at table—details that are positively blood-curdling to modern ears. One is glad to know, at any rate, that they always scrupulously washed their hands before and after meals, and sometimes in between the courses. And here, as we touch upon the subject of feasts, I would like to say that the notion that our early forefathers went through life gorging themselves at daily feasts is very unfair to them. As a rule they made simple meals, and got less eating into the day than we do. The meals one reads of were *feasts*, partaken of sometimes by hundreds of guests, coming and going, for whom constant and fresh supplies of food had to be provided. You know the old rhyme :—

"Lever à six,
Disner à dix,
Souper à six,
Coucher à dix."

Or the older one :—

"Lever à cinq,
Diner à neuf,
Souper à cinq,
Coucher à neuf,
Fait vivre d'ans nonante et neuf."

This was usually adhered to—two meals a day, with sometimes a "rere-supper" or fruit and wine in your room when retiring to bed. On ordinary occasions the food was plain and not much varied ; broths, boiled mutton, fresh and salt or smoked pork, game, while the cooks occasionally were allowed to let themselves loose in the conception of all sorts of weird and fanciful dishes. "Take pigs, flay them, and hew them in gobbet," is the favourite quotation of a friend of mine who is pleased to jeer at the cooking, that has gone with the other things mediæval, into the "ewigkeit" ; but it does not at all typify the state of the culinary art in the 14th century.

The kitchen ware in the illustration is all of the 15th-century. The object on the left is a mould to grill fish in, an ingenious "contraption," which would turn out your carp or your pike beautifully done on both sides, with a nice *barré* pattern all over it. The trivet or support for a saucepan and the round gridiron are, both of them, as practical as they are ornamental.

This room, filled with ironwork of every possible description, is crowded with interesting things. Marvellous keys—some dainty and flower-like, looking as if they had been made to open the way into fairy-land, others as ponderous and unwieldy as though they had been fashioned on a giant's forge ;—locks, arched and pillared, and covered with fine ornament, looking like the front of some Gothic cathedral in miniature ; strange weapons of offence and defence ; pots and pans and dishes, even workmen's tools and implements. One of the most beautiful and remarkable of these objects is a bronze tithe-pot or *dîme*, of the 13th-century (see illustration), one of the most perfect things of its kind and of its age that I have ever seen. It is supported on three feet formed of grotesque heads. The running ornament in the lowest division is characteristic of the purest 13th-century style. In the middle is represented a hawking party, a lady and gentleman on horseback, falcon in hand, while the top is wreathed by a beautiful border of girls dancing hand in hand—dancing in thanksgiving after the harvest. This vessel comes, no doubt, from some feudal castle, where it duly measured the over-lord's tithe of the gathered-in harvest. It bears no inscription, though such measures usually have their record round them. The museum possesses another, of the 15th century, which belonged to the Château de Milly. It is made of bell-metal, ornamented with flower-de-luces, and bears the legend "*Rogier de Amiens me fecit.* Liborgeois mô seigneur Guill. de Milli ount fete feire ceste mine bone et belle p. so gré." Fair and great the burgesses of Mille bade Roger of Amiens make the vessel for their lords' pleasure ; but did they bring their goods for measuring under the sharp eye of his steward with all the alacrity here expressed? The girls dance on, and the lords and ladies go hawking, but it is not always good harvest for the good men of Milly, yet the fair and great pot must be full just the same. "*Rodolphus vernonensis me copiâ fecit*" is the legend of another similar dîme. Then we have measures coming from the famous Abbey of Citeaux, bearing the arms of the Abbey, as well as the mark of Burgundy. One is rather curious —an *oil-pint* in bronze, which, bearing the date 1572, had been lengthened in 1686, and has the date of the modification marked on it. Some charming lamps, too, Gothic in style and contrivance, though of Late date, which I should have liked much to reproduce, as they give one a good idea of the ingenuity of the Mediæval mind. A lamp was wanted to be hooked on to a ring and quickly detachable, which should hang straight and evenly, and by means of joints they managed it, and a very good contrivance it is. One of the finest (they are oil-lamps, with a wick) has an Italian inscription round the bowl : "*Servo e me cosumo altri.*" "I burn for and serve others" is a clumsy translation of the prettily-worded device.

I must not pass without comment the large collection of wafer-moulds and moulds for altar-wafers, stretching over a long period, and from different parts of the country, and the plaster casts taken from others. There is an elaborate wafer-mould from the parish of Romilly-sur-Aigre (Eure-et-Loire dept.) of the 15th century. Christ on the Cross between Mary and St. John, the Descent from the Cross, on a flower-de-luce ground ; the Pascal lamb and the Monogram—all find place on it. A still more interesting mould of the 13th century has on one side God, with His right hand raised in Benediction, with the world in His left, with the legend "*Cuncta creata rego, trinus et unus ego.*" The border has little subjects from the life of Christ, with a legend round. The other face has Christ in the middle in a six-lobed aureole, with a border, in which are the Apostles in little Gothic niches. Another has on one side the arms of the Duke of Burgundy, and on the other the flower-de-luce of France. I saw several similar ones in the kitchen of the famous Hotel-Dieu at Beaune this summer. It gave great reality to all these Mediæval kitchen utensils, ewers, bowls, pots, fire-irons, and the like, to see them in their place in the old kitchen, which, with the rest of this interesting building, has been left with all its fittings almost untouched since the days of Philip of Burgundy, whose chancellor, out of his piety and good-will, founded the poor-house of Beaune.

Anyone interested in looking up the earlier objects of domestic art in the Cluny Museum should not fail to see the bowls and washing-basins, buckets, &c., of which there are several fine specimens. There is one washing-basin in copper, beaten and engraved, formed by the bust of a man, supported on three legs, a shield on his breast with the French flower-de-luce on it. Another curious bowl in bronze, on a foot, with cover, having on it a shield with an enamelled coat of arms. A charming pail or bucket, too, in bronze, with a handle of pierced ornament, of Italian Gothic workmanship. I should not forget to mention a font of the 14th century, a really beautiful piece of ornamental metal-work, which I must regret not having had time or opportunity yet to get photographed. It is of bell-metal, and comes from the old church of Bardewick, near Hamburg. It is ornamented with subjects in relief, the Crucifixion, the Virgin and Child, the Evangelists, with a pretty running border round the top and bottom. What is most noticeable is the four supports in the shape of figures. These figures, characteristic and full of expression, have all the appearance of raising and supporting an immense weight ; two opposite stand stolidly and squarely, hands on hips, while the others have both hands to their shoulders, with their heads screwed aside with a vivid expression in the whole pose of sustained effort that is almost, but not quite, pain. The base is decorated with small scraps of work ; the Dove of the Holy Ghost, rosettes, flower-de-luces, a head in a tall hat, and similar vagaries of the Gothic mind.

I wish, in my concluding article, to give a slight sketch of the jewel-room in Musée de Cluny, together with a note of the early and interesting objects of personal use and adornment that are to be found in some of the other rooms. The collection is small, but, as many of my readers will know, a remarkable and historical one.

◆

HOUSE PAINTERS AND DECORATORS IN CONFERENCE.

THE annual convention of the National Association of Master House Painters and Decorators was held on Tuesday and Wednesday, in the Art Gallery, Newcastle-on-Tyne. The President (Mr. G. G. Laidler, Newcastle), in his address, looked forward to the time when the Association would be not an association for England and Wales only, but for the United Kingdom. The institute was intended for the education of all connected with their trade, and in elevating the trade to a higher level their real work lay. Their Association was solely for the purpose of looking after the interests of their trade, and was therefore purely a business association, and it was on that ground they took their stand. They were entitled to congratulate themselves on having in twelve months established that Association so firmly. With regard to the apprenticeship question, he believed the operatives' societies were as anxious as they were that young men should be apprenticed to the trade. In connection with that matter the question of technical instruction was of the utmost importance. They owed their thanks to the manufacturers for the great improvement and artistic development of all goods used and for the strides made by them, not only in the improvement of paperhangings, but of those raised materials of so many kinds which now did so much to adorn the mansion. He knew of no country in the world where so many materials were produced for interior decorations. The vast superiority of these over any goods produced on the Continent was remarkable. This country had now distanced all competitors, not only so far as the cheaper, but the better, kind of goods were concerned. There was considerable overlapping on the part of the joiners, so far as the painter's and decorator's work was concerned, and on many jobs much of the priming and glazing was done before the painter came. No trade, however, was so closely allied with theirs as the plasterers. He should be glad to see more mutual assistance and combination in framing rules as between one society and another. He took it that every trade should have a sufficient complement of apprentices, so as to provide a sufficient body of efficient workmen. The President then touched upon the question of what was the best kind of house decoration, and expressed the opinion that probably the simplest was the best.

The secretary (Mr. W. E. Sutherland), in his report, stated that in the North they had a representation and connection of which any association might be proud, and it was their intention in the coming year to strengthen their hands in the Midlands and Southern districts. They had an organisation the framework of which was spread from the Trent to the Tweed, and it only needed courage and resolution on their part to extend the work until it embraced the entire country covered by their title.

The report was adopted, as was that of the treasurer, Mr. Thomas Preston.

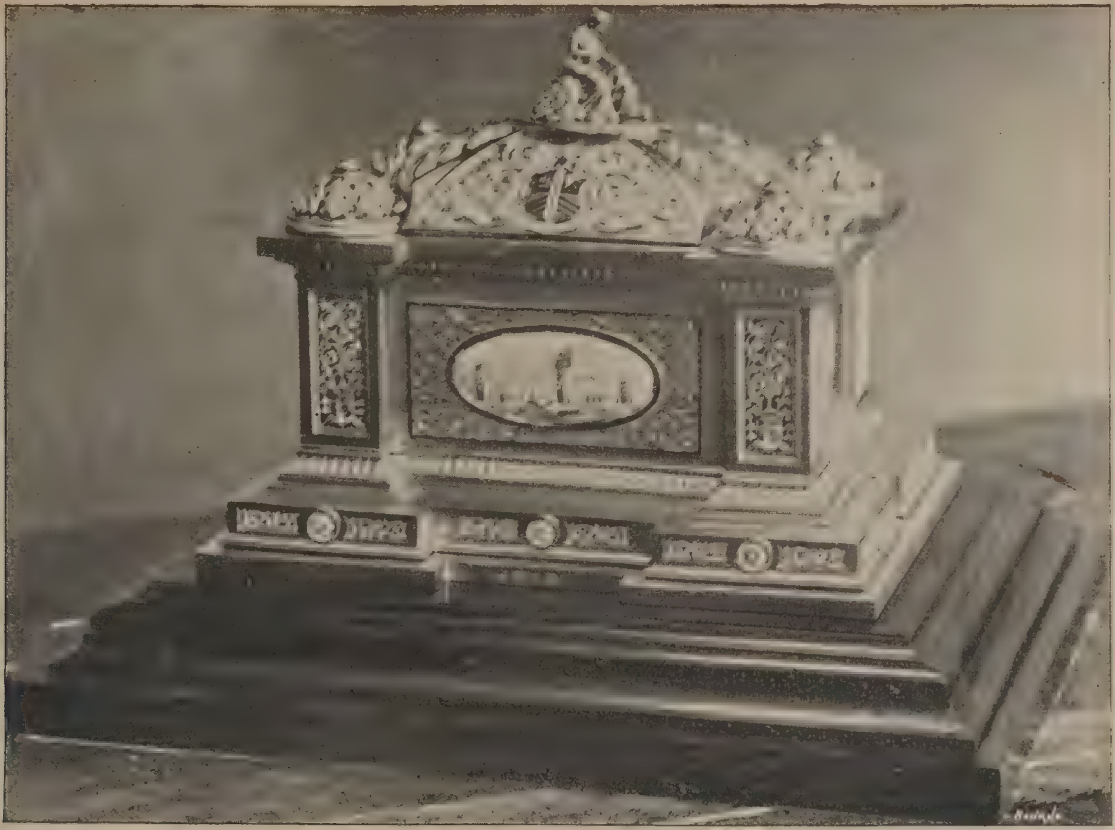
The consideration of the rules and the reports of committees occupied the remainder of the afternoon sitting.

At the evening sitting, the secretary read a paper by Mr. George Kilpack on "The Painting Trade in Relation to the Home." The writer pointed out that people should be educated to loathe filthy wall and other surfaces as much as they did a tainted water supply or bad drainage. The decomposition which wall-papers underwent, unless specially prepared, afforded a means by which disease germs could be brought into activity. The object to be attained by sanitary surfaces was even now but imperfectly understood by the mass of the people, even if it were by the more educated classes. The diminution of oxygen was not the particular evil to be guarded against in rooms, but the addition to the air of harmful gases. Bedrooms should have surfaces which could receive daily attention. The writer also spoke in favour of the sanitary and æsthetic value of a generous treatment of colours in the home.

Mr. T. R. Spence, of London, the architect of St. George's Church, Newcastle, read a paper entitled "Some Thoughts on Interior Decoration." Why, he asked, should English dining-rooms present a never-varying appearance? Why should they always be in solemn tones of red and brown? Why should we revel in furniture solemn and ponderous? The common practice was to treat ornament at considerable heights in the same delicate manner which they would apply to a casket or any decorative object whose position was close to the spectator.

◆

The market at Tokenhouse-yard was steady throughout last week, and the signs of a general improvement were maintained. Residential properties were somewhat difficult to dispose of, nor was there much demand for properties of a speculative character ; but sound investments were well sought after, and obtained satisfactory prices. The aggregate for the week was £50,100.



CASKET CONTAINING THE SCROLL OF FREEDOM OF THE BOROUGH OF WEST HAM, PRESENTED TO MR. J. PASSMORE EDWARDS.

MR. PASSMORE EDWARDS AND WEST HAM.

PRESENTATION OF THE FREEDOM OF THE BOROUGH.

THE presentation of the Freedom of the Borough of West Ham to Mr. J. Passmore Edwards took place in the large assembly room of the Town Hall on Wednesday afternoon. The ceremony was presided over by the mayor, Alderman J. Hay, J.P., who was accompanied by the town clerk, Mr. Fred E. Hilleary, Mr. J. Passmore Edwards, and Mr. Harry Passmore Edwards. Among others present were the mayoress (Mrs. Hay), Mrs. Passmore Edwards, Mrs. Clark, Mrs. Harry Passmore Edwards, Mrs. Alderman Kidd, Mrs. Hilleary, Mr. Ernest Gray, M.P., the whole of the aldermen and councillors of the borough, and the corporation officials.

AN ADDRESS OF WELCOME.

The Mayor, prior to calling upon the Town Clerk to read the address of welcome to Mr. Edwards, remarked that he was pleased to be there in his capacity as representative of the people of West Ham to welcome Mr. Edwards, who was well-known and universally admired. (Applause.) The address about to be presented would contain the sentiments and feelings of the whole of the burgesses of West Ham. (Loud applause.) The Town Clerk then read the address.

THE SCROLL AND CASKET.

The Scroll of Freedom, contained within a beautiful gold casket, was then presented to Mr. Edwards by the Mayor, his worship remarking that no one was more deserving of the honour than the present recipient. Mr. Edwards was their first free burgess, and he hoped he would live long and pay them occasional visits. (Applause.) The gold casket is a splendid work of art, the panels containing illustrations of West Ham Hospital, the Public Hall and Library, the Town Hall, and the Parish Church, and at one end is a lighthouse in half relief, and at the other end a figure symbolical of literature. The entire handiwork is surmounted by a figure of Charity. The Scroll of Freedom bears the borough arms and seal, and is signed by the town clerk, Mr. Hilleary.

MR. EDWARDS'S REPLY.

In responding to the presentation, Mr. Edwards, addressing the audience as "fellow burgesses," begged to be allowed to congratulate himself on being the only "free man" of the Borough of West Ham. He wished to say that that was not the first nor the second time that the freedom of cities and boroughs had been presented to him. (Applause.) The first one was at Truro a few years ago. Truro had existed for at least a thousand years; it had been a privileged community for that long period of time; yet it had only a population of ten thousand people. West Ham had not existed a thousand years; nor, in its present capacity, a hundred years, and yet West Ham to-day had more than five times the population of Truro. (Applause.) He looked upon

THE GROWTH OF WEST HAM

as one of the most interesting and phenomenal events of modern times. (Applause.) There were ten old British cities with smaller populations than West Ham. These were Truro, Salisbury, Winchester, Wells, Canterbury, Rochester, Peterborough, Ely, Durham, and Chester; and West Ham had 20,000 more than the united population of these ten old cities of the country. (Applause.) The question to be decided was, Whether West Ham should or should not go on increasing in this way? If it did, what would it be in the future? He was not sure that the time was not coming when they would find themselves in the same position as "the old woman who lived in a shoe," and who "had so many children that she did not know what to do." (Laughter.) At all events, it was an important thing that London in general and West Ham in particular should be increasing so in population. One of the greatest Germans living had said that great cities would be the grave of great Empires; and he (Mr. Edwards) was not sure that the time was not coming when

THIS POPULATION QUESTION

would have to be considered more widely and more deeply than at present. (Applause.) In the mean time they must do what they could to sweeten the atmosphere around them, to protect the sick, to build up the broken-hearted if necessary, and to thus brighten and strengthen the foundations of this great Empire. (Cheers.) Anyone reading the *Times* correspondence that morning would find that there was a strong feeling growing up in all parts of the world against England. England had scarcely a great national friend in the world at the present time; therefore, let England be friendly to herself. (Cheers.) Let them be true to themselves. Let them build up strong and stalwart citizens, improve their minds, give them opportunities of physical recreation and technical instruction, and he believed that England, with its thousand years of the past, would have another and a richer thousand years in the future. (Cheers). Rome had passed away, but the influence of Rome lived with us to-day, and was, perhaps, as great a power in Europe at the present time as even the Latin Church itself. All this had taught us that Empires might pass away, but their influence remained. The British Empire was a greater fact than Rome ever was, and it was for Englishmen to see that the Empire was strengthened and maintained. (Cheers.) This brought the proceedings in the assembly-room to a close.

A LUNCHEON

was afterwards provided for the principal visitors and the members of the corporation. The Mayor presided, and, after the usual loyal toasts, proposed the health of Mr. Passmore Edwards. Mr. Passmore Edwards, who was enthusiastically cheered on rising to respond, said he was pleased to know that 40 out of 41 members of the Council had voted in favour of conferring the Freedom of the Borough upon him. (Hear, hear.) Referring to the little contention that had arisen about amalgamation, he pointed out that London was one, England was one, Europe was one, humanity was one, and universal nature was one. (Applause.) It was only by sinking individual differences that great ends could be achieved. (Loud applause.)

VISIT TO THE HOSPITAL.

Subsequently the Corporate party paid a visit to the West Ham Hospital, the new wing of which, presented by Mr. Edwards, is now open. The first floor is to be named after Mrs. Passmore Edwards, who has furnished it as a children's ward, and the ground floor after Mr. T. R. Roberts, who had added £1,000 to the £3,000 given by Mr. Edwards.

The corporation of Richmond, Surrey, are erecting a number of workmen's dwellings, from plans by the borough surveyor. Twenty-one of the cottages are now occupied, and twelve others are nearly completed. Messrs. S. N. Soole and Son are the contractors.

ARCHITECTURAL ASSOCIATION.

THE inaugural meeting of the Architectural Association for the session 1895-6 was held in the meeting-room of the Royal Institute of British Architects on Friday evening. Mr. W. Douglas Caröe, M.A., F.S.A., the new president, occupied the chair, and there was a crowded attendance of members and visitors, including several ladies.

Mr. F. T. W. Goldsmith, vice-president, late hon. secretary, moved the adoption of the report, the main features of which were epitomised in our issue of September 20, p. 428, when reviewing the A.A. Brown Book, in which it is embalmed. He mentioned that the chief characteristics of the report were the marked improvement in the quality of the papers read at the general meetings—a subject to which the committee had given earnest attention—and the consequent increase in the numbers attending, and greater spirit in the subsequent discussions. Mr. A. Beresford Pite seconded the motion, which was unanimously adopted. The adoption of the balance-sheet for the past session was moved by Mr. Hampden W. Pratt, hon. treasurer, seconded by Mr. Francis Hooper, and agreed to, a vote of thanks being accorded to the auditors, Messrs. E. Howley Sim and Buss.

A vote of thanks to those who contributed to the success of the A.A. Excursion to Gloucestershire in August last by throwing open mansions and churches, and other places of interest, was proposed by Mr. B. Flight Fletcher, hon. secretary, and carried by acclamation. The President announced that the conversazione would be held on that day fortnight, Friday, the 25th inst., at the King's Hall, Holborn Restaurant. Forty-one nominations for membership were read.

MEDALS AND PRIZES, SESSION 1894-5.

The President then distributed the awards for the past session in accordance with the following list: A.A. Travelling Studentship (Bronze Medal), H. J. Triggs; Measured Drawings Prize, A. Bryer; Essay Prize (Silver Medal), T. A. Abbott; Mr. James Brooks' Prize, P. R. Smith; Discussion Section Prize, C. H. Fowler; Oliver Prize, H. C. R. Hide, first prize; A. J. Roddis, second prize. List of Medallists, Session 1894-5.—Division I.: E. P. Wheeler, silver medal; A. Smithers, bronze medal; C. F. Dawson, hon. mention. Division II.: P. J. Groom, silver medal; E. Bates, bronze medal; E. H. Evans, hon. mention. Division III.: C. W. Surrey, silver medal; A. H. Allan, bronze medal; F. Catling, hon. mention. Studio.—Division I.: H. C. Bathurst, silver medal; C. Martin, bronze medal; J. G. N. Clift, hon. mention. Division II.: H. C. Trimnell, silver medal; H. C. R. Hide, bronze medal; S. Perkins, hon. mention. Division III.: J. R. Stark, silver medal; J. Hunt, bronze medal; J. W. Abraham, hon. mention. List of Prizes and Certificates.—Division I.: E. P. Wheeler, Certificate and Prize Greek and Roman Orders; A. Smithers, Certificate and Prize, Materials and Construction; A. Smithers and E. P. Wheeler, Certificates, Perspective; C. F. Dawson, Certificate and Prize, Elementary Physics. Division II.: E. H. Evans, Certificate and Prize, English Architecture; G. H. Paine, Certificate and Prize, Materials; S. Perkins, Certificate and Prize, Elementary Ornament; P. J. Groom, Certificate and Prize, Stresses and Strains. Division III.: P. W. Meredith, Certificate and Prize, Practical Design. Extra Subjects: E. P. Wheeler, Certificate and Prize, Plane and Solid Geometry; W. Hearn, Certificate and Prize, Land Surveying; C. W. Surrey, Certificate, Quantity Surveying; H. C. Lander and A. T. Griffith, Certificates and Prize, Modelling.

INAUGURAL ADDRESS.

The President, in giving the opening address of the session, pointed out that the Association exists primarily and expressly as an educational force, and has so existed for nearly 50 years; its history groups itself entirely around this object, and shows this as its original and ultimate end. Since its creation 48 years ago by Mr. Gray and Professor Kerr, the first President, from the embers of a not too prosperous benefit society of architectural draughtsmen, the Architectural Association has had some necessary changes in methods of education; from the system of instruction by mutual criticism has grown that of instruction by voluntary visitors, which continued until 1891, and made the classes so deservedly popular. Towards the close of the last decade, however, continued the President, it became evident that some change would be inevitable. The influence of the new condition of things at the Institute was making itself felt. The Voluntary Examination of former years had developed in 1882 into the compulsory examination for admission to Associateship of the R.I.B.A., and we were all by the ears with a new system and other standards erected among us, necessarily to be acknowledged and dealt with as with existent facts. Five years ago it was felt that systematic teaching had become a *sine quâ non*, and we undertook the reform in our system with a will. Our chief energies were devoted to the admirable task of perfecting and improving our schools and our system of education, of revising them as new needs demand, and of bringing them into direct agreement with the requirements of the time. We now have before us the results of four years' working of the new scheme, and in the year 1893-4 we had the satisfaction of proving that with the aid of the Institute the new scheme could be made financially successful, leaving us with a substantial balance. But a meeting of the ways has come, and other causes have been at work which demand a new adjustment. The session just past does not show the desired continuation of this success, and we have to regret a considerable falling off in our students as well as in the number of our new members, though the work done in our classes and studios has been of first-rate quality. Your committee set itself to fathom the cause of the dwindling numbers, and finally a special committee was formed to investigate and to report upon the whole scheme. The slackening of our success last session was, I believe, due to passing and not to permanent causes. The number of incipient architects cannot be absolutely the same, session by session, and when trade is bad we must expect lean years. The discomforts of our too small rooms may have had something to do with the decrease in our numbers of this year. But apart from these, other causes have also been at work, and first of these is the re-organisation of the examinations at the Institute. Now, shall our course of study acknowledge these examinations and aid in preparing for them? or, shall we stand aside on the neutral ground of giving a good and thorough architectural education, not of a nature to be best tested by examination alone? or again, shall we oppose these new tests of a merely stereotyped efficiency by formulating our scheme on different lines, and with an intentional disregard to the standards and arrangements of the Institute examiners? I should like to make my own position clear, having myself been a Memorialist, and holding still every jot and tittle of the beliefs that that body strove to make clear, differing only from it in its final and exaggerated antagonism to the Institute. I hope that before many years are out the most eager advocates of architecture by examination will have found that no form of diploma, no corollary of significent letters, will in any way advance the cause we have all at heart. Already I hear whisperings of the failure of these ideals so plausible and promising; how the man who was safest in marks is not the surest in merit. The examination is the safeguard of those alone who look no further than an official guarantee of stereotyped efficiency—the terror of those whose hope is for the freest and fullest development of the artistic spirit. Nevertheless, I know well that our modern world will never more be persuaded to run its appointed course off its chosen rails of degree and diploma—the examination in some form or other we shall always have with us; and to some natures, to some types of mind, it may possibly be not only necessary, but expedient. We must admit this necessity, and must acknowledge the dangers of this modern tendency, and must arrange both our own scheme of life and the curriculum of the Architectural Association accordingly. The only way in which we can combat the examination evils is by the provision of an adequate, thorough, and intelligent education for the many-sided calling of an architect, which shall maintain as its standard and its keynote that "cramming shall not be." We have so often agreed upon the main needs of an architect's education that it is enough to restate them concisely. (1) That the system of pupilage or apprenticeship is good as far as it goes, but that it does not go far enough. (2) That it should be supplemented by systematic training by skilled instructors. (3) That that training should be directed to stimulate the artistic faculty—to order the imagination, to give the necessary practical as well as theoretical knowledge in all the accessories of the craft; in short, should consist of work in studio, lectures, classrooms, and in workshop. The committee has accordingly decided to bring classes and studio work into line with the requirements of students for the examinations. The Institute has met us half-way, and altered the dates of its summer examinations, both intermediate and final, to suit our classes. At the same time, we leave it to the free will of our students to enter for the examinations or not, as they think fit; and we continue a goodly number of classes which are quite beyond examination requirements. But we go further in an opposite direction to that suggested by mere preparation for examinations. Before 1891 all classes were on the self-help system, the chief of them being those of design, elementary and advanced. We have formally reinstituted these old classes, with their excellent system of visitors, upon a basis that all will approve. Thus the old and new ways meet, leading us to a new feature which has been almost a dream for many years past to those connected with the management of the Architectural Association—viz., the establishment of Handicraft Classes. I do not say it is necessary for us to be highly skilled in each craft, but we do want to be able to handle materials intelligently, and to have constant opportunities of watching others handle them deftly; and this practical training is so much the more helpful if it is acquired side by side with the more theoretic knowledge evolved from the lessons of the past. It seems a wasteful policy to multiply classes in any subject beyond the demand for them, and inasmuch as excellent handicraft classes already exist in the Metropolis, it would seem even a greater advantage to our students to secure for them the entry of these, than to undertake the organisation of competing classes on our own account. The Polytechnics of Battersea and Chelsea have thrown open their doors to the architectural student, and negotiations are now afoot which, I hope, will prove successful for the admittance of our students to the classes conducted by the Carpenters' Company, at the Trades Training School in Great Titchfield-street. Thus we have remodelled our teaching, forming some of it anew, making some of it continuous of our happiest traditions of self-help and mutual aid. Some of us are prepared to go further, and ask if we may not open our schools to others outside our elected members. May we not offer our educational advantages (let us say) to the engineer and the builder, while our social privileges and Association should remain our own, and need in no way be touched by this proposition? A sub-committee has, in fact, reported in favour of this view, subject to very necessary reservations. Meantime, let us put our house in order, that when new learners come, whoever they be, all may be ready; that the question of house-room may be efficiently solved. Our own work has already been much hampered by our narrow and not too convenient limits. This cannot be treated as a question of funds alone, but as a primary need of our continued existence as a successful corporate body. A sub-committee has been employed in the search, and has laid a promising proposition before us, which it would as yet be premature to discuss. Should it prove necessary to make an appeal at an early date to the whole body for support, I feel confident that this will be gladly given, not only by members of our own Association, but also by our many friends and well-wishers within and without the profession. Day classes must next be started, with day schools of handicraft. There is another phase of this question of education to which our attention has been lately drawn—the better education of the British workman. The men themselves have so far stepped in to render our own efforts in this direction abortive. At present the labours of our committee are in abeyance, though I hope that steps may soon be taken by which these labours may be resumed. The Plumbers' Company are conferring upon us all, architects as well as plumbers, the first of benefits in encouraging the spread of apprenticeship. Other City Companies are also working to the same end, and it behoves us all to further this as far as we can. An architectural school is said to be in the making, backed by the rates of London, by the enterprising L.C.C. Of course the questions must occur to us—Is there room even in London for two important schools to exist side by side? Will a supply of students be found to support both? If the County Council desires to expend its energy, or the funds at its disposal, in the direction of architectural education, would it not do well to assist us still further to extend our sphere of usefulness? We certainly demur to the statement in Mr. Llewellyn Smith's Report to the Special Committee on Technical Education, that we carry on our work "tentatively," or "may at any time fall to the ground." We are neither tentative nor moribund. We are already "a school of architecture"; but we are quite ready, under conditions to be agreed, to "be developed by the assistance of the Council." We shall before long have the opportunity of hearing from Mr. Lethaby the direction which it is proposed shall be taken by the proposed L.C.C. Architectural School. His views upon the subject we have already learned. "Handicraft" is his keynote and ultimatum; the architect, again the master-builder, shall leave history and theory and learn how to build with his own hands, and construction shall come to him in Nature's school through the touch of her materials. Mr. Lethaby has to reconcile his advocated method of training, itself based upon the achievement of the past, and known to us through history alone, with his demand for the abandonment of all derivative and all teaching from the historical past—also for the application of ideals to the accomplished facts and complicated requirements of our century. Whatever our methods of teaching and training, let us educate our eyes, strive to see and understand Nature's harmonies and restraints. We have a heritage, daily dwindling, of characteristic beauty in our English landscape. Let us see that by no act of ours any particle of our inheritance shall be stolen from our sons. The President descanted on the vandalism which has disfigured so many a country side by the introduction of alien materials into the buildings, quoting, as an illustration, the Manchester waterworks buildings at Thirlmere, where the dam-wall is battlemented in imitation of Gothic work, and the turncock's cottage is dealt with as a pseudo-castle, vulgar in its treatment and details, and bedizened with dressings of glaring red stone imported from Scotland into the very centre of a grey-stone district. In these days of rapid and easy railway transit, the choice of materials is, the President added, freer than in the past, and in the great towns imported material must be employed. Yet in each town there are certain materials which weather better and look better in the weathering than any others. But in the country side in the use of local material lie safety, harmony, and enduring honour. In its own district, a stone wears best, looks best, weathers best; timber construction will have its best value; native slates for our roof, where such there are. If the district affords no fitting materials for roof or wall, then our choice must be of those which harmonise the best with the character of the country. The question of cost you must perforce heed, but do not leave the other unheeded. Some of the most glaring examples of misapplied materials occur where the reverse of economy is the result. In the towns our first duty should be to study our neighbours, never forgetting the demand upon us for our share of a dignified whole, and should treat an exceptional site with special consideration and deference. Let us show our public what good architecture is; let each do his part, however small that part; seek out the principles underlying the greatness of the great architecture of the past and of our own day. Study our own time, its need and its achievement; observe its excellence, and we need not spare its faults, and then when the crucial test and the happy moment of designing comes, our houses will no more be as "the houses in between," but a part of the City Beautiful which it lies with us to bring into being. In our self-education there occur opportunities which we are prone to misuse or waste—viz., the important aid that such bodies as the Association or the Institute might render by general and genuine mutual criticism of the work done, to be done, or in the doing. We are public servants, and should be able to bear both from an educated public and from each other generous and wholesome expression of critical opinion concerning our productions. We must criticise ourselves and each other, that the public in its turn may acquire the knowledge to do so, and the Press the desire to understand. The public now desire not quiet beauty, simplicity, and proportion, but what they are pleased to call "the picturesque"—a spurious, wilful inversion of order and dignity, a subordination of proportion to the unusual, the unexpected, the novel. Examples both of the real and spurious are many. To find one where they are well contrasted, we need only look to the reach of the Thames between the Albert and Chelsea Suspension Bridges. I knew of no finer bit of grouping and outline than the quite exceptional terraces, the charm of which we chiefly owe to two men of genius—Mr. Norman Shaw and the late Mr. E. W. Godwin—with their surroundings of tree and river, and, beyond, Wren's noble Chelsea Hospital. Here was the genuine picturesque, not aimed at in the individual works, but developed in their total effect. But the plot of land between the terraces and the hospital has lately come into the market, and a long block of (no doubt) "commodious residences replete with all modern improvements" has sprung up, to the final destruction of the exceptional beauty of the spot. We are compelled to suppose that these buildings aim at the picturesque. They are planted upon the ground like an ill-drawn parabola — the two ends straightened with a connecting curve—no part of it having the slightest relation to the lines of hospital, river, or terraces. Bay windows, balconies, the inevitable angle-turret, alternate gables with capricious differences of outline, some of them mere shams of elevated brickwork, iron-stayed; a gratuitously broken line of roof, all make up a composition the like of which may be studied as an example of the power of bricks and mortar to mar a great opportunity and a great site. Chelsea Hospital may have even the better part in the view of the neglected back scornfully turned in that direction. No oriel windows and angle-turrets could be spared for a mere back—to be "picturesque" in front makes all other considerations superfluous, it seems. Let us simplify our fronts, and not overlook our backs. An instance of a well-treated and considered back may be found in a small new building overshadowed by the School Board Offices on the Temple Embankment. One burning subject remains for our consideration—that of competitions, on which I will say a word from the standpoint of architects generally and of assessors in particular. The Institute has again organised a Competition Committee, which it is hoped may exercise a speedy and beneficial influence upon the conduct of competitions. There has been certainly improvement in the last few years, but cases of gross injustice are still too frequently recorded; nor is it apparent to me how any protest can avail much. We must act, not protest; and we have the matter in our own hands if we will act together. If no reputable architect will become a competitor unless there is first appointed a professional assessor, whose award shall be final; if no reputable architect will become an assessor unless his award is to be so accepted, the matter will cure itself. The discovery of any touting on the part of competitors should be at once sufficient ground for the elimination of their names from the rolls of any honourable society. Especially to assessors we might commend the firm attitude suggested, for there is no doubt that a sure and honourable basis for the distinction of true merit by an adequately trained judge would be a real benefit, as much to the public as to the architects themselves. The Building Act for London seems, on the whole, to be working smoothly, but it is evident that an Amending Act will soon be necessary. It should now be our object to induce surrounding local bodies to amend their by-laws in accordance with the better provisions of the new Act. In conclusion, let each of us look to it that no temptation, no laxity or laziness, no greed of easy gain, and, may I add? no client, turn us from the right path. This Association is *Alma Mater* to many of you, and will be as years go by, to an ever-increasing number. As well as the earth on which we build, we dishonour her by any but our noblest efforts; if we give of our best, we are still but debtors.

> "My new cut ashlar takes the light
>   Where crimson-blank the windows flare;
> By my own work, before the night,
>   Great Overseer, I make my prayer.
>
> "If there be good in that I wrought,
>   Thy hand compelled it, Master, Thine—
> Where I have failed to take Thy thought,
>   I know, through Thee, the blame is mine!"

In proposing a vote of thanks to the President, Professor Kerr claimed for the A.A. classes that they were the best practical means yet devised for the end in view. The Association served three main ends—firstly, preparation for the Institute examination, which moreover served an indispensable purpose, although he was not one who attached great weight to examinations and diplomas; secondly, the preparation of young men for their practical business as architects; and thirdly, to obtain greater recognition of the principle of artistic grace in their buildings.

Mr. H. O. Cresswell, another past-president, seconded the motion, which was carried.

"BUILDING NEWS" DESIGNING CLUB.

AWARD OF PRIZES, SESSION 1894-5.

THE following is the text of the record of work done determining the winners of the prizes, which we award in accordance therewith.

"Sphinx," 1st prize, £10 10s., Mr. C. A. Battie, 462, Hornsey-road, Hornsey Rise, N.

"Heather," 2nd prize, £5 5s., Mr. E. G. Collins, 47, Henslowe-road, East Dulwich, S.E.

"Nyoola," 3rd prize, £3 3s., Mr. T. A. Pole, 2, Great Coram-street, Russell-square, W.C.

Hon. mention is obtained by "Jackeroo," Mr. H. A. Crouch, 2, Great Coram-street, W.C.; "Morris," Mr. W. M. Carter, Precentor's-court, York; and "Stormfiend," Mr. W. H. Warwick, Dalkeith, Iffley-road, Oxford.

LIST OF SUBJECTS AND RECORD OF SCORES.

A.—A Moorland Church.—"Sphinx," 1; "Ictinus 2nd," 2; "Red Rose," 3; "Myst," 4; "Heather," 5.

B.—Hall Fireplace.—"William of Sens," 1; "Storm Fiend," 2; "Nyoola," 3; "Red Rose," 4; "Ictinus 2nd," 5.

C.—Model Dairy.—"Sphinx," 1; "Albyn," 2; "Blundella," 3; "Just My Luck," 4; "Calcutta," 5.

D.—Parsonage.—"Morris," 1; "Sphinx," 2; "Just My Luck," 3; "Red Rose," 4; "Calcutta," 5.

E.—Railway Station.—"Sphinx," 1; "Jackeroo," 2; "Nyoola," 3; "Floreat Sherringham," 4; "Storm Fiend," 5.

F.—Dining-room Buffet.—"Sphinx," 1; "Ictinus 2nd," 2; "Calcutta," 3; "Morris," 4; "Heather," 5.

G.—Labourers' Cottages.—"Jackeroo," 1; "Wykehamia," 2; "Sphinx," 3; "Red Rose," 4; "Nyoola," 5.

H.—A Parish Council Building.—"Heather," 1; "Wykebamica," 2; "Nyoola," 3; "Xedra," 4; "P," 5.

I.—A Village Club.—"Heather," 1; "Sphinx," 2; "Nyoola," 3; "Rover," 4; "Floreat Sherringham," 5.

K.—Riverside Bungalow.—"Sphinx," 1; "The Dodo," 2; "Nyoola," 3; "Heather," 4; "Xedra," 5.

RULES OF COMPETITION FOR SESSION 1895-6.

1. Drawings to be sent in within 28 days after the publication of the particulars of subjects.
2. One or more subjects will be given every month, from which a competitor may choose.
3. The drawing to be executed in firm black lines on white drawing-paper, in sheets of the absolute size of 22in. by 14in., with no washes or tinting in colour whatever. Outline to be the first consideration; but drawings may be slightly shaded with shadows executed wholly in line. Sectional parts to be shown in ruled "hatching," or blocked in. The scale to be used will be given with each subject.
4. Drawings to be forwarded, unmounted, by post, care being taken to roll the short way of the drawing, as packages over 18in. long are not transmissible through the book post.
5. On entering the class (which may be done at any time) each competitor is required to furnish his name and address, which must be written legibly on the back of each drawing, as a guarantee of good faith, the *nom de plume* the author intends to adopt boldly marked on the front of each separate drawing. To avoid confusion, each member must adhere to one motto, which should be as distinctive as possible.
6. Prizes of £10 10s., £5 5s., and £3 3s. will be awarded to the best series of designs. Our decision to be final.
7. Before awarding the prizes, any contributor will be expected to furnish proof, if necessary, as to his age, and the time during which he has been engaged in professional pursuits, though no candidate need be strictly an architectural student.
8. We reserve the right of arranging the drawings for publication in any manner we deem necessary.
9. A critical notice of the designs sent in of each series will be given in an early issue following the receipt of the drawings.

SESSION 1895-6.—FIRST LIST OF SUBJECTS.

A.—*A Country House*, to cost £3,000. To be built in red brick, and roofs covered with tiles. Stone sparingly used; but carved brick may be introduced for ornamental parts, though not too freely employed. The accommodation to provide three reception-rooms of suitable size, the relative proportions being left to the judgment of each competitor; the Hall must be made a central feature in the plan, and not be too big, and is not intended for a sitting-room. Seven bedrooms, two of which may be on a second floor and partly in the roof. Offices and bath-room to be provided. The style adopted must be suitable to the material, and a quiet but picturesque treatment is suggested, adapted to the home of a gentleman of moderate means. The entrance front faces the road on the north side; the views from the site are towards the south-west. The height of the ground-floor best rooms to be 12ft., and on the first floor 9ft. 6in.

Plans, two elevations, one section, and perspective sketch. The plans may be drawn to scale of 16ft. to the inch; other geometrical drawings to be drawn to scale of 8ft. to the inch. The site is practically a level one.

COUNTY LUNATIC ASYLUMS.—XXX.

By George H. Bibby, F.R.I.B.A.

ACCOMMODATION FOR ATTENDANTS.

The staff of attendants at the Banstead Asylum (where the patients number about 2,000) is considered by the Commissioners in Lunacy to be moderately strong, there being 64 men and 106 women available for day duty, and for night duty 12 men and 22 women. These numbers give a proportion for day duty of one to 11 among the men, and one to 12 among the women. In this asylum there are said to be a large proportion of attendants who have been for many years in the service—a fact which is of great importance to the well-being of the patients, as new and constantly-changed attendants cannot manage patients with the same advantage possessed by persons who are well acquainted with the habits and condition of those in their charge. An asylum superintendent states: "There is rather an erroneous impression that attendants are not as regularly trained as hospital nurses. I think that a better knowledge of what does occur would rectify this error. In this asylum (Banstead), at any rate, novices are made to begin at the beginning, and are moved regularly upwards according to merit. Since the duty of each subordinate post is carefully defined, and the carrying-on of the work is carefully supervised, it appears that the juniors go through a complete schooling, and are brought into contact with the patients in a manner which induces that intimate knowledge of the insane state which is the essence of a good attendant. Some of the best attendants would probably be the worst at passing written examinations and obtaining certificates."

In some asylums the changes of nurses and attendants is very great, owing, in some cases, probably, to the insufficient, unsuitable, or uncomfortable arrangements made for their *residence*, and instances have occurred where one-third of the attendants have resigned during one year. It is, therefore, necessary that every reasonable provision should be made by the asylum architect for the comfort and accommodation of the nurses and attendants, whether these be housed in the main asylum or in detached cottages.

The messroom should be placed within reasonable distance of the asylum kitchen, and some such arrangement as that shown on Fig. 45 would be appropriate for a large county asylum, the areas of the rooms being varied according to the number of patients.

By this arrangement a messroom is provided, with an adjoining scullery; but in many asylums recreation or club-rooms are given in addition, where attendants and nurses can meet for social intercourse, reading, writing, or other amusements and occupations. The club-room shown in Fig. 45 should be comfortably furnished, and should contain a piano, be provided with book-shelves, and games of chess, draughts, &c. This room is much better placed where shown than if it opened directly out of a ward or near to rooms occupied by patients; in the latter arrangement, there would be constant opportunities for neglect of duties. In large asylums a billiard-room might be placed in a similar position to that shown on Fig. 45, and also be used as a smoking-room; a lavatory and w.c. is arranged conveniently thereto. In this block of buildings the attendants, when off duty, would live comfortably, and apart from the patients, and would receive their friends (under suitable regulations). An eminent asylum authority states that much may be done in this way "to brighten the leisure hours of the attendants, to provide them with subjects of interest, and to occupy minds that have necessarily many vacuous hours. Still, when all has been done, the need for some change of companionship—and especially for companionship with the other sex—will always make the neighbouring publichouse a formidable rival to the attendants' recreation-room. To meet this difficulty social meetings should be organised, in which the male and female attendants can meet together for friendly and social intercourse. To such meetings, held chiefly in winter and wet evenings, the women bring their needlework, and the men their pipes and games; some of the more sensible and better class of patients may be included. An officer should, of course, be always present to preserve decorum and give the initiative to the proceedings, which otherwise are apt to flag. The arrangement shown on Fig. 45 would enable this to be carried out, and is intended for the males' side of an asylum; but a similar arrangement (minus the billiard-room) would be required on the females' side.

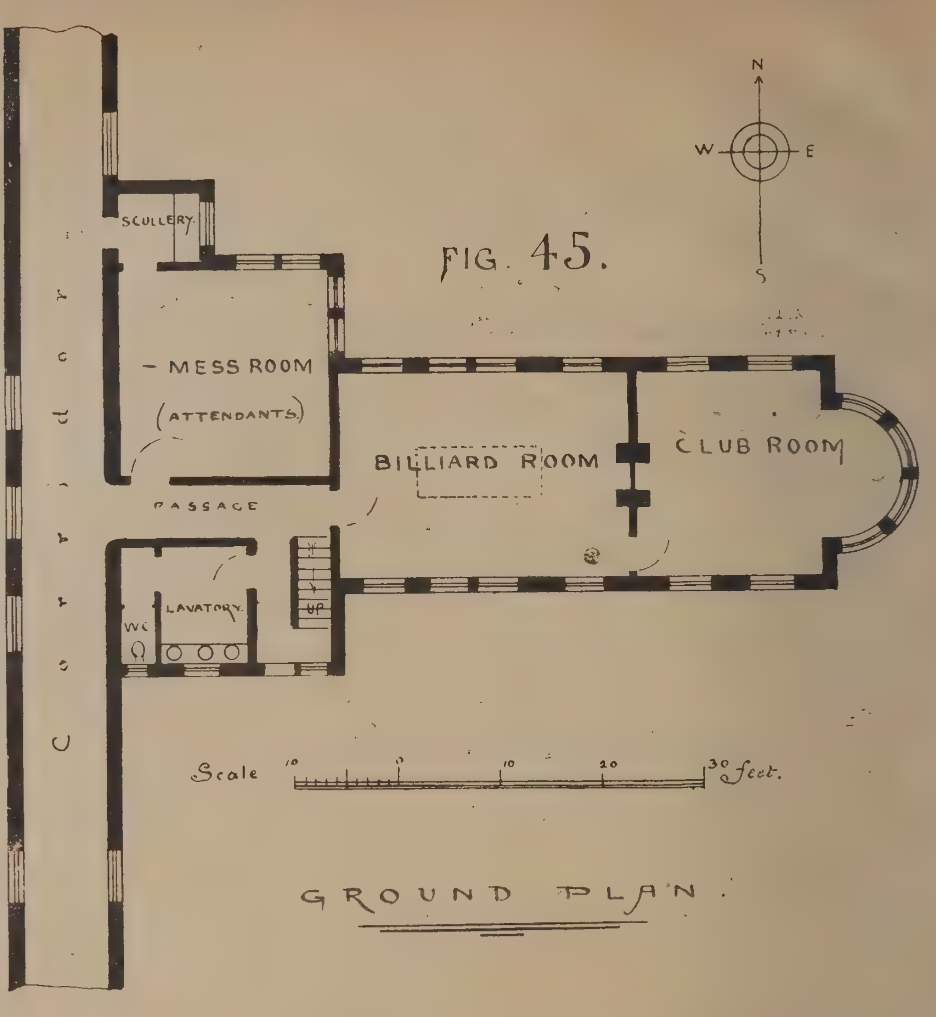


FIG. 45.

GROUND PLAN.

On the floors above these ground-floor blocks there might be provided a few bedrooms, with bath-rooms and water-closet, &c., which would serve either for the ordinary accommodation of nurses or attendants, or otherwise serve for the purpose of separating attendants suffering from illnesses and requiring quiet and attention apart from their companions.

In all arrangements of apartments for attendants, it must be borne in mind that some are nearly always absent on leave, some are watching difficult or suicidal cases, others are out on the farm or estate, and supervising the exercise of patients, while others may be ill; but it would be well that the number of attendants should not be at a less rate than one to every ten patients. With fewer than these, it is the opinion of experts that proper attention cannot be given to the patients, and that it would not be fair to the attendants that there should be a less number, having in view the nursing of patients seriously ill, or with homicidal or suicidal proclivities.

Many of the patients are frequently very noisy at night, and unless an asylum is well planned, the attendants and nurses off duty are apt to suffer from loss of sleep. There is obviously less reason in a large asylum than in a moderate-sized or small one, why the attendants should suffer in this respect, as special wards in the former instance are frequently provided for violent and noisy patients, whereas in smaller institutions all classes of officers, attendants, and patients are frequently brought into much closer conact.

The comfort and welfare of all the patients are contingent upon very greatly upon the character and dispositions of the nurses and attendants, and it is obvious that if these are not provided with properly separated residences or apartments, that the constant misery of living in ill-constructed and badly-planned rooms can only tend to impair their capabilities for usefulness by reason of all those evils that arise from loss of energy, dulness, and shortness of temper upon the part of persons associated within an insufficient or inconveniently arranged area.

In place of the billiard-room shown upon the ground plan in Fig. 45, there might be, on the female's side of the asylum, a room of similar size to be used as a music-room by the female attendants and assistant matrons and others of a corresponding grade. Thus the attendants, as a rule, would have (for both sexes) entirely distinct suites of rooms for their exclusive occupation except upon those special occasions of social gatherings to which I have referred.

The garden or grounds adjoining the blocks of buildings for attendants and nurses might (should the general plan of the asylum admit) be handed over to some of the attendants, in plots, to be cultivated for their own advantage for flowers or vegetables.

There should be one head attendant to about every thirty attendants, and his cottage or rooms might sometimes conveniently be placed near to the attendants' messroom. The number of patients in the charge of these thirty attendants should not, in ordinary cases, exceed from 300 to 350 persons. Therefore, in an asylum for 2,000 patients there should not be less than six head attendants, with about 180 ordinary attendants.

It is desirable in all buildings set apart for the use of officials, attendants, and nurses, that the staircases should be constructed in a similar manner to those intended for the use of patients, the possibility being borne in mind that a patient might wander from his ward and attempt suicide

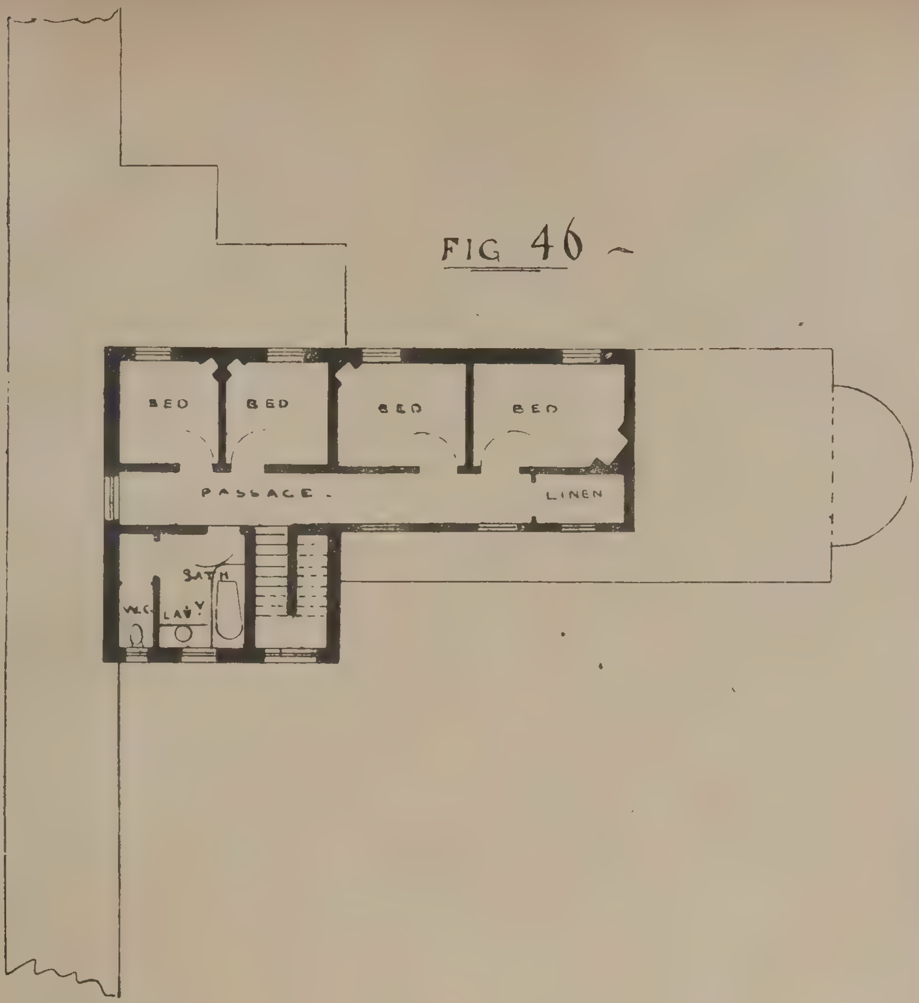


FIG 46 ~

by throwing himself from the upper levels of the staircase; therefore there should either be no open well-holes to the staircase, or otherwise, railings should be carried up to the ceilings, even in the buildings for officials.

If it be not practicable to provide every resident attendant and nurse with separate sleeping apartments, the attendants' dormitories should certainly be divided into cubicles, with every reasonable provision for privacy; but it would always be far better that most of the officials should have sleeping accommodation in blocks of buildings disconnected with the wards for patients.

In many asylums the accommodation for the attendants is very unsatisfactory. Separate mess-rooms are sometimes omitted, and some of the officials are compelled to take all their meals in the same apartment with the patients; and if in ordinary county asylums the accommodation for both attendants and patients is still very defective and insufficient, yet matters in the "short-period lunatic" wards, and in the imbeciles' wards in workhouses, appear also in many instances to compare very unfavourably with asylum accommodation generally, particularly as regards the floor spaces, heights, and cubic space permitted by the instructions of the Local Government Board, which allow in the day-rooms a floor space of 20ft., a height of 10ft., and a cubic space of 200ft. for each patient, whereas the Commissioners in Lunacy demand that "the day-rooms, of which there should be at least one in each ward, should afford not less than 40ft. superficial for each patient, not reckoning corridors of less width than 10ft. Where corridors of that or any greater width exist, the day-rooms may afford only 20ft. superficial for each patient, it being understood that a space equal 40ft. superficial be provided for each patient *in the day-rooms and such corridors combined.* Mere passages of communication are not to be considered as corridors." In other respects, the constructional arrangements for imbeciles and "short-period lunatics" in workhouses are somewhat similar to those required for county asylums.

In large workhouses, provision for the reception of "short-period lunatics" is sometimes provided in connection with the wards set apart for imbeciles; but in the smaller workhouses it is considered to usually suffice to "so arrange two wards, an *attendants' room with padded room,* that one of the wards may, if necessary, be entirely shut off from the other portion for the joint use of a patient and an attendant."

The requirements and suggestions of the Local Government Board state that the padded room may be most suitably fixed inside the attendants' room against an external wall, and in any case should be entered directly from that room. Also that the padded room should have a superficial area of about 63ft., exclusive of the padding; 9ft. by 7ft., or 8ft. by 8ft., are suitable dimensions, and there are objections to more than slight variations from them in either direction; it should be at least 10ft. high. The attendants' room should have a floor area of not less than 100ft. superficial, exclusive of the space occupied by the padded room. The padding, which may be of cocoa fibre or other suitable material, and at least 4in. in thickness, covered with indiarubber or painted canvas, should extend to at least 7ft. 6in. from the floor, and be capped with a strong slope, fixed with screws, and sloping at an angle of about 30° from the wall in order to afford no hold to a destructive occupant; the floor should always be padded, cork chips covered with indiarubber or painted canvas, so laid as to be thoroughly watertight and washable, being commonly used; it is desirable to bed the floor on concrete or similar material, to prevent damage either by vermin or dry-rot. Light may be provided by a small window of $\frac{1}{2}$in. plate glass fixed high up in the external wall; it should be furnished with a shutter either on the outer side or inside, so arranged as to lock into a recess when not in use. For artificial light a fan-light should be provided. The gas jet should be on a jointed bracket to turn away, so as to be wholly out of sight of the occupant of the padded room when necessary.

Ventilation may be furnished by air-bricks near to the wall plate, and by a strong grating in the lower 3in. of the door below the padding, when the padded-room is situated wholly within the *attendant's room,* the partition may stop about 2in. below the ceiling. Warmth in a padded-room is a specially important matter, as patients of this class are frequently inclined to strip themselves. When the *padded room* is not so situated as to share the warmth of the *attendant's apartment,* means should be provided for passing into it warmed air, either from a coil of hot pipes or from a chamber behind the grate in the attendant's room, through air-bricks in the wall, at a suitable height above the padding; a roomy approach, free from awkward angles or projections, is a most important disideratum for a padded room. The door, which should ordinarily be about 3ft. wide, should open outwards to its full extent, so that the padding on it may not diminish the clearway. The door should be so hung as to prevent danger of crushing a hand or foot in the hinges when the door is being closed, and the fastening of the door should be by means of a snap-lock, with bolts near to top and bottom of door respectively, and commanded by a single handle, and it may be desirable to arrange a supplemental drop-bolt in such manner as to allow of partial opening of the door for ventilation and inspection. Two inspection slits, the upper one vertical, the lower one horizontal (being for a lantern to light the floor where the gas-jet may fail to illuminate it), should be provided in the door. They should be protected by strong plate-glass, sunk so as to be beyond reach of a blow from the occupant.

The above suggestions for a padded-room, in connection with an attendant's room, appear to fairly solve a difficult subject.

(*To be continued.*)

NOTES FROM EDINBURGH.

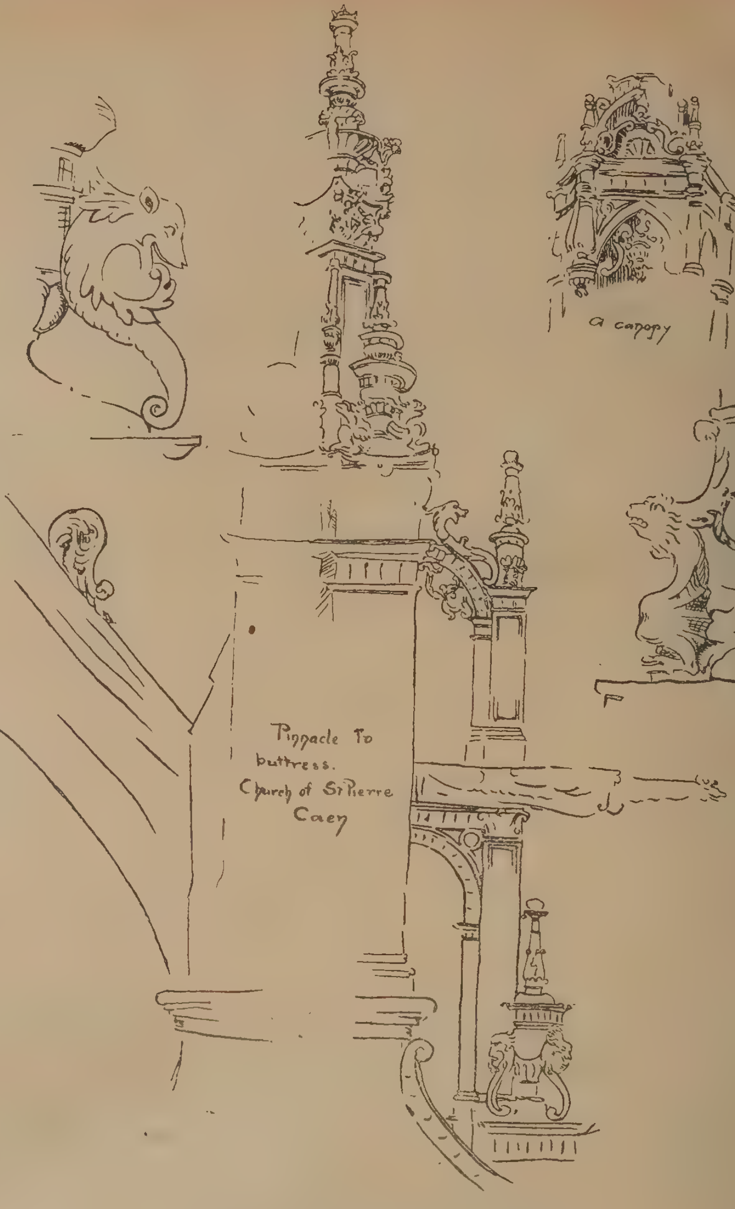
THE reconstruction of the Waverley Station here, which has been going on for more than a year, eclipses in its magnitude all other work now carried out in the city. It is very much in evidence from any point of view to the east of the Mound, and more especially to the east of the North Bridge, where one can estimate the vast encroachment that has been gradually made upon the city precincts for convenience of the company's traffic. Probably, had the area of this encroachment been anticipated at the first, the goods traffic station, at least, might have had its location in a neighbourhood equally convenient, and further from the passenger sheds. A sea of dirty glass is not in happy contrast with garden-ground and grassy slopes; still, it must be confessed that the widening of the way westward of the Waverley Bridge has not made the alteration with injurious effect on the appearance of the gardens. As to the large and wider space acquired to the east of the North Bridge, nothing of any interest was left after Trinity College Church had been sacrificed to meet the exigencies of the railway, and there will be little to regret in contemplating the ruins to which the operations of the preceding year have reduced a great part of New-street and other dingy thoroughfares, with their commonplace tenements. Something better can hardly fail to rise in their place. The new tunnels have been completed for some time, the Waverley Bridge has been widened, and a vast extent of massive underground arching has been built to carry the floors, &c., of the extended station. Provision has been made for keeping open old thoroughfares between the old and new town at the lower levels, and some progress has been made with the piers of the new bridge. From the east the bridge presents itself to view as an interesting longitudinal section, and looks much better with its relieving arches exposed than the elevation on the other side. The large block of buildings at the north end of the bridge, with a frontage in Princes-street, is still standing, and as shops have been erected there to provide for tenants dispossessed in North Bridge-street, a good portion will remain while the offices are being built up from the low level of the railway. The cost of all the reconstruction scheme approximates to three millions sterling, which means a good time for the building trades, as the completion must be distant some five or six years at the earliest.

The city has a large—many think too large—share of the cost of rebuilding the bridge: £50,000 out of the estimated £80,000, and the civic authorities are very naturally falling into the habit of launching large and costly schemes, with the inevitable result that the rates are rising. They have recently purchased the farm of Colinton Mavis, where a fever hospital will be erected. The sanitary and amenity guardians have not been remiss, having lately purchased a piece of ground by way of preserving the amenity or privacy of the Arboretum, and have made a bridle-road round the Stockbridge Park, which does not improve its appearance, and seems a very needless expense, with miles of the best riding road everywhere around. Talk is heard of the city purchasing the extensive premises of McLaren and Co., in the High-street, for £17,000, and a Bill is preparing to extend the boundaries of the city by amalgamating Leith and Portobello on the east, and going round by Corstorphine and Colinton to Duddingstone. Edinburgh will thus have an area of about 20 square miles.

The Prudential Assurance Co. have done a graceful thing in yielding to the representations made by the authorities, who protested against the erection of a terracotta building alongside the stone ashlar work for which Edinburgh has long been famed. It appears that the company's building, though unexceptional in architectural design, appears to little advantage there, and their interests will not suffer, and the city be a gainer by their resolution. It is to be hoped that a proper stone will be employed, and nothing can be better than that selected for the Jenner building, which stands the weather well. Unfortunately for St. Andrew-square, at the corner opposite, a huge projection in timber has lately thrust its obtrusive and unsightly proportions on the eye, utterly spoiling the entrance from St. David-street as well. The design is a skeleton of the most commonplace details, brought out to the limits of the property, and carried up through two floors, burying the stone tenement, and leaving little visible but the gable and the chimneys. The tailoring firm which has perpetrated this obnoxious specimen of shop architecture, has no doubt succumbed to the advertising and cheap ticket style of doing business. The house is the one for which David Hume left the house he thought so much of in James-court; but this circumstance does not seem to have had any consideration given it. A mere modest addition of one story would have been much less objectionable, and the deep projection is quite unnecessary, and spoils the corner for the pedestrian who likes to turn it easily. Edinburgh is not improved by its shop architecture, more especially when it comes forward, as it does so often. The earliest samples, without projection, are invariably better. The latest novelty is making the whole shop front down to the pavement one sheet of plate glass; but this gives one the uneasy impression that the window has subsided, and it leaves a large portion of the glass exposed to accident and disfigurement of any kind.

The large addition to the High School is completed in its masonry, and is imposing in its magnitude. It stands to the east of the present building, and detached from it, on a slightly higher level, and appears to double the amount of accommodation, or nearly so. The ground plan has a central façade and projections at each side in front, and two side wings. It is thus a long building of two floors, and is altogether wanting in the picturesque variety, which constitutes the charm of the original. The details of the architecture are all copied from the plainer portions at the back, having at the roof a heavy blocking crown over the usual cornice and frieze, with pilaster corners, &c. Something might have been done to relieve the ponderous monotony with pediments, and roofs of more variety and that without additional expense.

The electric-lighting of the thoroughfares has been successful, with some slight exceptions. The consumption of gas, however, has not diminished, and the price has been lowered. The old chimney of the gasworks is insecure, and a new one of better architectural design is to be built further south—so that, in the course of a year or two, this portion of the city's aspect will have undergone transformation greatly for the better.


a canopy
Pinnacle to buttress. Church of St Pierre Caen

(From a Sketch by Mr. E. R. Barrow.)

ENGINEERING TOOLS AT POMPEII.

UNDER the title of "Things of Engineering Interest found at Pompeii," Professor Goodman gave his inaugural lecture in the Engineering Department of the Yorkshire College, Leeds, on Friday night. The lecturer remarked that he had recently visited Pompeii, and was not only charmed by the great beauty of the works of the ancient Romans, but also by their extreme ingenuity as mechanics—in fact, it was a marvel how some of the instruments and tools they were in the habit of using could possibly have been made without such machinery as we now possess. After explaining the situation and destruction of Pompeii by showers of ashes and mud, not lava, as is usually supposed, in the year 79 A.D, Professor Goodman showed a series of about fifty lantern slides, prepared from photographs taken by himself in Pompeii last Easter. The streets, he explained, were used as waterways to carry off the surface water, and probably sewage, from the houses. The pavements were raised about a foot above the streets, and stepping-stones were provided at intervals for foot passengers. The horses and chariot wheels had to pass between, and in many places deep ruts have been worn by the chariot wheels in the stone-paved streets. The water supply of Pompeii was distributed by means of lead pipes laid under the streets. There were many public drinking fountains, and most of the large houses were provided with fountains, many of most beautiful design. The amphitheatre, although a fine structure, capable of seating 15,500 people, was small compared with many in Italy. The bronzes found at Pompeii reveal great skill and artistic talent. The bronze brazier and kitchener were provided with boilers at the side, and taps for running off the hot water. Ewers and urns have been discovered with internal tubes and furnaces precisely similar to the arrangement now used in modern steam boilers. Several very strong metal safes, provided with substantial locks, have been found. The locks and keys were most ingenious, and some very complex. On looking at the iron tools found in Pompeii, one could almost imagine he was gazing into a modern tool shop, except for the fact that the ancient representatives have suffered severely from rust. Sickles, billhooks, rakes, forks, axes, spades, blacksmith's tongs, hammers, soldering-irons, planes, shovels, &c., are remarkably like those used to-day; but certainly the most marvellous instruments found are the surgical instruments, beautifully executed, and of design exactly similar to some recently patented and reinvented. Incredible as it may appear, yet it is a fact, that the Pompeiians had wire ropes of perfect construction.

CLASSIC DETAILS AND THEIR APPLICATION.*

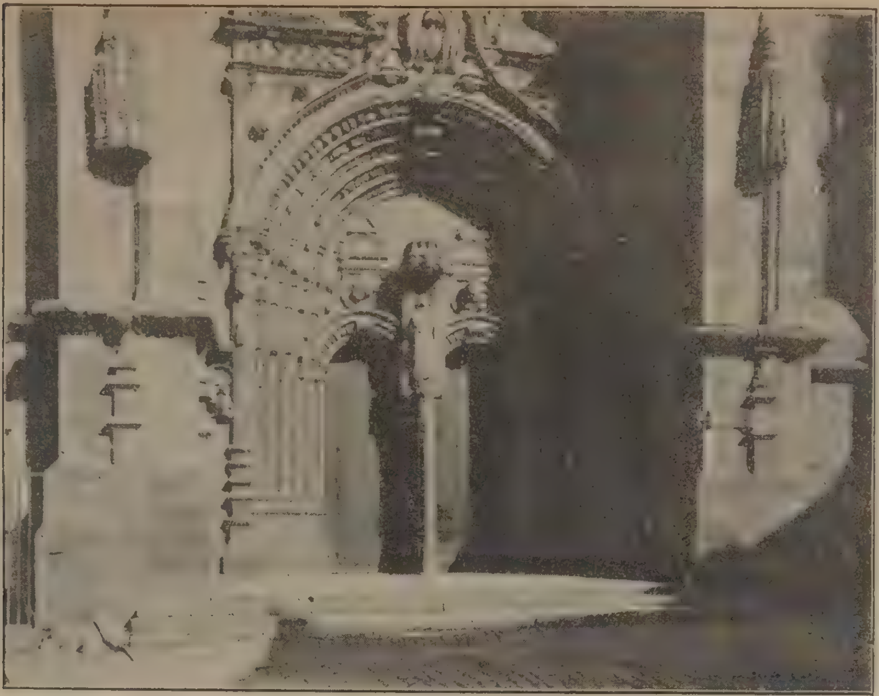
By G. A. T. Middleton.

XV.—FRENCH RENAISSANCE: MINGLING OF GOTHIC FORMS AND RENAISSANCE DETAILS.

AS the Gothic had been an imported style in Italy, so was the Renaissance in France; but whereas Italy had always received the Gothic as a stranger, ill-suited to the soil, France welcomed the Renaissance with open arms, and took it to herself and made it hers, developing one of the most beautiful forms of Classic architecture known as her own peculiar development. But it did not spring into existence straight away. France was Gothic, and had been Gothic for centuries, when the Renaissance was imported from Italy in the 15th century, it being there already a perfected style. The beauty of its delicate details was appreciated, but its general principles were not understood; and it is consequently no matter for surprise to find that the details were taken as they were found, and planted upon the Gothic outlines—not incongruously or coarsely, but with a refined sense of how and where this could be done with safety, which speaks volumes for the native artistic talent and good taste of our neighbours. The Gothic, we must remember, was in decay at this time—its prime was long

---

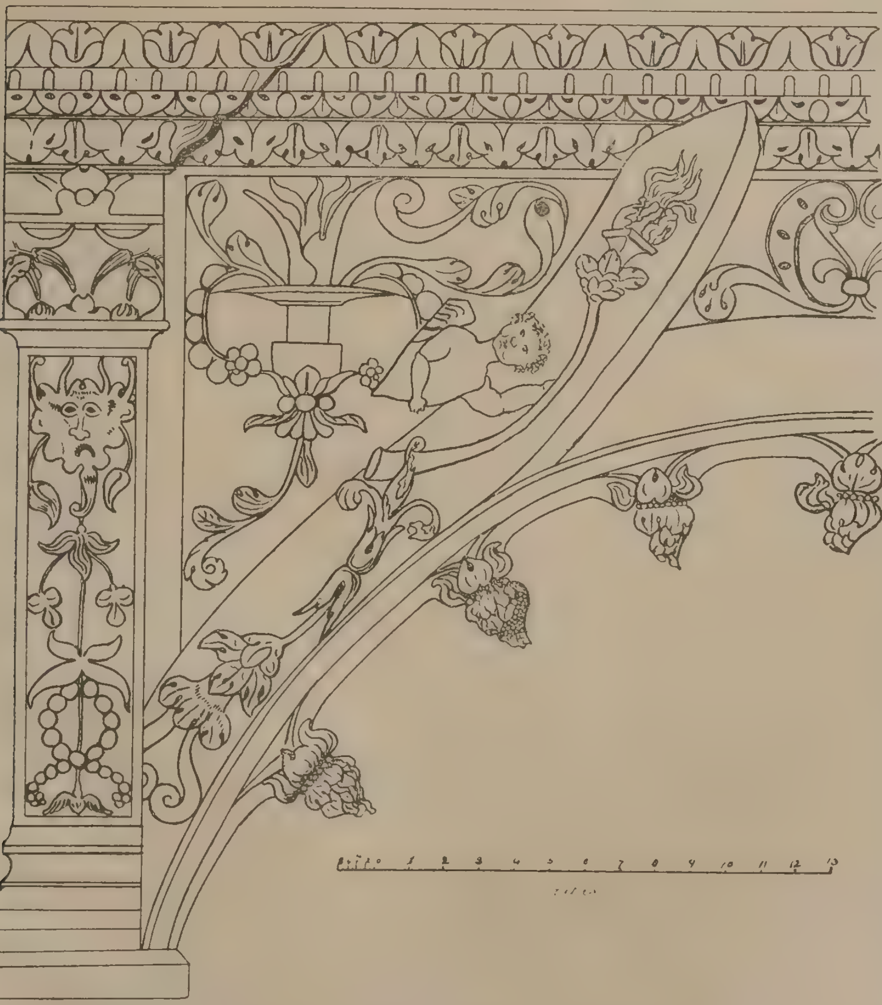
* All rights reserved.



WEST DOOR OF CATHEDRAL, GUINGAMP, BRITTANY.

past; and in France it was lapsing into senility—the love of the people for the light and delicate precluding the sturdy old age, which it enjoyed in England; and the new details brought from Italy were welcome as a new covering to the old bones. That the old style was to disappear and the new clothing to take a new body to itself, making as perfect a whole as that which it supplanted, and yet an entirely different whole, could scarcely have been understood. The process was a gradual one; but it was hardly a transition so much as a gradual ousting of the decrepit old by the vigorous new.

It will thus be seen that it was not the orders which first appeared in France, nor principles of design based upon the orders, but the fanciful panelling, the mouldings, and the enrichments which went to decorate the smaller things in Italy. These could be employed without upsetting traditionally-established methods of construction which they were to be used to embellish, and even in combination, where it was convenient, with ornaments which were still wholly Gothic.



FRENCH ARCADING IN CARVED OAK. (EARLY 16TH CENTURY.)

The general effect of this curious and frequently charming combination may be tolerably well gathered from the three illustrations given herewith. To illustrate all the eccentricities perpetrated would be obviously impossible, as a free admixture always allows of great variety, and all is not equally good. For example, the east end of the church of St. Pierre, at Caen, has much the appearance of an elaborate bridecake, the detail being too small and too lavishly employed. Yet this detail itself is well conceived, even if it be a quaint rendering and curious application of Italian ornament. The general form of the pinnacle, the use of the false flying buttresses, and the gargoyle, as shown in the illustration given, are all Gothic, and yet with these the Renaissance grotesques and mouldings, panellings and semi-arches are in good harmony.

Again, the west door of Guingamp Cathedral in Brittany (whose whole south triforium is of this mixture) is Gothic in its form, and enriched with detail which might have been worked in Italy, and with truss keystones and a rectangular Renaissance hood, supported by pilasters, subordinate to the Gothic outline, and so not clashing with it. The detail of the carved wood arcading of the early 16th century shows even more clearly a combination of Gothic and Classic forms, which was by no means uncommon. A general sketch of this same arcading, by Mr. A. E. Chancellor, appeared in last week's BUILDING NEWS, and may be referred to with advantage. The arch and the cusps belong to the dying style; but the carved wreaths and scrolls are of Italian importation, and the leaf and dart enrichment carries one's thoughts back to ancient Rome and Greece.

Wanting in the breadth and dignity which is only to be found in a design whose broad principles rule its details, the work of this time of change in France is still frequently so delicately beautiful that one cannot wonder at its passing popularity amongst modern seekers after the beautiful and the original, especially when applied to small gems rather than great monuments.

A WIDE-SPAN STATION ROOF.

AN important railroad station is described in a paper read at the annual convention of this year, and given in the *Transactions* of the American Society of Civil Engineers. It is the Philadelphia and Reading Terminal Station, and is described by Mr. Joseph M. Wilson, M.Am.Soc.C.E. Several plans, sections, and views are given of the building in the above journal. The principal feature of the station is the roof of the train shed; it is a large three-centred, pointed arch roof in a single span, and hinged at the crown and springing line. We give a few dimensions. The span, centre to centre of pins, is 259ft. 8in.; the height between centres of pins at crowns and springing, 88ft. 3in.; out-to-out span, 266ft. 6in.; height from centre of pin at springing to starting point of centre curve at eaves, 33ft. 4in.; depth of arch rib at crown, 6ft.; at haunch, 12ft. 4¾in., and the pin at crown is placed in centre of depth of rib; height from pavement to centre of pin at springing, 20ft. 6in., and extreme height from pavement, 122ft. 9in.; total length, 662ft. 11in. "The exterior curve of each semi-arch has a radius of 120ft. for an angular distance of 41½° from horizontal, and thence a radius of 310ft. to the crown; and the interior curve has a radius of 50ft. for an angular distance of 39½° from the horizontal, and thence a radius of 280ft. to the crown. The arch is therefore a compound curve, four-centred for the outer flange member, and six-centred for the inner flange." Its form and proportions were designed with great care to produce an artistic and architectural effect, and agree with the requirements of economical construction. Looking at the cross section given, it presents a graceful pointed four-centred arch, the ribs widening from the crown to the springing and of open lattice bracing, and its main features resemble those of the St. Pancras station roof of the Midland Railway, London. Each semi-rib is divided into six panels by purlins, with three ventilators. The arches are in pairs, placed 50ft. 2in. apart; those of each pair are 5ft. apart to centres. "The weights from these arches are carried by wrought-iron girders acting as cantilevers, with projecting stone brackets below." The assumed loading areas are as follows: Weight of trusses, purlins, and jack rafters, 25lb. per square foot; weight of covering, 8lb., snow

12lb.; total, 45lb. per square foot. The wind-pressure was taken at 35lb. per square foot against a vertical surface, the pressure normal to the roof surface depending on the curve or angle, ranging from 30lb. per square foot at the springing to 15lb. per square foot at the crown. Full details of the roof, which is of wrought iron, are given in Mr. Wilson's paper.

OBITUARY.

Mr. Philip Henry Lawrence, F.R S., late of Lincoln's Inn and Carlyle Mansions, Chelsea, barrister-at-law, died on Tuesday at his residence, 8, Royal-crescent, Brighton, aged 73 years. Mr. Lawrence was admitted as a solicitor in the year 1848, and established a large practice in Lincoln's Inn-fields, the chief feature of which was that it included the conduct of all the heavy litigation which resulted in the preservation for the public of the metropolitan commons. It was owing very largely to Mr. Lawrence's energy and to his intimate knowledge of this branch of the law that the commons in the immediate neighbourhood of London were preserved as open spaces for the benefit of the public. Mr. Lawrence took an ative part in forming the Commons' Preservation Society, and acted as its solicitor until he ceased to practise in that branch of the profession. In 1868 Mr. Lawrence was appointed solicitor to the Metropolitan Board of Works, which post he held until its abolition, and for many years held the post of conservator of Wimbledon Common as nominee of that Board. He was the author of "Cotta on Rocks"—a handbook on mineralogy, and of "The Partition Acts, 1868 and 1876."

Mr. Robert Barker, architect's assistant, aged 46, committed suicide in a deliberate manner in his bath at the hotel, 45, Woburn-place, Russell-square, on Saturday night. It appears that the deceased, who had resided at the hotel for a considerable time, on Saturday night retired to have a warm bath. An hour afterwards he was discovered in the bath dead. The police-surgeon who was called in found that Mr. Barker had opened an artery in his left arm by means of a razor, and so had bled to death. At the inquest, held on Wednesday, it was stated that deceased had been for years in the employ of a firm of architects at 5, Bedford-row, W.C., up to a fortnight ago, when he resigned in a fit of temper, and had since been unable to obtain another situation. It also transpired that he had lived alone in lodgings, apart from his wife and children, for the last four years. A verdict of "Suicide while of unsound mind" was returned.

* * *

The electricity works of the Corporation of Newport, Mon., were opened, and the inauguration of public street lighting in the borough was made, on Monday. Under the advice of Professor Henry Robinson, Mr. Robert Hammond was appointed consulting engineer, and the works have been carried out under Mr. Hammond's supervision on the lines he has adopted at Leeds, West Brompton, Dublin, Madrid, and Blackpool. The architect for the buildings was Mr. W. Conyers Kirby.

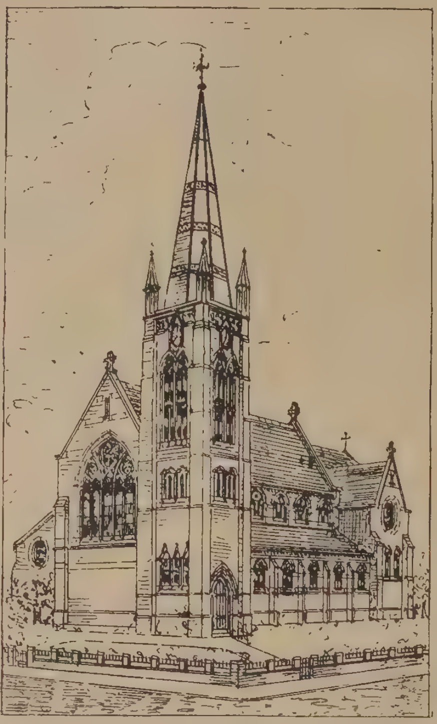
The opening of the Wear Valley extension railway for passenger, goods, and mineral traffic, will take place on Monday next, the 21st of this month. The line penetrates into the heart of a broad expanse of high hills and moors, reaching 2,000ft. above sea-level, and into an area rich in its natural soil, being on the Yoredale rocks, and, consequently, capable of cultivation to the very top, where the heather blooms. It will perhaps be known in the future as a health resort.

A staff of surveyors have been sent from London to Dover for the purpose of commencing the surveying of the area for the National Harbour, for which there was a vote on account by Parliament this year. Messrs. Coode, Son, and Matthews have been appointed engineers by the Admiralty. All the plans are to be completed by March next, when tenders will be invited. The actual work is to be commenced by midsummer next, and will be pushed on rapidly. A large torpedo station is to form a part of the work.

The new public cemetery of the district council at Shipley was opened on Saturday. The cemetery, nineteen acres in extent, is situate in Nab Wood, the prettiest part of the Aire valley. The front entrance is on the Bingley and Keighley road. The ground consists of about six acres of tableland, the rest being undulating woodland, well-timbered, with gravelly subsoil. The chapel and lodge buildings are not yet completed; but the laying out of the grounds by Mr. Dawson, the council's surveyor, is in a forward state. The outlay has been £10,000.

CHURCH OF ST. FRANCIS DE SALES, TOTTENHAM.

This church, opened on the 16th inst. by Cardinal Vaughan, is situated in the High-road, Lower Tottenham. The design of the building is in the Early Decorated style. The extreme external length is 123ft.; of this the nave and aisles take 84ft., and the chancel 39ft. The width of the nave and chancel is 24ft., and the total width across nave and aisles is 49ft. The nave is divided into six bays, the arcade is carried on quatrefoil columns with a three-light clerestory window over each arch. In the west gable is a slight tracery-headed window. The chancel is in three bays, with an apsidal end in addition, with a groined timber roof, which springs from the cloistered shafts of the arcade around it. In each of the five end bays there is a long single-light window, with tracery in the head. The nave is covered with an inner roof of pitch-pine. At the S.W. corner of the nave a tower and spire, forming the principal porch, will rise to the height of 145ft., and at the N.W. corner is the baptistery. The accommodation is for 600. The architects are Messrs. Sinnott, Sinnott, and Powell, of Liverpool.



R.C. CHURCH OF ST. FRANCIS DE SALES, TOTTENHAM.

The R.C. mission of Tottenham is somewhat remarkable. It was founded just over a century ago by one of the most distinguished of the French emigrant priests, the Abbé de Cheverus, who afterwards went to America, and became the first Bishop of Boston. At the Restoration he was recalled to France, where he was Bishop of Montauban, and finally Cardinal Archbishop of Bordeaux. G. W.

* * *

The directors of the Newcastle-on-Tyne Architectural Society have purchased an estate of 215 acres at Stocksfield, which will be laid out as a building estate, being divided into 174 plots, ranging from ¾ acres to 3½ acres in extent. Messrs. Watson and Scott, of Newcastle, are the surveyors.

The town of Portsmouth, which was redrained in 1866 on a high-level and low-level system, is in an unsatisfactory condition, although storage reservoirs were built near Fort Cumberland in 1881, under the advice of Sir F. Bramwell. The corporation have now voted £30,000 to be expended, under the direction of Mr. Philip Munch, the borough engineer, in dealing separately with the rain-water.

A public fountain at Pontypridd, provided by Mr. A. Thomas, M.P., was unveiled on Thursday in last week. It has been constructed from designs by Mr. Charles B. Fowler, F.R.I.B.A., of High-street, Cardiff, and has a stone canopy supported on four shafts. The sculptors were Messrs. Martyn, of Cheltenham, and the copper work was carried out by Messrs. Letheren, of the latter town.

COMPETITIONS.

Shoreditch.—Thirty-five designs have been sent in for the public baths, with laundry, and the free library to be built in Pitfield-street, Shoreditch. The plans are now being considered by the professional referee to the commissioners and vestry, Mr. Rowland Plumbe, F.R.I.B.A., so that the award of the combined board may be looked for at no distant date, we presume.

Bridgend.—In a limited competition for a new official block and additional casual wards, &c., at the Bridgend and Cowbridge Union Workhouse, the building committee reported the adoption of the plans of Mr. P. J. Thomas. The estimated cost of the proposed work is £3,500.

CHIPS.

The present Mayor of Southampton, Mr. Levi Button, builder, of that town, has been elevated to the aldermanic bench of that borough.

Some correspondence has passed between the Department of Science and Art and the London County Council with a view to the latter body taking over the charge and maintenance of the Bethnal Green Museum. The overtures made by the Department have not, however, been favourably entertained by the County Council.

Meissonier's monument is to be unveiled in the gardens of the Louvre on the morning of the 25th inst. The effigy of the great painter has been sculptured by Mercié. It will stand near the quay facing Raffet's memorial.

A scheme is proposed for the construction of un undercliff drive on Bournemouth promenade at an estimated cost of £35,000. Towards this sum the London and South-Western Railway Company have taken powers to contribute £10,000.

A grand jury in New York have found indictments for manslaughter in the second degree against Charles P. Behrens, the architect of the collapsed iron buildings in that city; Dennis E. Buckley, the inspector; Edward J. Youdale, the clerk; George H. Parker, the contractor; Thomas Walker, the superintendent; and Thomas Murray, the foreman mason; and they will be tried in due course.

A conference of representatives of the different authorities interested in the port of Manchester was held on Tuesday, for the purpose of considering the question of forming a sanitary authority.

The district council of Colwyn Bay decided, on Tuesday, to proceed with the construction of a promenade, at an estimated cost of £12,000, in accordance with plans prepared by their surveyor.

A statue of the late Mr. Ralph Ward Jackson, the founder of West Hartlepool, is about to be placed in the public park of that town, at the sole cost of Col. J. W. Cameron.

Dean Farrar appeals for about £300 for the preservation of the picturesque ruins of Richborough Castle. The remains have been acquired by a few donors for £1,072, and the further sum is needed for fencing, &c.

The day schools attached to the Wesleyan chapel, Ettingshall, have been enlarged, at a cost of about £900, to provide accommodation for about one hundred more children. The designs for the alterations were by Mr. R. J. Rowe, Bilston, and the work has been executed by Mr. H. Cave, Wolverhampton.

The interesting old coaching-house adjoining the Romford Brewery, the Old White Hart, which is said to be more than two hundred years old, and to have been several times patronised by Royalty, is about to be demolished.

The Great Western Railway Company contemplate applying to Parliament next session for powers to construct a new line of railway from Pilning or Patchway to Dauntsey. The places mentioned are in almost a direct line, and a considerable saving of distance would be effected by the proposed new railway, in connection with the company's service to South Wales.

The First Ordinary General Meeting of the Session 1895-96 of the Surveyors' Institute will be held on Monday, November 11, when the President, Mr. Daniel Watney, will deliver an opening address.

At Lambeth Police-court on the 10th inst., Mr. John Marsland, a builder, of York-street, Walworth, answered a summons taken out by Mr. J. P. Norrington, surveyor to the Lambeth Vestry, complaining that he unlawfully commenced to lay or dig out the foundation of a new building on certain land in Vauxhall-walk, without having first given seven days' notice in writing. After evidence had been given by the vestry's officials, the magistrate said a technical offence had been committed, and ordered the defendant pay a nominal penalty of 20s. and 2s. costs.

CONTENTS.

Another Cathedral Competition 545
Opportunities of the Young Architect 545
The New Gallery Exhibition 546
Cluny Museum.—V. 547
House Painters and Decorators in Conference 548
Mr. Passmore Edwards and West Ham 549
Architectural Association 550
Building News Designing Club 551
County Lunatic Asylums.—XXX. 552
Notes from Edinburgh 553
Engineering Tools at Pompeii 554
Classic Details and their Application 554
A Wide-Span Station Roof 555
Obituary 556
Church of St. Francis de Sales, Tottenham 556
Competitions 556
The Building News Directory ... ... ix.
Our Illustrations 557
Architectural and Archæological Societies 576
Engineering Notes 576
Building Intelligence 577
Correspondence... 579
Intercommunication 579
Legal 579
Legal Intelligence 580
Water Supply and Sanitary Matters 580
Stained Glass 580
Our Office Table 581
Meetings for the Ensuing Week 582
Trade News 582
Tenders 582

ILLUSTRATIONS.

"THE FALL OF THE REBEL ANGELS," BY JEROME BOSCHE.—PUBLIC BATHS, WASHHOUSES, AND MUNICIPAL BUILDINGS AT DEPTFORD.—SIR WILLIAM CHAMBERS'S TEMPLE AT CLONTARF, NEAR DUBLIN.—NEW SCHOOLS AT TUNSTALL.—CHURCH OF ST. LAURENCE, BARTON, NEAR PRESTON.—DIME, OR TITHE POT, AND FISH MOULD FROM CLUNY.

Our Illustrations.

"OLD MASTERS" ON THE CONTINENT.—NO. XXV.: "THE FALL OF THE REBEL ANGELS."

There are no examples of the Dutch school in our National Gallery of so early a date as that which belongs to the strange picture which we illustrate to-day, from the Royal Gallery at Brussels, by Jerome Bosche (or Bos, as he is sometimes designated), and no specimen of this master's handiwork is included in the Trafalgar-square collection or in the Galleries of the Louvre. His repute almost entirely rests upon the curious grotesque representations of devils and incantation subjects, which he painted with so remarkable a fancy and almost unrestrained freedom. The composition of his conceptions is essentially crowded and involved, replete in minute detail, with a tendency to meteoric lininess, relieved by a sort of utricular arrangement, such as strongly marks the drawing of the subject chosen for illustration to-day. The inventive fancy of the artist seems unbounded, and his power of delineation is in every sense remarkable, as he appears to revel in every conceivable outlandish idea and every sort of contradictory pose and form. In the midst of this extravagance, carried as it sometimes is within the region of the enjoyment of wantonness, it is to be noted how reserved and dignified the painter is in each instance in the handling of his good angels who appear as the instruments of Divine justice, performing their task of punishment and expulsion without the least trace of spite or hate as they pass unscathed through the limitless abyss peopled by the condemned. Little is recorded of Jerome Bosche calling for comment here, beyond the facts that he was born in 1470 and died in 1530.

NEW BATHS AND WASHHOUSES FOR DEPTFORD.

This parish, with its population of 110,000, and a rateable value of £493,000, has been one of the few remaining instances of an important London district without public baths and washhouses. Commissioners of Baths were appointed some years ago to prospect sites, and in 1890 designs were obtained in competition for adapting the old Deptford Lecture Hall as public baths. The designs of Mr. Thos. Dinwiddy, of Greenwich, were then selected, but objections were raised in the vestry to the proposed site. Another site in New Cross-road of three-quarter acre has since been bought at a cost of about £7,000, and the commissioners instructed Mr. Dinwiddy to prepare plans for the new buildings. These plans were adopted by the vestry of St. Paul's, Deptford, and the work is in hand. The accommodation comprises a first-class swimming-bath 110ft. by 35ft., with galleries; a second-class swimming-bath 80ft. by 27ft.; slipper baths for 15 first-class and 30 second-class for men, and five first-class and ten second-class for women. There is a public laundry, and administrative accommodation for the board and clerk and the superintendent. A well on the site will supply the baths. In addition to the intended baths and washhouses, the architect's instructions comprised the provision of a new vestry-hall and offices for the parish, and the illustrations which we now give represent the entire project, showing the façade in New Cross-road. The plans clearly indicate the internal arrangements. The baths will have a frontage in Laurie-street, and of this elevation we shall give a working drawing by the architect at an early date. The builder is Mr. H. L. Holloway, the contract amount being £32,950.

CASINO AT MARINO, CLONTARF, CO. DUBLIN.

In 1757 Sir William Chambers, to the instructions of the first Earl of Charlemont, prepared the drawings for the Casino, or Temple, at Clontarf. Sir William had already made working drawings for a reproduction of the Monument of Lysicrates; but this had fallen through in favour of the present building. The principal floor contains a vestibule leading into the saloon, off which are two smaller rooms—a study and bedroom. The details of these rooms are very beautiful, the floors being of inlaid wood in geometrical design of various colours; the doors are of mahogany and cedar, with their mouldings enriched, the handles being very fine specimens of the brassworker's art. The ceiling of the vestibule is panelled, the frieze being enriched with representations of the various arts and sciences, and the portion which is semicircular on plan has a depressed semi-domical ceiling in small panels. The ceiling of the saloon has a very large cove, also panelled and further enriched; whilst in one of the smaller rooms is to be found the Signs of the Zodiac in small figures on the vaulted ceiling. The plan, which on this floor takes the form of a cross, develops on the basement floor into a square, with an area 9ft. wide on all four sides. On this floor are found kitchen, butler's pantry, and other offices, the whole being vaulted. Off the area are two vaults on each side for storage purposes. The bedroom floor contains four bedrooms, and above all is a rectangular flat, from which a lovely view of the surrounding country and Dublin Bay may be obtained. The particular order employed, Doric, is a far richer example than any given by Sir William in his work on the Orders, which may be accounted for by the fact that the ornament throughout was the work of an Italian artist named Cipriani, and this may also be the reason for the variations in details which the building presents when compared with the plates in the Five Orders. Since 1876 the building has been in the hands of the trustees of the O'Brien Institute close by. Frederick H. Jermyn.

[The original drawings from which our illustration is taken were shown at this year's Exhibition of the Royal Hibernian Academy in Dublin.]

TUNSTALL HIGH STREET SCHOOLS.

The schools here illustrated occupy a most central and convenient position. The site contains 3,674 square yards, having a good frontage to the High-street, and surrounded by Woodland-street, Garden-street, and Wood-street, the cost of which has been £2,500. The school buildings will be of two stories, and will give accommodation on the ground floor for 330 infants, and on the upper floor for 460 boys and girls, to be worked for the present as a mixed department. The accepted tender is that of Messrs. Yorke and Goodwin, of Tunstall, for £6,690. The principal frontage is to High-street, is two stories in height, and has a commanding appearance, being faced with red pressed bricks and terracotta dressings. A tile roof and a handsome ventilating turret complete the design. The classroom principle is adopted; but by means of glazed sliding partitions, two or more rooms can be thrown together. The upper floor will be of fireproof construction, also the staircases. The rooms are admirably lighted and ventilated, lofty, and well proportioned. Ample cloakrooms and lavatory accommodation and teachers' rooms are provided to each department. The entire building will be heated with hot water, and supplemented by open fireplaces. The interior walls will have glazed tiled dadoes and plastered above, and all the woodwork will be stained and varnished. Covered playgrounds are provided under a portion of the main building, and also good open playgrounds with asphalted surface, and the usual latrine blocks are arranged for. A convenient caretaker's house adjoins Woodland-street. The architect is Mr. A. R. Wood, of Tunstall, the architect to the Wolstanton School Board.

CHURCH OF ST. LAWRENCE, BARTON, NEAR PRESTON.

This church, now in course of erection, replaces an older one which has been found inadequate and unsuitable for the needs of the parish. The corner stone was laid last April by the Right Hon. Viscount Cross, G.C.B. The plan consists of nave, north and south aisles, chancel, side chapel, and vestries, &c. The main entrance is at the south-west angle through a tower arranged as a porch, and surmounted by a spire, the total height being 94ft. Another entrance is provided for the vestries. The main walling is in Yorkshire parpoints, backed with brickwork, and relieved by red stone dressings from Runcorn quarries. The roofs are to be slated with Buttermere green slates. The inside woodwork generally will be pitch-pine unvarnished, the principal fittings being in oak. The walls are finished in plaster. The total accommodation provided is 336, with space for additional seats when required, and the cost, including the spire, about £5,000, in which amount is included a bequest of £2,500 by the late Mr. C. R. Jacson and another £2,000 by the late Miss Cross. Mr. T. Croft, of Preston, has the general contract, the joiner's work being carried out by Messrs. Hatch, of Lancaster. Mr. R. Knill Freeman, F.R.I.B.A., of Bolton and Manchester, is the architect.

CHIPS.

New schools for Holy Trinity parish, Darlington, are in course of erection in Greenbank-road, in that town. The cost will be £2,500, and Mr. G. Gordon Hoskins, of Darlington, is the architect.

Subscriptions are being raised now for the scouring and preservation of the White Horse at Kilburn, near Coxwold, in the Vale of Mowbray, below the North Yorkshire moors, a well-known landmark to railway travellers between York and Darlington, which by neglect has become in places almost obliterated.

Good progress is being made with the new iron pier at Bangor, the sheet-iron of the structure now extending to a length of 1,285ft. The bridge and pontoons are in course of construction, and arrangements are progressing in connection with the proposed dredging operations, which are expected to cost £1,200. Mr. J. J. Webster is the engineer.

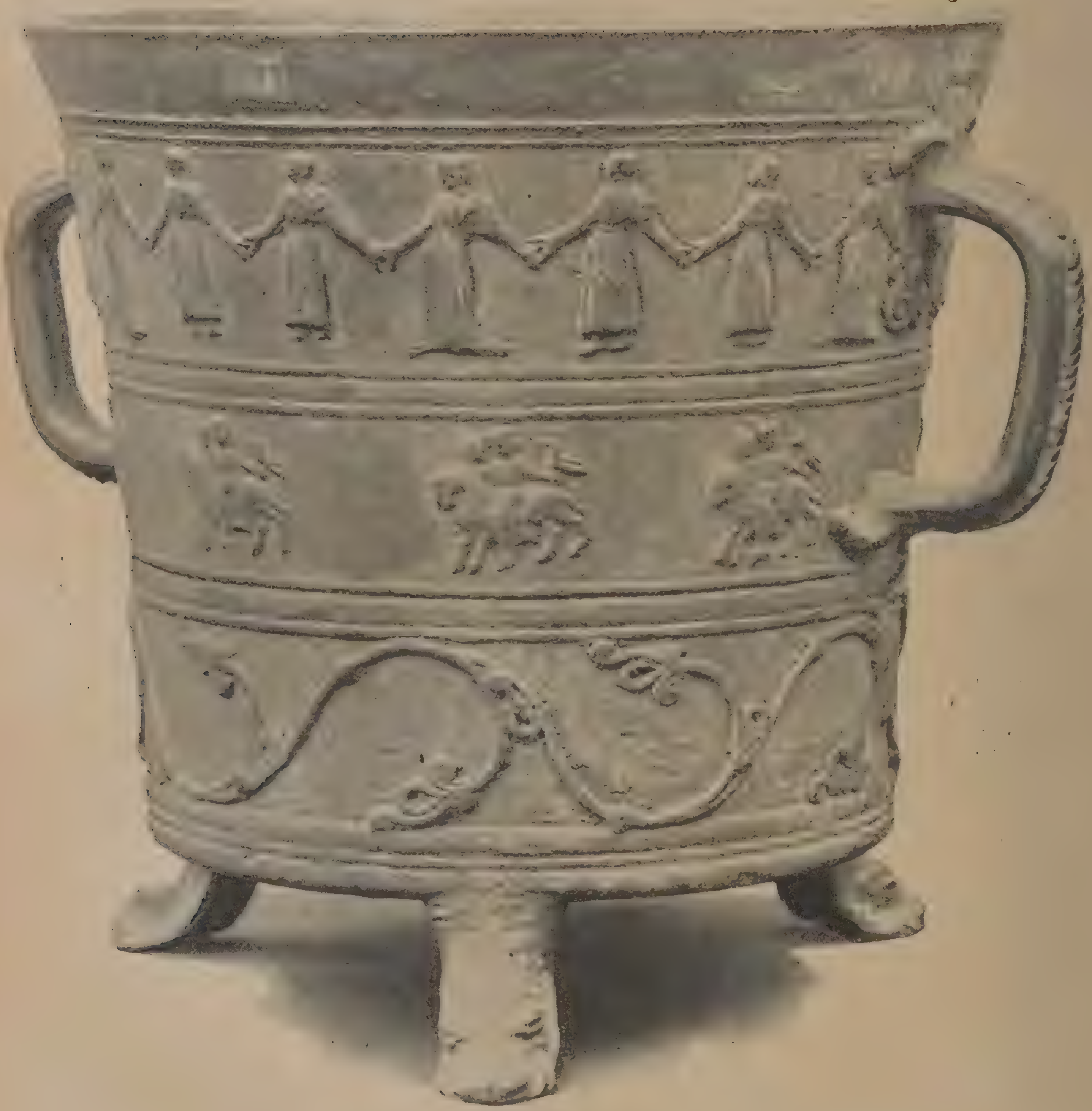
On Wednesday week the Vicar Apostolic of Wales (Dr. Mostyn) visited Pantasaph to open a new wing which has been added to the orphanage portion of St. Clare's Convent, at a cost of about £3,000. The building, which will afford accommodation for 100 orphans, has been erected by Mr. William Healey, contractor, Salford, from plans prepared by Mr. E. Kirby, of Liverpool. The new wing practically completes the original design for the whole range of buildings.

At the meeting of the Dover Corporation on Wednesday week, the question of introducing a system of electric tramways into the town, over an area of between three and four miles, was considered, and it was decided to apply for Parliamentary powers to carry out the proposal forthwith. The cost of the scheme was roughly estimated at £50,000, which sum will include the construction of a generating station.

On Saturday morning the dead body of Mr. John Edward Moseley, architect, Clara-street, Huddersfield, was found floating in the canal at Huddersfield. The deceased, who was 73 years of age, was last seen alive at nine o'clock on Friday evening. At the inquest, held on Tuesday, the jury returned an open verdict.

An impetus is about to be given to the construction of the new Opéra Comique at Paris. M. Poincaré, Minister of Fine Arts, has made an investigation into the causes of the much criticised delay. This is now attributed to the negligence or the apathy of a contractor, who, for some reason or other, seemed inclined to procrastinate. He is accordingly to be called upon for explanations by the Building Board. Should his defence be deemed satisfactory, he will be directed to get the work done by a certain date, and to make up for lost time. In the contrary event, his contract will be cancelled, and his place will be taken by a more energetic person.

The Duchess of Westminster laid on Tuesday the foundation stone of a new national school for girls at Wrexham. The new building adjoins the existing national schools for boys and infants at Madeira Hill, and will cost over £4,000.



BRONZE DÎME, OR TITHE POT. (13th CENTURY.)

FROM THE CLUNY MUSEUM.

OF THE
UNIVERSITY OF ILLINOIS

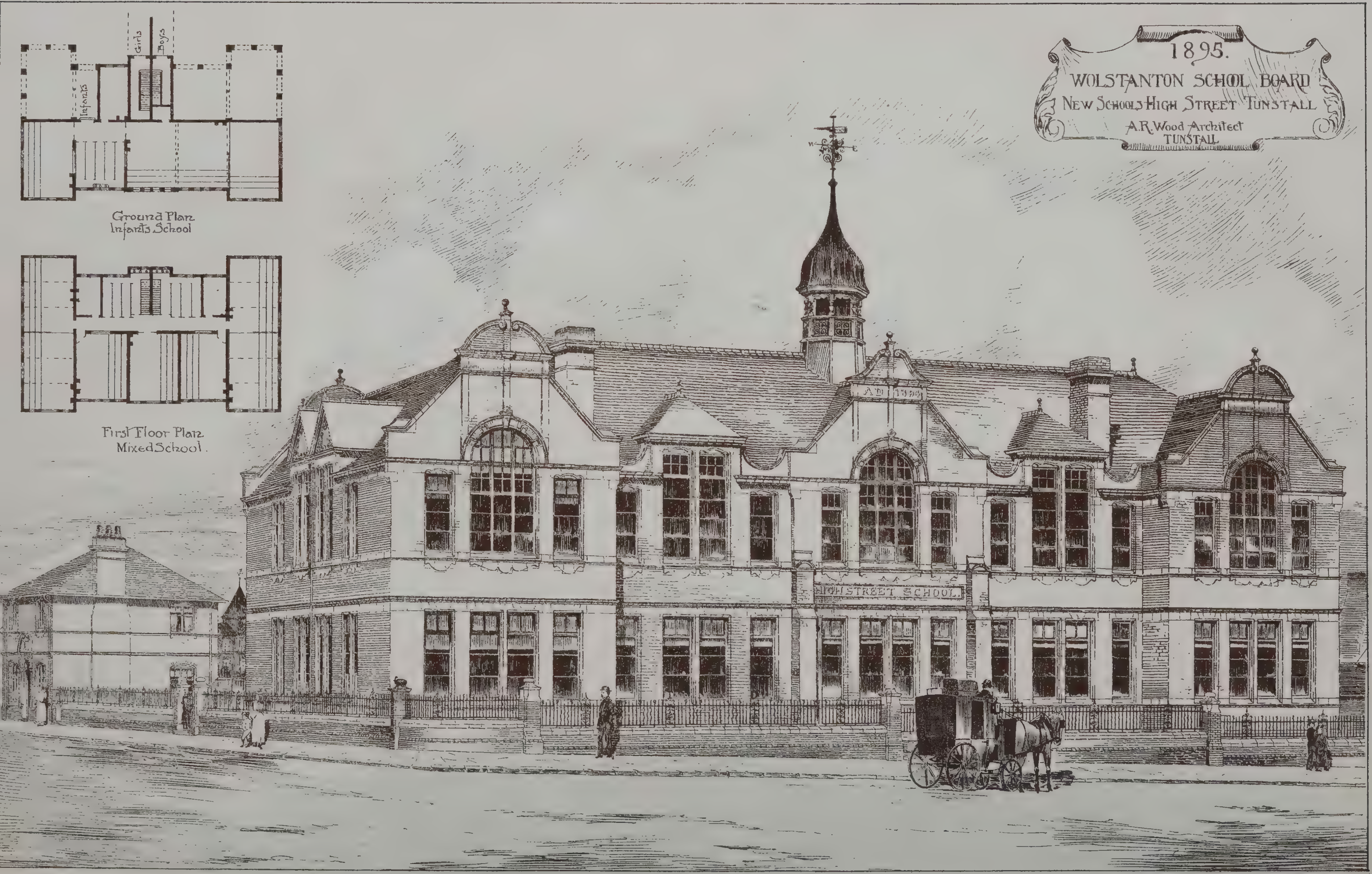
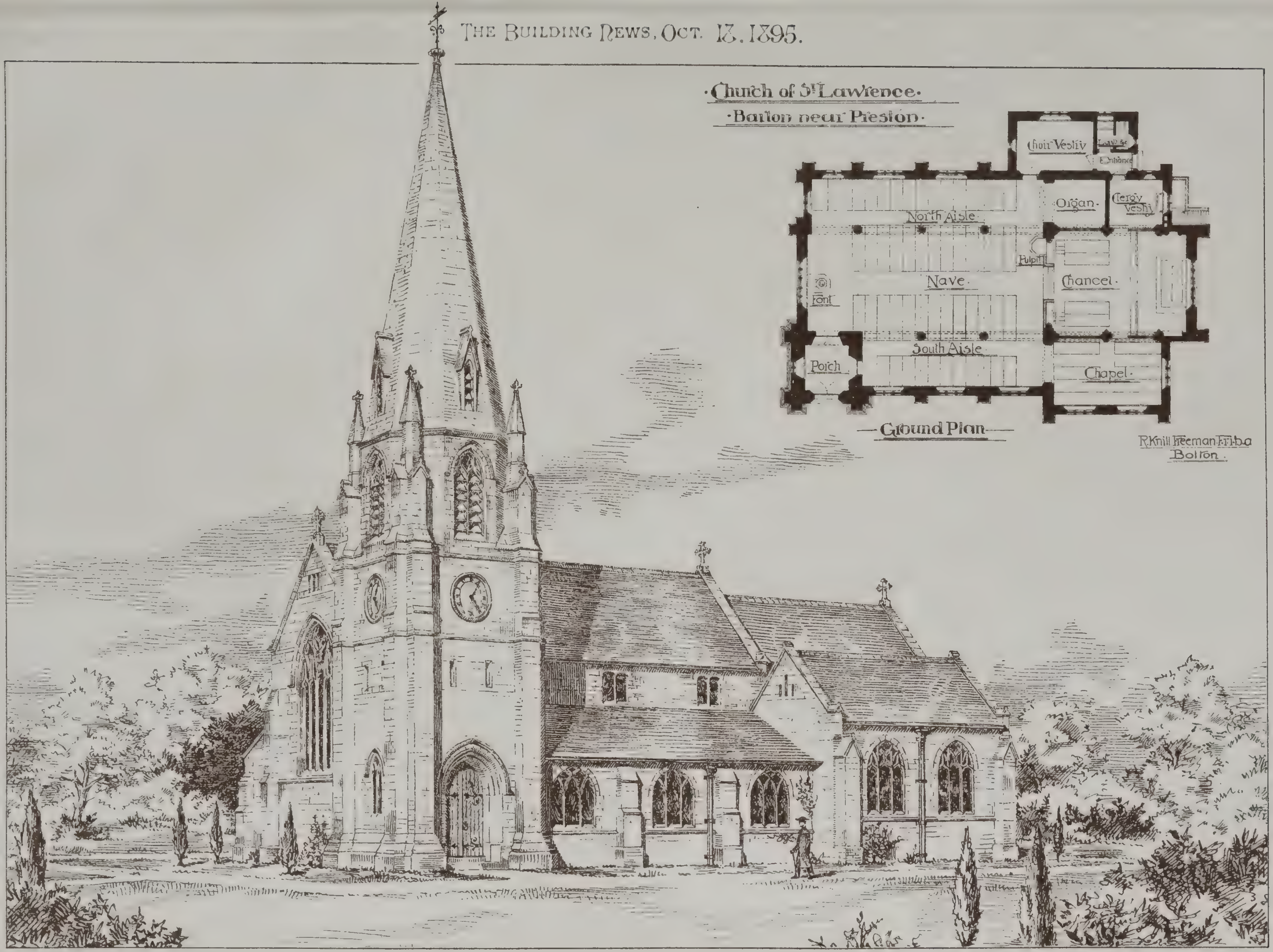


Photo-Lithographed & Printed [illegible]



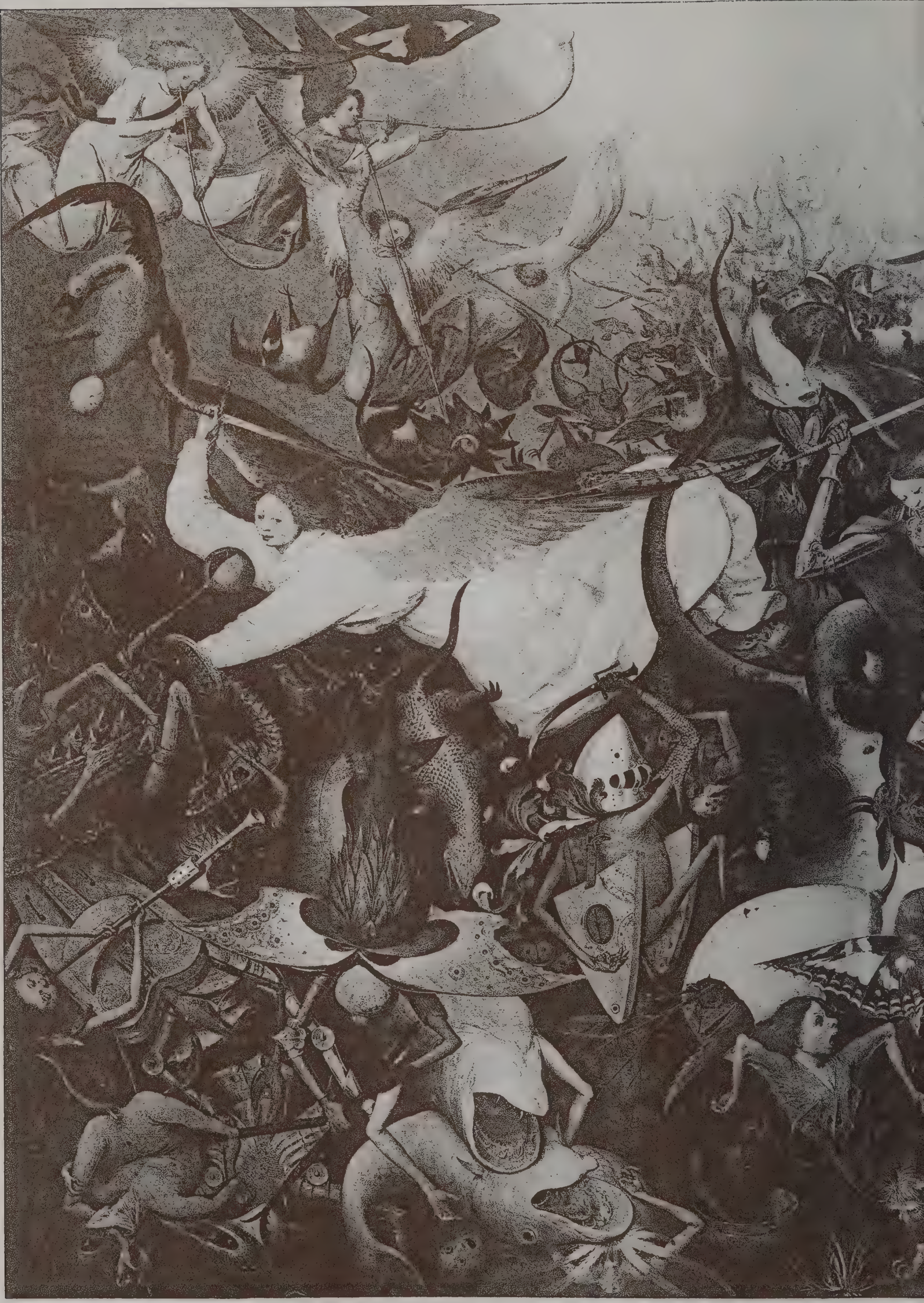
·Church of St. Lawrence·

·Barton near Preston·

—Ground Plan—

R. Knill Freeman F.R.I.B.A.
Bolton.

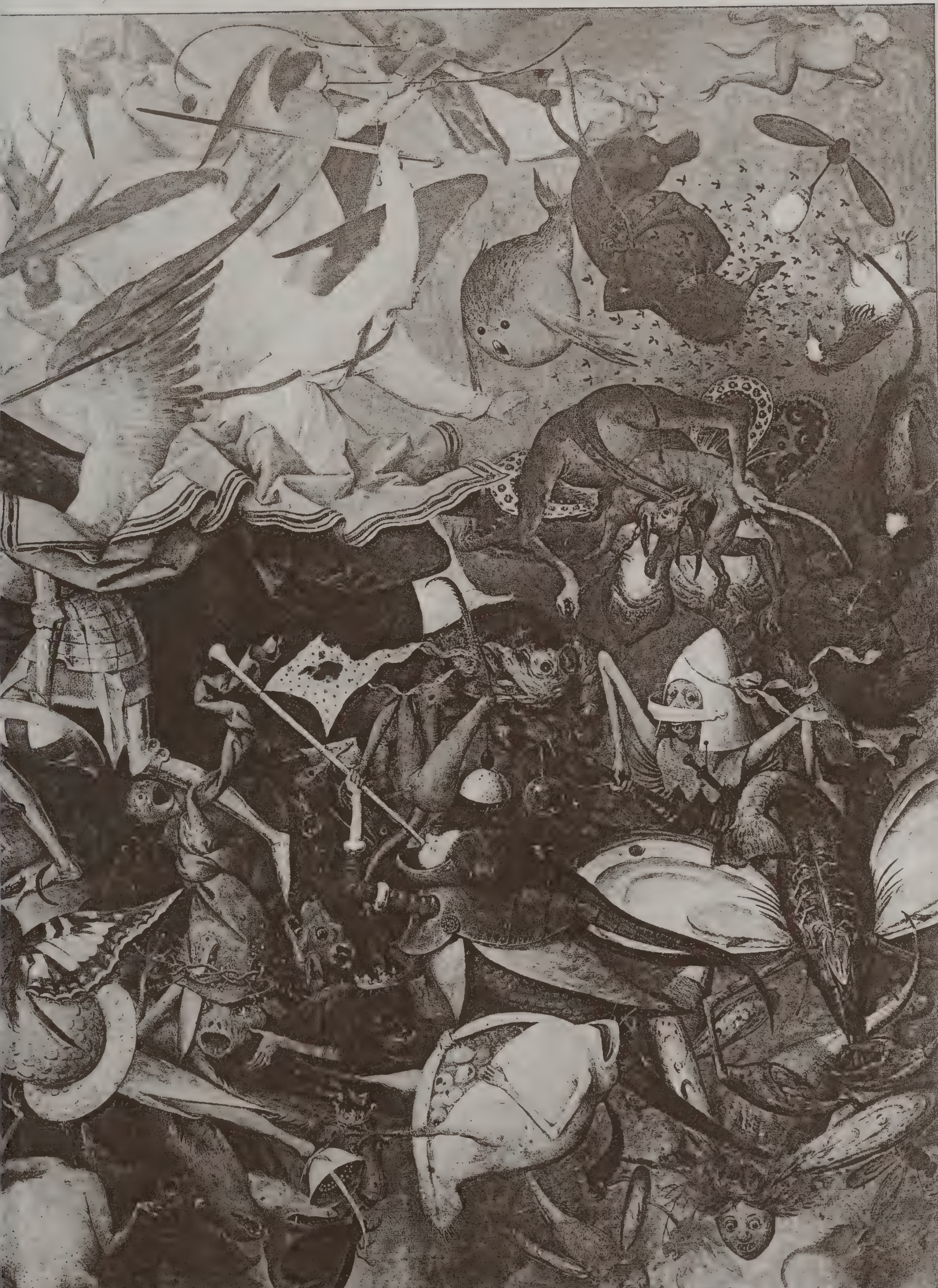
[illegible]



– PHOTO · BY · FRANZ · HANFSTAENGL. –

OLD · MASTERS · ON · T

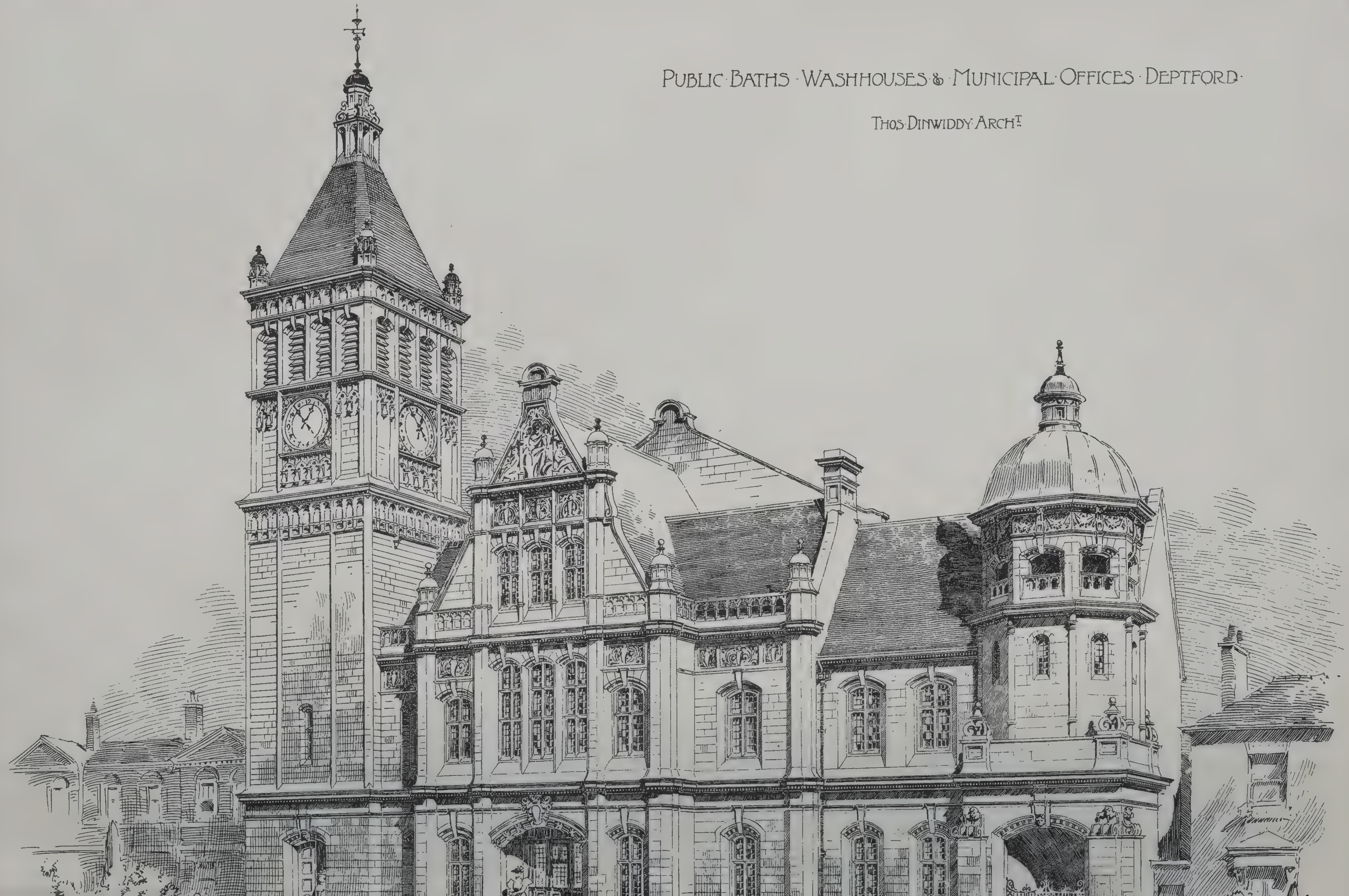
THE FALL OF THE REBEL ANGELS



"PHOTO-TINT," by James Akerman, 6, Queen Square, London, W.C.

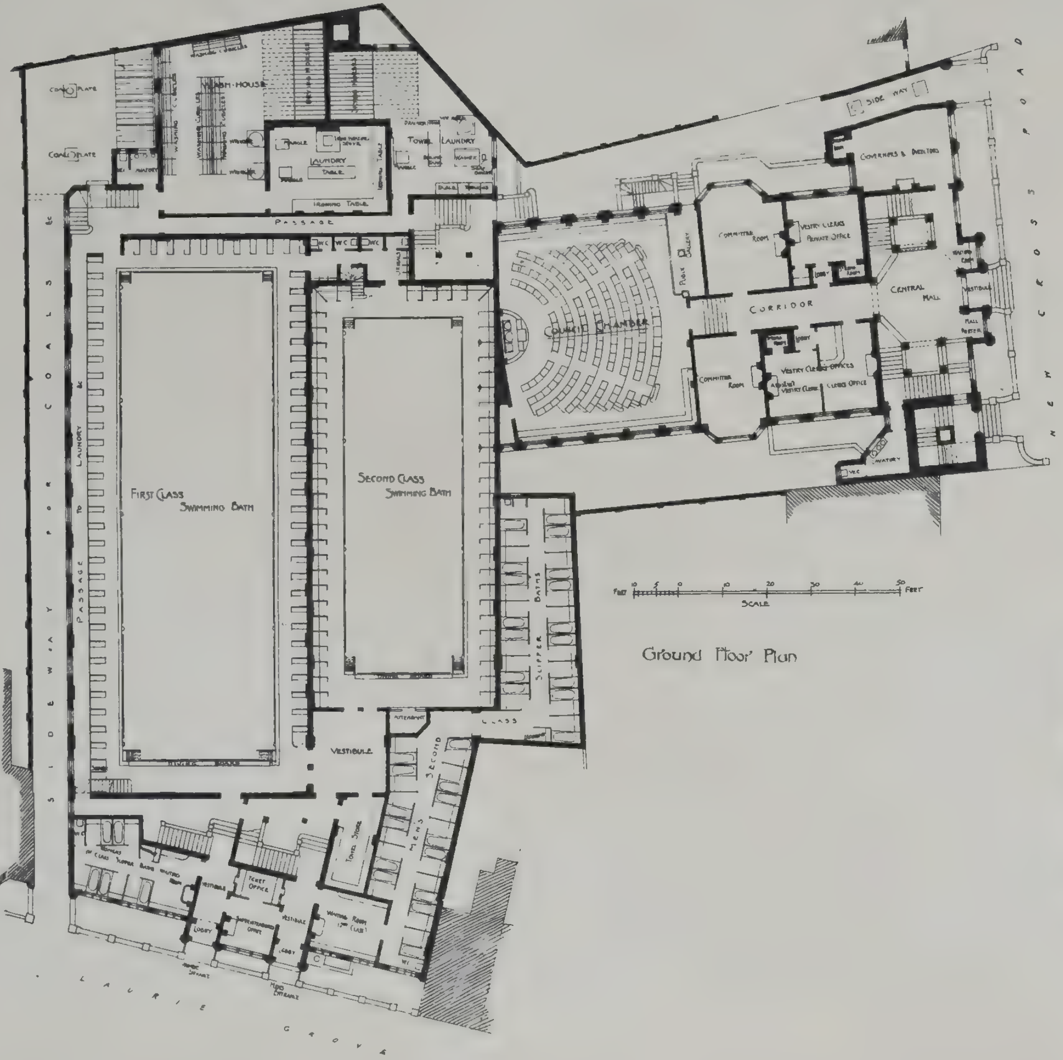
E · CONTINENT · N°25 ·

JEROME · BOSCHE · (B. 1470 · D. 1530) DUTCH · SCHOOL ·

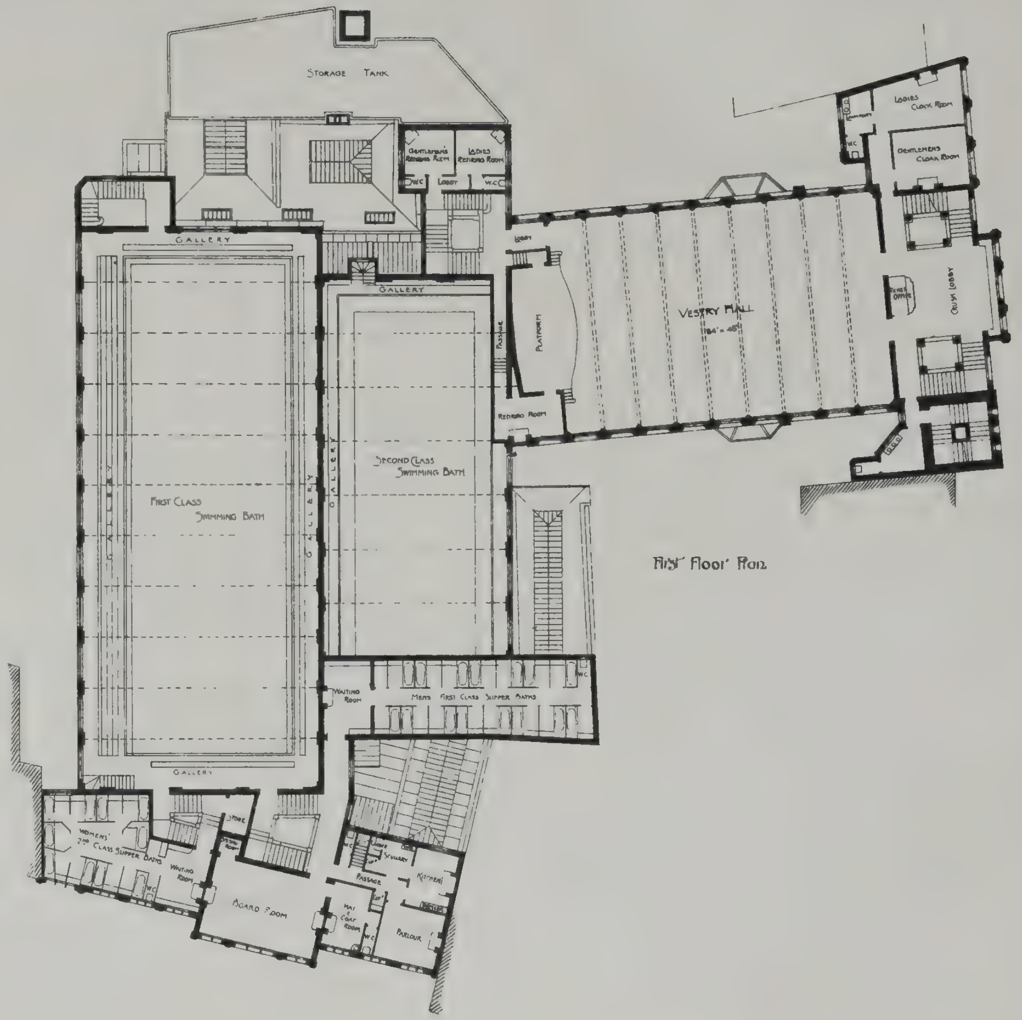


PUBLIC·BATHS·WASHHOUSES & MUNICIPAL·OFFICES·DEPTFORD·

THOS·DINWIDDY·ARCH^T

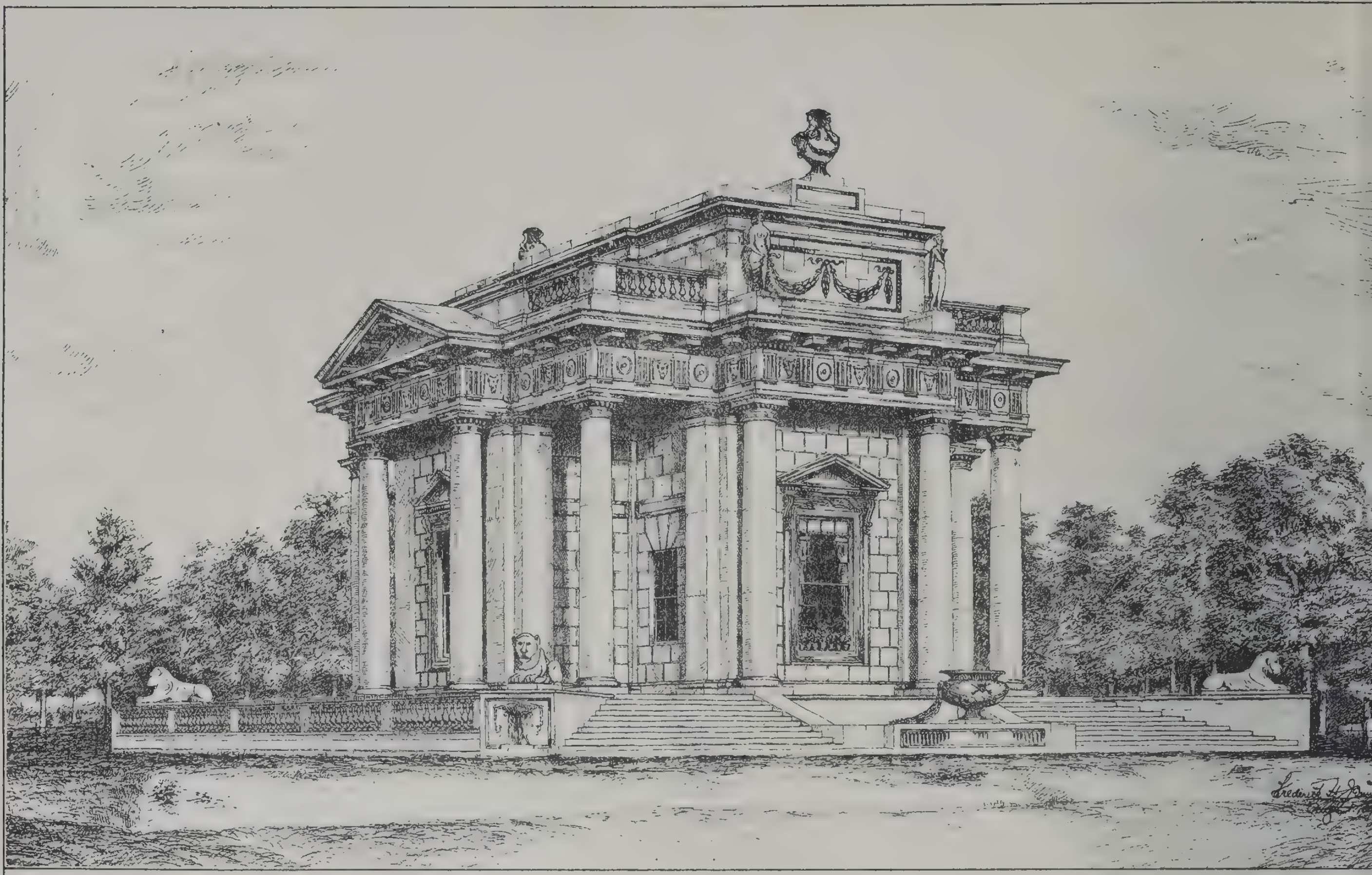


Ground Floor Plan



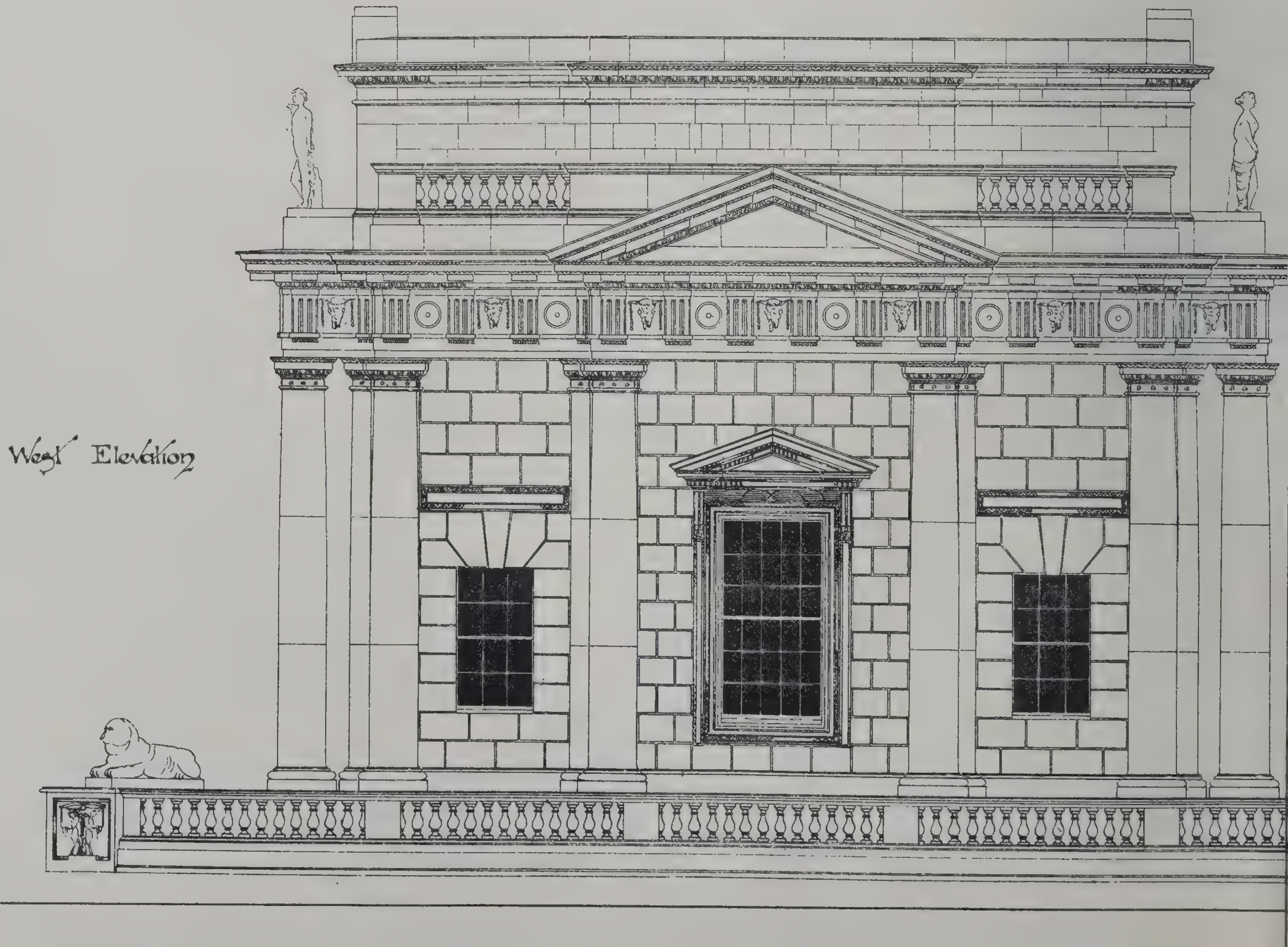
First Floor Plan

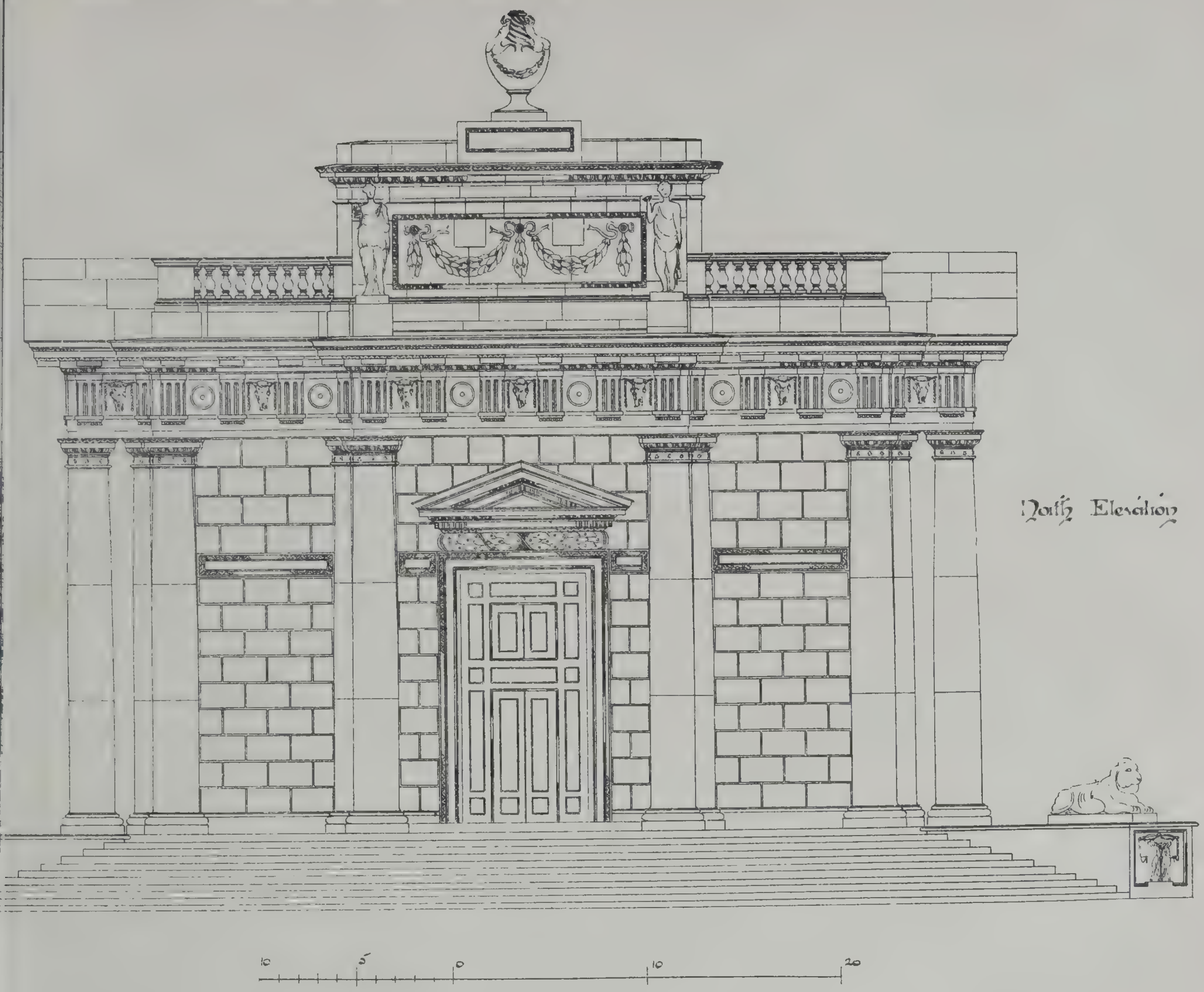
Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C.



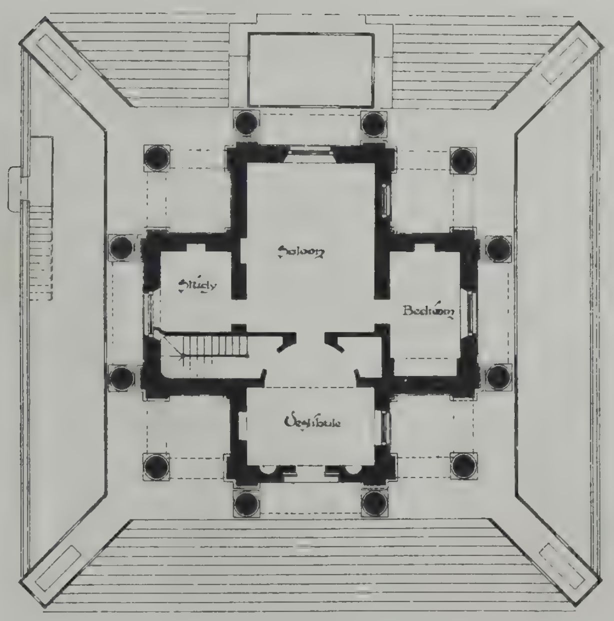
SIR WM CHAMBERS' TEMPLE AT CLONTARF NR DUBLIN

DRAWN BY FREDERICK H. JERMYN

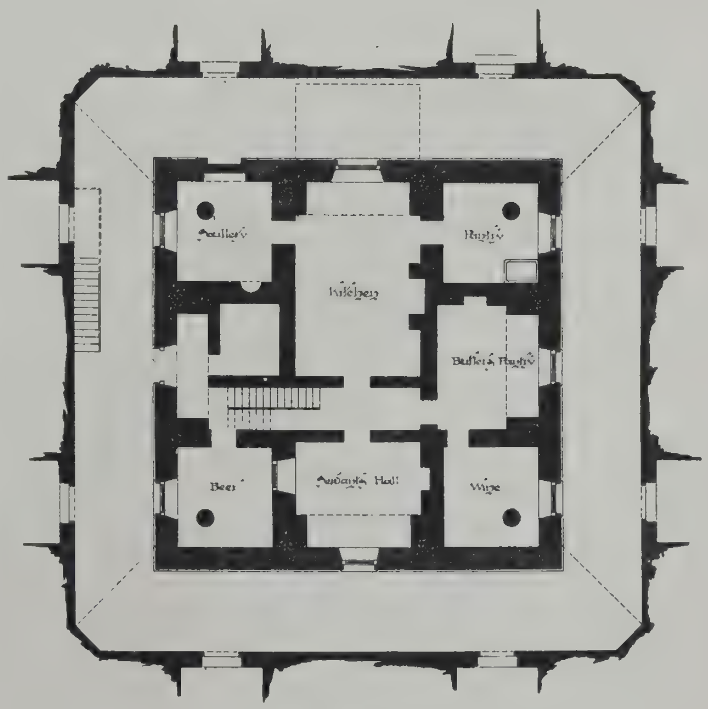




North Elevation



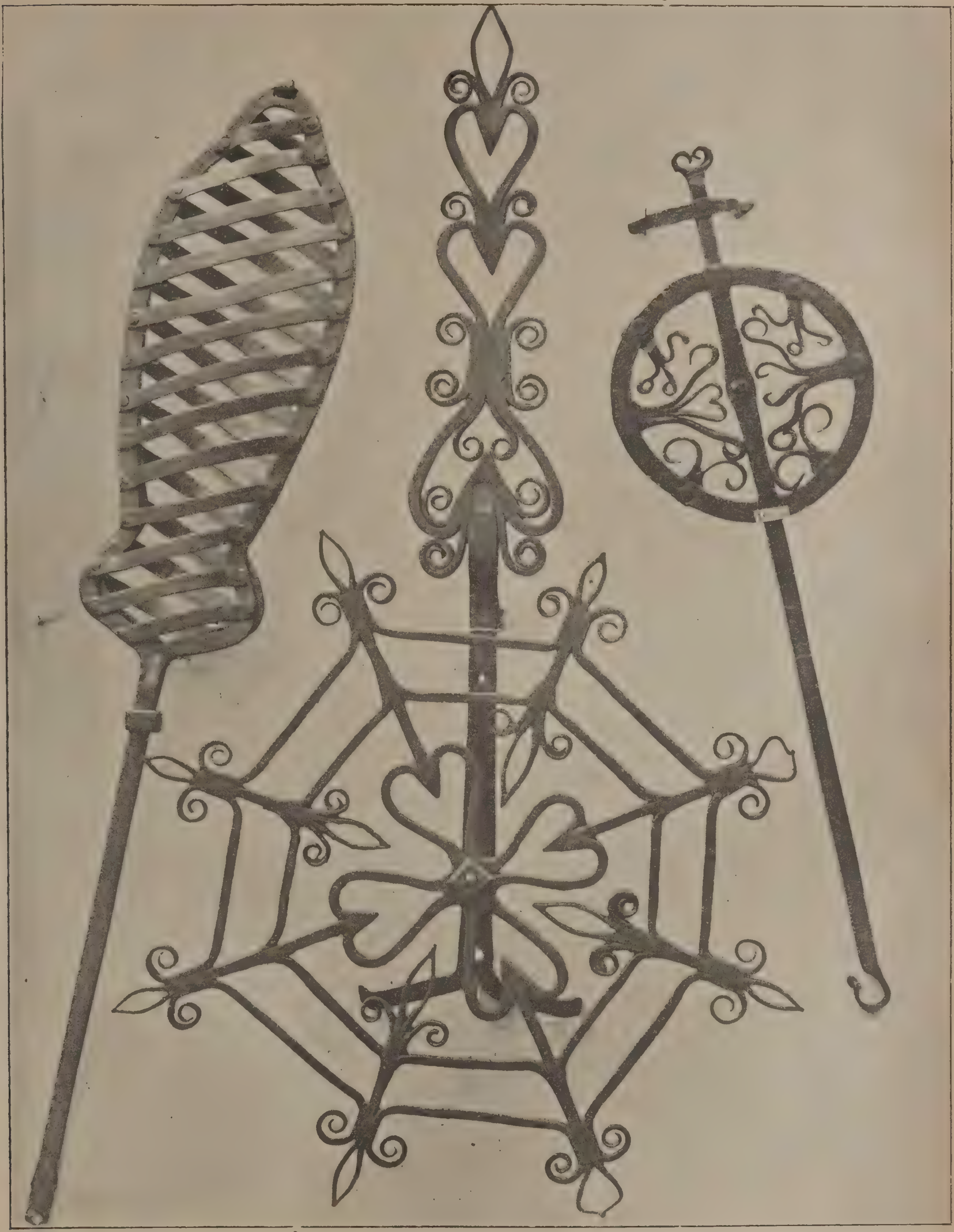
Ground Floor Plan



Basement Plan

Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C.

LI
OF THE
UNIVERSITY OF ILLINOIS



MOULD FOR FRYING FISH, TRIVET, AND GRIDIRON. (15th CENTURY.)

FROM THE CLUNY MUSEUM.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

The Society of Architects.—The annual general meeting of the society will be held at St. James's Hall, Piccadilly, on Tuesday week, the 29th inst., at 8 p.m., when the election of officers and council for the year 1895-96 will be proceeded with.

Association of Sanitary Inspectors.—The annual general meeting of the members of the Sanitary Inspectors' Association was held on Saturday night at Carpenters' Hall, E.C., Mr. Henry Thomas, of Bermondsey, in the chair. From the annual report, it appeared that the membership of the association was now 292, as compared with 216 last year. Sixty new applications for membership had been received at that meeting, and there was a prospect of an additional hundred at an early date. Reference was also made in the report to recent deputations to the Local Government Board on the questions of security of tenure of office for sanitary inspectors and the operation of the Food and Drugs Act, and it was stated that the association intended to still further pursue their representations. Respecting the proposal of the Hackney Vestry to appoint six sanitary inspectors at a salary of £91 each per annum, it was stated that, as a result of representation made to the Local Government Board by the council of that association, that body had refused to sanction the appointments at such a meagre salary. Mr. H. Thomas was elected chairman of the council.

Birmingham Architectural Association.—On Thursday night in last week a conversazione was held in the galleries of the Royal Society of Artists, by permission of the committee. The president, Mr. William Henman, received about 150 guests, and presented to the following gentlemen the prizes they had obtained in the various classes during the past session:—Construction class, W. J. Pritchard. Sketching class: first prize, Mr. A. McKewan; second, Mr. H. Norman. Vacation sketches and measured drawings made on the visit to Shropshire: first prize, Mr. E. F. Reynolds; second, Mr. A. E. McKewan. History lectures: first prize, Mr. E. F. Reynolds; second, Mr. H. Guest. Class of design: first prize, Mr. J. A. Swan; second, Mr. H. E. McKewan. The two latter were conducted by Mr. Arnold Bidlake, in conjunction with the Municipal School of Art. Mr. Oscar Pollack undertook the musical portion of the evening's entertainment, and was assisted by Madame Pollack, Masters Martyn, Monte, and Maurice Pollack, Misses Louie Myers and Emilie A. Turner, and Messrs. F. S. Howl, Samuel Evans, Walter Vaughan, and Percy Stranders. Besides the pictures on the walls, there was a large collection of students' works and drawings, lent by London and Birmingham architects.

Glasgow Architectural Association.—The new rooms of the Glasgow Architectural Association at 187, Pitt-street, were formally opened on Saturday afternoon, when there was a large attendance of the members and their friends. Mr. A. N. Paterson, M.A., presided, and briefly welcomed the guests. A programme of music was submitted, and the visitors had an opportunity of inspecting a select little arts and crafts exhibition which was laid out in the premises. A partner in the tenancy of the rooms is the Architectural Institute of Glasgow.

Glasgow Institute of Architects.—The annual meeting of the members of the Glasgow Institute of Architects was held on Tuesday in the new rooms, 187, Pitt-street, Mr. T. L. Watson, president, in the chair. Mr. C. J. Maclean, secretary, read the annual report of the council on the affairs of the Institute. It stated that the past session had been one of great prosperity. For many years the membership had steadily increased; but this year no fewer than eight new members had been admitted. There were now on the roll 60 ordinary and 10 honorary members. The finances were in a very satisfactory position. The chairman, in moving the adoption of the report, said they had seen a wonderful revival in some of the arts connected with architecture, such as glass-painting or stained glass. Other arts, less important, it might be, but still valuable, had become almost extinct within the last hundred years. They had no workers in lead such as they had in past times. Up till early in the present century the worker in lead was an artist; now he was a registered plumber. With all possible respect for registered plumbers, and the useful and excellent work they did, he suggested that an exhibition of old artistic lead-work, if such could be got together, would be something of a revelation to lead-workers and to many other trades. Again, would anyone assert that ironfounders generally know anything of cast-iron design? He believed that small and carefully selected exhibitions would have a highly educative influence both on architects and their collaborators in the work of construction and decoration. The report was adopted.

CHIPS.

The ancient abbey church of Llanthony, Monmouthshire, has been reopened after a thorough restoration of the nave under the direction of Mr. J. J. Spencer, architect, of Abergavenny.

Archdeacon Brooke, of Halifax, opened a new Sunday-school for St. Andrew's, Bruntcliffe, on Friday afternoon. The building is in the Gothic style, and the cost, inclusive of the erection of boundary walls, is about £2,000.

At Hedley, Surrey, the east window of the parish church has recently been enlarged, and new stained glass inserted, from designs by Messrs. Burlison and Grylls, in memory of the late Mr. and Mrs. George Lyall, of Hedley Park. The architect was Mr. Henry Rose, of Staple Inn, Holborn, who also designed a triptych containing paintings representing the Entombment of Christ, the Supper at Emmaus, and the Appearance to St. Mary Magdalene in the garden. The churchyard of this parish has also been improved by the erection of three covered gates, including a lych-gate.

The contract for the reconstruction of the building in the Haymarket, at Newcastle-on-Tyne, hitherto known as the People's Palace, amounting to £4,600, has been let to Mr. Alexander Pringle, of Gateshead, and will be carried out according to plans prepared by Mr. J. W. Taylor, architect, Westgate-road, Newcastle-on-Tyne. Operations will be commenced forthwith. It is intended to gut the building, and to remodel the auditorium on modern lines.

After a discussion extending over nearly six hours, the Leeds City Council decided on Tuesday, by 29 votes to 24, to adopt the overhead system of electric haulage for the tramways throughout the city. Horse and steam haulage were both condemned as unsuitable for the city, and most of the opposition came from those who thought the cable system preferable. It was contended by the supporters of electricity that the cable system would cost £428,922 to introduce into Leeds; and the annual outlay is estimated at £101,819; whereas the capital outlay on the electric system will be only £378,499, and the working expenses £90,072 per annum. In mechanical efficiency, the balance of argument was also apparently in favour of the electric system.

The ancient bone crypt of the Church of St. Bartholomew the Great, West Smithfield, which was opened as a mortuary chapel last June, has been visited by large numbers of people. The Lady-chapel above is still in an unfinished condition, the restoration, which was being carried out under the direction of Mr. Aston Webb, being entirely suspended for want of funds. The whole church, including the crypt, Lady-chapel, museum, and south triforium, will be open for free inspection on Saturday in next week, October 26th, at 2.30, when the history and architecture of the church will be explained.

At a meeting, on Wednesday, of the Inverness County Road Board, the question raised by the operators of the British Aluminium Company as to the alteration of the roads and the raising of the levels of three lochs in the Foyers district was again discussed. The objections to the scheme which dealt with the alleged destruction of the Falls of Foyers were alleged to be greatly exaggerated, and the board unanimously agreed to approve of the alterations and works proposed.

At a general assembly of the Royal Society of British Artists, held on Tuesday, the following artists were elected members from a list of 155 candidates—viz.: Messrs. Abbey Alston, F. A. W. J. Armstrong, J. H. Bentley, J. Ernest Breun, Victor Burnand, C. E. Clifford, E. G. Fuller, Carleton Grant, George Harcourt, Arnold Helcke, Hal Hurst, Gemel Hutchison, Neils M. Lund, A. Meade, Herbert A. Olivier, E. A. Fellowes-Prynne, Reginald Smith, J. F. Sullivan, A. Tucker, and W. J. Warrener. The exhibition of members' works, which will open on the 28th inst., will contain a series of studies by Sir Frederic Leighton, made during his visit to Algeria this year.

Colonel W. Langton Coke, M.I.C.E., inspector from the Local Government Board, held an inquiry on Wednesday at the board-room of the Soothill Upper Urban Council relative to an application for sanction to borrow £2,134 and £612 respectively for the improvement of Rouse Mill-road and Bradford-road, and the widening of High-street. There was no opposition.

Engineering Notes.

Preston and the Ribble Works.—Reports on the improvement of the Ribble navigation works have been issued to the members of the Preston Town Council. Sir G. S. Nares (chairman of the Ribble Commissioners), Mr. W. H. Wheeler, M.Inst.C.E., and Mr. Fowler, Ribble engineer, have been taking surveys of the channel for some months, and their opinions are embodied in lengthy reports. It is suggested that the training-walls be extended two or three miles below Lytham, and that suction dredging be commenced. The cost is estimated by Mr. Fowler at £39,450, to be expended as follows:—Training walls, £11,000; light beacons, £1,250; dredging, £18,000; three additional sand-pumps and distributors for four barges, £5,600; contingencies, £3,600; total, £39,450. The expenditure of this sum is expected to permit ocean-going vessels of 15ft. draught getting up to the dock every day, instead of five days in a fortnight, as at present. Sir George Nares advises an ample margin for any extra walling required. The Ribble committee also propose to increase the warehouse accommodation, and construct a timber pond and graving dock. The total sum expended on the Ribble to date is £1,123,745, of which £93,575 has been repaid out of the rates. The revenue last year from the river was £15,233, as against £13,373 the previous year.

The new workhouse infirmary, Mildenhall, is being warmed and ventilated by means of Shorland's patent Manchester stoves, with descending smoke flues, the same being supplied by Messrs. E. H. Shorland and Brother, of Manchester.

The Brighton race-stand trustees have completed the whole purchase of Brighton racecourse, costing £25,000, and presented it to the town.

The western section of the Siberian Railway has now been completed as far as the River Ob. The continuation of this section as far as Krasnoyarsk will be opened this year.

The House Committee of the Morley House Convalescent Home visited the Home at St. Margaret's Bay, Dover, on Saturday, and held a meeting to consider the advisability of replacing the old building with a new and more commodious structure. Mr. G. D. Stevenson, hon. architect, submitted plans, and stated that the cost of rebuilding would be about £3,000. It was resolved to endeavour to raise this amount in order that the new wing might be in readiness to receive patients next spring.

The churchwardens of the parish church of Burton-on-Trent, with the contractors for the work which has been recently carried out there, entertained the workmen engaged on the job at dinner at the Star Hotel, High-street, on Saturday night. The chair and vice-chair were occupied by Mr. White (clerks of works) and Mr. T. W. Turner (son of one of the contractors).

The Financial Commissioners of the Paris International Exhibition in 1900 have prepared a scheme for raising the necessary funds, which will be submitted to the Chamber on the reopening. The expenses are to be provided by an issue of three million two hundred and fifty thousand lottery bonds of twenty francs each, which should provide sixty millions out of the hundred millions the Exhibition is expected to cost, the bonds to be issued, at latest, at the beginning of next year.

The Rochester Town Council have decided to have the south-western turret of the Castle repaired. The north turret has already been restored. Other work found to be necessary for the preservation of this historical relic will be undertaken. Mr. George Payne, F.S.A., secretary to the Kent Archæological Society, is superintending the operations.

An electric-light installation, carried out by the corporation, was inaugurated at Tunbridge Wells last week. The works have been executed under the direction of Mr. H. L. P. Boot, borough electrician, in accordance with a report prepared by Mr. W. H. Preece, C.B., and the outlay has been about £25,000. The buildings, which adjoin the South-Eastern Goods Station, have been erected from designs by Mr. A. Ardon, F.R.I.B.A., of Westminster.

A three days' bazaar, under the auspices of the Hawick Archæological Society, was held in the Exchange Hall, Hawick, at the close of last week, and was opened by her Grace the Duchess of Buccleuch. The object of the bazaar was to provide a small endowment to insure the efficient carrying on of the society's work, the classification and increase of the museum's treasures, and the appointment of a curator. The hall was illustrative of Old Paris. Of the £600 aimed at, £570 was raised by the end of the week.

Building Intelligence.

Bath.—A new organ has been placed in the Abbey Church, Bath, in memory of the 20 years' rectorate of Canon Brooke. The instrument, which was formally opened on Friday, has cost about £3,000. The organ, which has been built by Messrs. Norman Bros. and Beard, of Norwich and London, consists of four manuals and pedal organ and 52 sounding stops. It stands in the north and south arches under the tower, the pedal organ occupying both sides of the north transept, each side having a depth of 3ft. 6in., with the lower notes of the 32 and 16ft. open diapasons forming a front to each, the lower portions being covered in to a height of 6ft. with panelled oak screens, and containing four wind-reservoirs on different pressures for supplying the various stops and pneumatics. The length of tubing between the console and pedal organ is 70ft. The portion under the north arch of the tower contains the swell and choir organs, the pedal open diapason (metal) forming the front. The swell organ is divided into two portions, occupying the sides behind the longest front pipes, the choir organ being placed between them. There are also four reservoirs of various pressures placed immediately below the soundboards. The swell-box has four sets of shutters, which are governed pneumatically from the console. The connections between the north division and console are 60ft. in length. The small front facing north is composed of the bases of the choir organ diapasons. The division under the south arch of the tower contains the great and solo organs, the front pipes being composed of great organ diapasons, and the small front facing south of solo bases. There are five reservoirs of different pressures placed under the soundboards of this division. Part of the solo stops are inclosed in a separate swell-box, the shutters of which are governed pneumatically. The connections to console are 90ft. in length. The wind pressures vary from 4in. to 14in., and are supplied from two large mains, which are charged from nine square feeders worked by a 4H.P. "Otto" gas-engine, placed in a vault outside the south wall of the abbey, at a distance of 120ft. from the organ, the wind being conveyed by means of large zinc tubes, placed under the floor of the transepts. The supplies in the various organs are governed automatically from the large mains. The action is tubular pneumatic throughout. All stops are of complete compass. Some of the old stops from the original organ have been worked in, the scales being increased and the whole revoiced. The console is arranged so as to bring everything under easy control. The jambs are placed at an angle of 45°, and are of ebony, with ivory knobs and bushings, the casework being of oak. The player is raised 2ft. above the floor level.

Clydebank, N.B.—The new Union Church was opened on Thursday, the 10th inst. It occupies a site almost directly opposite the old church, which has been demolished by the railway operations. The style is Late Decorated. The church is built in Locharbriggs sandstone, with light green slated roof. The main front faces Dumbarton-road, and the central gable here rises to a height of over 60ft., flanked on each side by octagonal staircase turrets containing openwork stone tracery in the upper story, and terminating in steep red-tiled roofs, each over 70ft. high. Over each side of the main doorway are winged angel figures projecting from the wall, and carrying the base of moulded shafts which run up the height of the gable, and terminate in crocketed pinnacles. The side elevations are divided into four bays each, the lower stage with three-light cusped windows, and the upper with a series of four-light traceried windows, all of varied design, placed between broad, plain piers of masonry. The organ-chamber is continued beyond the main building, in chancel form, and the hall buildings form a lower group to the west of the main front. Internally the church is divided into nave and side aisles by massive moulded stone arches of wide span, resting on stone piers, one on each side. The pulpit gable is pierced by a triple arch, carried on clustered columns, with carved caps, the pulpit being placed in front of the central arch, the choir behind, the two side arches arranged for organ-chambers. The ceiling is lofty, and the roof of massive construction, the whole main timbers exposed, and the ceilings in wood panelling. There are side and end galleries, carried on beams behind the columns. The gallery fronts and the pulpit are of oak. The total number of sittings is 850, and there are also a hall seating 350, two large class-rooms, session-house, vestry, ladies'-room, kitchen, cloak-rooms, &c. The cost is about £7,000. The architect is Mr. John B. Wilson, A.R.I.B.A., Glasgow, whose design was selected by the assessor from those invited in competition, and the work has been executed by the following contractors:—Mason, D. Winton, Duntocher; wright, Geo. Ferguson, Glasgow; slater, Latto and Son, Clydebank; plasterer, J. M'Donald and Son, Kirkintilloch; plumber, Stalker and Dave; glazier, L. Adam and Co.; and carving, Dawson and Sheriff.

King's Langley.—The parish church, a fine example of Perpendicular work, was reopened last week after restoration. It consists of nave, aisles, chancel, with north and south chantry chapels, and western tower. There are several brasses in the church, the oldest being dated 1528, and there are also a couple of Mediæval altar tombs to the memory of Edmund de Langley and Sir John Verney, besides one of later date, and some mural tablets. The church was partially restored in 1878, the work including a new reredos, and the extension of the north chantry further eastward, to form a chapel for the reception of Edmund de Langley's monument, then removed from the north side of the sacrarium. The present reopening marks a further enlargement and restoration. The south chantry of the choir has been extended eastward to form a choir vestry, and the organ has been taken down and removed from the tower to a position adjoining. A new oak case has been added to the instrument by Messrs. Gray and Davidson, London. The tower has been paved, its western doorway has been restored, and a panelled ceiling formed, so that it is now available for seating. The garish east window has been replaced with fresh glass, the old glass being reserved to be altered and refixed elsewhere in the church. New oak choir stalls and clergy stalls are to be found in the chancel. A brass lectern has been supplied by Messrs. Jones and Willis, of Birmingham. The general restoration and enlargement has been carried out by Mr. Miskin, builder, of St. Alban's, under the direction of the architect, Mr. Gordon P. G. Hills, A R.I.B.A.

Lisburn.—For months past the Town Commissioners of Lisburn have been engaged in improving the public markets which they have lately acquired, and which had become dilapidated. The butter and egg markets have been renovated. The grain market is also undergoing a like transformation. There will be an inclosed shed for storage 147ft. long and 32ft. wide, and an open shed (for grass-seed) supported on iron columns 172ft. in length by 16ft. From the centre of the columns to the wall there will be a raised platform level with the floors of the shed. Appliances will be provided for weighing. The floors of the sheds will be of granolithic, and the whole extent of the market will be made up of passage and carriage ways. The front next Market Place will be inclosed with an iron railing. The market will be completed on the 1st of March next. The architect is Mr. James Johnston, C.E ; the contractor Mr. John Vernon, and the clerk of works Mr. William M'Dowell.

London County Council.—At Tuesday's meeting of the council, a scheme for improving the Churchway area in Somers Town, was approved, and the resolution declaring the area to be an insanitary one was agreed to. The scheme deals with the houses in Churchway, Wellesley-street, Elizabeth-court and York-buildings, and provides for the formation of a 40ft. road along the existing line of Churchway, widening on its western side from Grafton-place to Drummond-street, and thereby converting three *culs-de-sac*—viz., Grafton-place, Wellesley-street, and Lancing-street, into thoroughfares. The total net cost of the scheme is £51,650, and by the co-operation of Lady Henry Somerset a saving will be effected of £12,500, reducing the total cost of the scheme to the Council to £39,150 net. The total number of persons who will be displaced is 1,086, and accommodation for about 568 can be provided on the cleared area. It was agreed without discussion to contribute £44,960, one-half of the cost, towards the widening of Ludgate-hill. The scheme for the improvement of the area north of the Strand adjoining Clare-market at a net cost of £216,000, described in detail in our last issue, p. 542, was approved after some discussion, and the resolution declaring the area unhealthy agreed to. A recommendation was submitted by the Parliamentary Committee, in reference to the eight Water Bills promoted by the Council in the last session of Parliament, that the Council invite the Government either to deal with the question of water supply themselves or to appoint a Royal Commission. Mr. Stuart, M.P., moved as an amendment that the bills for the purchase of the undertakings of the London water companies be proceeded with. After a debate the amendment was rejected by 54 to 53 votes. The debate was then adjourned.

Manchester. — The Grand Committee of Trustees of the Manchester Royal Infirmary appointed to consider the extension of the building met on Monday to receive the report of a sub-committee, and also the report of a minority of such sub-committee, upon the matters referred to them. A resolution was passed requesting the signatories to the majority report "to obtain full plans and elevations on which they propose the hospital shall be rebuilt on the present site, and also to obtain evidence from experts in hospital buildings and others as to the practicability and efficiency of such plans, and an approximate estimate of their cost." A further sub-committee was appointed to obtain the opinion of experts and others as to the building of a new supplementary hospital elsewhere, to provide for the additional accommodation required, to obtain plans and an approximate estimate of the cost of such hospital, and also to report as to what alterations in the present building would be necessary to bring it up to date and to make it as efficient as possible according to modern ideas. The signatories to the minority report were asked to give full details of their scheme, and were also empowered to order plans to be prepared and to call in experts.

Marsden.—A new church was consecrated at Marsden, on Saturday, by the Bishop of Wakefield. Thirty years ago foundations were laid for the church; but after they had been brought to the level of the ground, unfortunate circumstances arose which put a stop to the work. The difficulties have now been removed, and a building has been erected upon the foundations laid so long ago. The church is designed in the English type of 14th-century Gothic, and the portion now completed consists of a lofty nave, 92ft. long by 24ft. wide, in six bays, with open-timbered roof. A temporary chancel has been formed. A stone pulpit, executed by Mr. George Milburn, of York, has been presented as a memorial. The design includes a western tower, but this will not be carried out at present. The church will now seat 600, and when fully completed 800. The architects are Messrs. C. Hodgson Fowler, of Durham, and John Kirk and Sons, of Huddersfield, and the work has been carried out by local contractors. The cost has been about £7,800.

Morley.—The new town-hall at Morley, near Leeds, was formally opened by the Right Hon. Henry Asquith, M.P., on Wednesday. The building is Classic in style, and the stone used in construction has been obtained from the local quarries. The main front has a projecting portico carried by Corinthian columns, and approached by a flight of steps; behind this is a lofty and massive clock-tower, with domical roof, rising to a height of 150ft. The site on which it has been erected, from the designs of Messrs. Holtom and Fox, of Dewsbury, is between Albion-street and Wellington-street, the dimensions of the building being 140ft. by 146ft. To the left of main entrance are the offices of the town clerk and the borough accountant, and to the right those of the borough surveyor and the inspector of nuisances. Along the north corridor is the borough court, and adjoining are rooms for the magistrates, for their clerk, and for solicitors and witnesses, and also magistrates' clerk's office. The town-hall proper is 90ft. by 46ft., and 36ft. high. At the northern end there is an orchestra extending across the room; at the opposite end a large gallery, with a balcony on each side, has been erected, giving in all accommodation for 1,200 persons. The floor is to be seated with chairs, and the gallery with upholstered tip-up seats. At the south end there is a banqueting or reception room, with a small room attached. At the opposite angle are the council-chamber, councillors' ante-room and retiring-room, mayor's parlour, waiting-room, and tea-room. The police offices and cells are on the ground floor. Underneath a portion of the large hall there is a smaller hall to accommodate 600 persons. The large kitchen is connected by lifts with the banqueting and other halls. The large rooms will be heated by means of hot-water pipes, and the offices by open fireplaces. Portions of the flooring are coloured blue, and the remainder pink, in encaustic tiles or mosaic, while all the staircases are fireproof, with stone steps, wood handrails, and iron balustrades. The doors are panelled and moulded, and the windows have moulded fixed sashes, with circular heads. The total cost has been £36,000. Mr. Henry Clarke has been the clerk of works, and the work has been carried out by local contractors, the chief being those for masonry, taken by Messrs. Schofield, Sons, and Co., of Leeds; and joinery, Messrs. James Clegg and Co.

Newcastle-on-Tyne.—The Stephenson Free Library in Elswick-road, Newcastle, was inaugurated by the Home Secretary a short time since. The building, which is 85ft. by 43ft., comprises two floors. On the ground floor there is a refreshment-room, committee-room, ladies' reading-room, general reading-room, and lavatory. On the upper floor is the large hall to serve as the library and for meetings. It is 70ft. by 36ft., with platform and retiring-room. On this floor are also a smaller committee-room and janitor's room. There is a second staircase adjoining the platform. Externally, the walls are faced with red Leicestershire bricks, with dressings of stone and pink terracotta, and the roof is covered with red Ruabon tiles. The internal woodwork is stained canary wood, except the roof of the large hall, which is of hammer-beam construction in pitch-pine, the ceiling being panelled with moulded ribs. The staircases are in pitch-pine. The whole of the windows have lead glazing in clear glass, except the staircase, which has a stained-glass window. The west entrance is carried up to form a low tower, having a steep, tiled, pyramidal roof rising behind the parapet. There are three gablets on each of the north and south fronts. A special system of ventilation has been carried out, the vitiated air being carried off in flues all over the building, and discharged through a turret at the south-west angle. The heating is by radiators on a low-pressure steam system, and electric light is installed throughout the building. The general contractor has been Mr. Walter Scott; the roof tiling is by Messrs. Beck and Sons; the plumbing by Messrs. Bland Bros.; the painting and staining by Mr. John Gibson; the heating by Messrs. Emley and Sons, Ltd.; the iron casements for windows by Messrs. Ashwell and Nesbit; the lead glazing by Mr. G. J. Baguley; the door and other fittings by Mr. N. F. Ramsey; the carving by Mr. Howson; and the electric lighting by Messrs. R. J. Charleton and Co. The work has been carried out from the designs and under the superintendence of Mr. John W. Dyson, architect, of Newcastle, at a cost of £4,000.

New Mar Lodge.—The Queen visited the Duke and Duchess of Fife on Tuesday to lay the foundation-stone of the new mansion which is to take the place of Mar Lodge, recently destroyed by fire. The site of the new residence is a picturesque spot at present occupied by Old Mar Lodge, about two miles further up the valley of the Dee, and on the opposite or north bank of the river. The Lodge is to be a comparatively low building, but very extensive in range. It will consist of a centre block 118ft. in length, with two side wings, each 78ft in frontage, which project forward from the main building in a crescent or half-moon form. Round the entire mansion will be erected a verandah. The Lodge will be built of granite quarried in the neighbourhood, and a large portion of the timber will also be taken from the adjoining forests. The granite is of a warm pink colour, and the roof will be covered with English-made red tiles. The style will be Old English, having a good deal of woodwork in the exterior about the gables and verandahs. A large number of bedrooms are provided, besides numerous public rooms. The kitchen and offices will form a separate pavilion from the main house, and the latter is so arranged that all the bedrooms and public rooms will have a southern exposure. New stabling and a thorough system of water and drainage will be carried out. The architect of the new Lodge is Mr. A. Marshall Mackenzie, A.R.S.A., Aberdeen, and the outlay will be £20,000.

Northampton.—In the church of St. Matthew, built in 1893 by the family of the late Mr. Pickering Phipps, a new organ and new reredos, altar rails, and screens were dedicated on Friday by the Bishop of Peterborough. The organ, a four-manual instrument, has been built by Messrs. J. W. Walker and Sons, of Francis-street, Tottenham Court-road. It is situated in a chamber on the south side of the chancel some 40ft. in height, and opens both to the south transept and to the chancel by a series of eight arches. The new reredos is composed wholly of polished alabaster, sunk, carved, and moulded, and has been carried out from designs by Mr. M. H. Holding, A.R.I.B.A. (the architect of the church). The general composition comprises in the central compartment the Crucifixion, with St. Mary and St. John and attendant angels; and the smaller compartments and niches are filled with statues in white alabaster of saints and martyrs chosen from all ages since the times of the Apostles. Mr. Robert Davison, of Marylebone-road, London, executed the whole of the structural work, and Mr. Nathaniel Hitch, also of London, executed all the sculptured work. The sanctuary is fitted with a panelled and traceried credence table in wainscot oak. This is the work of Mr. Henry Martin, the builder of the church. Two standard lights, six smaller sanctuary lights, and a processional cross have been made by Messrs. Barkintin and Krall, of Regent-street, W. All the additions have been executed, either from designs by, or under the direction of, Mr. M. H. Holding, and the structural additions were carried out by Mr. Martin.

Northampton Master Builders' Association.—The annual dinner of the Northampton Master Builders' Association was held in the old reading-room, town hall, in that borough, on Thursday in last week, about 110 sitting down to the repast. The chairman of the association (Mr. R. Cosford) presided, Mr. G. J. Fisher occupying the vice-chair. Supporting the chairman there were the Mayor (Councillor W. Tomes), who wore his chain of office, Mr. H. Martin, J.P., Mr. G. Norman, J.P., Mr. E. Law, Mr. W. Norman, Mr. W. I. Brown (borough surveyor), Mr. W. D. Gibbins (borough engineer), Mr. F. H. Harris, Mr. C. Smith, Mr. R. S. Skillington, and Mr. F. G. Airs (secretary). Mr. J. B. Clarke gave the "Mayor, Magistrates, and Members of the Corporation," which was acknowledged by the Mayor, who is a member of the association, and by Messrs. Norman and Martin, magistrates. Mr. H. Green proposed "The Architects," and Mr. E. F. Law responded. Messrs. J. T. Ingman, Stevenson, Shaw, Piccaver, and Harris also replied. "Success to the Northampton Builders' Association" was submitted by R. S. Skillington, who thought the society had fully justified its existence. The toast was drunk with musical honours, and the chairman, in replying, remarked that the association was formed some 19 years ago for the purpose of settling disputes in the trade, and so far it had been most successful, as during the last 12 months they had not had a single dispute. Mr. A. J. Chown gave the "Town and Trade of Northampton," coupled with the name of Mr. T. L. Wright. Other toasts were "The Chairman," "The Vice-Chairman," and "The Secretary."

Scarborough.—The new Liberal Club at Scarborough is to be opened by Lord Rosebery to-day (Friday). The front entrance opens into the vestibule, which leads direct to the hall, from whence is reached the reading-room, a very spacious apartment, about 32ft. square, and well appointed. The billiard-room is 74ft. long by 27ft. wide, and contains three billiard-tables. It is provided with a raised platform and excellent lounge-seating throughout. This is also entered direct from the hall, as also is the game-room adjoining, which is about 27ft. long by 17ft. wide. The council-room, about 58ft. long by 32ft. wide, is on the first floor, and has an open-timbered roof. Immediately adjoining are the game-rooms and committee-rooms, which, by an arrangement of the North of England Furnishing Company's patent folding-shutters, can be thrown open and added to the council-room, making the whole well adapted for the social gatherings of the club. On the first-floor is also provided apartments for the Women's Liberal Union. The building is provided with caretaker's rooms. The electric light is installed throughout, by Messrs. Pym and Co. The heating, on the low-pressure system, is applied to every room, as well as to the shops in front. This is the work of Messrs. Newton, Chambers, and Co., of Sheffield. The contractors are all local men. Brick, &c., Messrs. Petch and Fox; carpenter, Mr. Geo. Scales; plumber, Mr. David Maynard; smith, Mr. A. J. Lowe; slater, Mr. John Hardgrave; painter, Mr. Thomas Fidler. Leaded lights and iron casements have been carried out to the architect's design by Messrs. Talbot and Co., of Leeds. The building, with the site, cost about £11,500, and has been erected under the direct supervision of Mr. John Hall, the architect; Mr. J. Soul acting as his clerk of the works. A library is being fitted up in the reading-room at the cost of Mr. J. Compton Rickett, the borough member, and will contain several hundred volumes.

St. John's Wood, N.W.—Mr. William Pollitt, general manager of the Manchester, Sheffield, and Lincolnshire Railway, laid, on Monday, the foundation-stone of the artisans' dwellings which the company are erecting in connection with their extension to London. The buildings, which are at the junction of Grove-road and St. John's Wood-road, will occupy an area of four and a half acres, and will accommodate 2,690 persons, there being 540 sets of rooms in the six blocks, the tenements being arranged in sets of 325 two, 165 three, and 50 four-room holdings. Mr. A. R. Stenning is the architect, and Mr. J. T. Firbank, M.P., the contractor. Mr. Pollitt, on formally declaring the stone laid, said it was 30 years since a new railway had been brought into London, but he was certain it would tax the ingenuity of the greatest engineers and surveyors to find means of getting another into London on the north side of the city. It was owing to the compulsory powers of Parliament that they had erected those dwellings, as about 3,000 of the working population had been displaced owing to the new line. The total cost of the buildings was something like £250,000, but he believed with careful management there would be a fair and reasonable return on the outlay.

Stratford, E.—The foundation-stone of a church for St. Matthew's Park district was laid on a site at the corner of Dysot-road the other day. The building will be erected by Mr. S. C. Parmenter, of Braintree, and Mr. E. P. Loftus Brock, F.S.A., is the architect. The church will be in the Gothic style of the middle of the 13th century, with walls faced with flint, and with windows filled with Geometrical tracery of Bath stone. It will consist of a nave, with north and south aisles, chancel, double transepts on each side, organ-chamber, and choir and clergy vestries. The roofs will be of open timber, each aisle, as well as the nave, transepts, and chancel, having its separate gable and ridge. An octagonal turret will be erected over the chancel arch of considerable height. The nave will be divided from the aisles by columns and arches of timber, instead of the ordinary system of stone. By this means an unusual degree of lightness will be given to the interior, which will be practically free from obstructions to view. The windows will be filled in with cathedral glass of varying tints, and the passages will be laid with tiles. All the seats will be open benches.

Swanage.—A cottage hospital has just been built at Swanage as a family monument of the late Mr. George Burt, a native of the town, the head of the well-known firm of contractors in Pimlico, and Sheriff of London and Middlesex in 1879. The hospital was designed by Mr. W. J. Fletcher, of Wimborne. On the ground floor there are two large wards, each holding six beds; an accident ward, sitting-room, matron and nurses' room, surgery, bathroom, and the usual domestic offices. On the first floor is a room which can be utilised for paying patients, or as a children's ward. It also contains bedrooms for the staff. The main feature of the building is a central hall, in which is a Gothic ingle-nook composed of Derbyshire limestone with a memorial brass, and bas-relief medallions in statuary marble, by Mr. C. H. Mahey (of Westminster), of the late Mr. and Mrs. Burt. In addition to this there is a stained-glass window, representing Faith, Hope, and Charity. The work of construction has been superintended by Mr. Cooper, the foreman of the Durlston Park Estate. The ingle-nook has been executed in London by Messrs. John Mowlem and Co. The walls have been tiled in dadoes, this having been carried out by Messrs. Minton and Co. The brass tablet, locks, and window-openers have been supplied by Messrs. Hart, Son, and Peard, of Drury-lane; the glass mosaic and stained glass by Messrs. J. Powell and Sons, of Whitefriars-street; and the hot-water apparatus by Messrs. J. Jones and Sons, of Farringdon-street, E.C.

Widnes.—St. Mary's Parish Church, Widnes, was reopened on Sunday week, after renovation.

When the church was built the contractor found the land very sandy; but an immense quantity of chemical waste was placed on the sand, and careful examination has now demonstrated the fact that the foundations are good. The building has been pointed and repaired by Mr. J. Beech. The north side of the roof has been re-slated by Mr. Henry Quinn, and the old east window has been replaced by one of cathedral glass by Messrs. Jones and Willis, of Birmingham. The work of painting and decoration was executed by Mr. J. H. Malam, of Widnes-road. The main principals of the roof have been painted in colours to give the church a lighter appearance. The walls are painted salmon colour, and has a frieze in greenish yellow, lettered in maroon with blue capitals. The voussoirs of arcades are stencilled in patterns. The chancel-ceiling is in panels, painted blue, interspersed with stars; the walls are divided into frieze filling and dado. The organ-case has been decorated, and the pews and other fittings painted.

CHIPS.

Viscount Wolseley will open the new rifle range, which the Corporation of Nottingham has provided for the 1st Notts (Robin Hood) Rifles, near Trent, on Thursday, the 7th prox.

Memorial stones have been laid of new Sunday-school premises in connection with the Wesleyan Chapel at Consett, county of Durham. The cost is estimated at £4,000.

The memorial stones of new Sunday-school premises in connection with the Central United Free Methodist Chapel, Cleckheaton, were laid on Saturday. Accommodation is to be provided for 1,000 scholars, and the contracts for the building amount to £5,684, exclusive of £1,410 paid for the site.

The Aberdeen Harbour Board confirmed on Monday the recommendation of the Works Committee that Mr. William Simpson, C.E., assistant civil engineer on the Clyde Navigation Trust, and formerly of Aberdeen, be appointed assistant harbour engineer under Mr. Nicol.

The new Natal-Transvaal Railway will be opened for goods traffic from Durban to Standerton on November 1, and for the conveyance of passengers from Durban to Johannesburg on November 15.

At a meeting of the ratepayers of the parish of St. George the Martyr, Southwark, held on Tuesday night, Mr. R. K. Causton, M.P., presiding, it was unanimously resolved to accept the offer of Mr. J. Passmore Edwards to build a free library for the district.

The urban council of Machynlleth adopted at their last meeting a scheme of water supply prepared by Mr. Kirkby, and estimated to cost in execution £4,300.

A large clock has just been erected upon the church tower at Morchard Bishop, Devonshire, which shows time on a large dial and strikes the hours. The clock has been made generally to the designs of Lord Grimthorpe by John Smith and Sons, Midland Clock Works, Derby.

The refuse of Yarmouth used to be deposited in what was known as "the muck holes" in the river Bure, but the town council have resolved to erect a destructor to consume the refuse by burning, the first cost of which is estimated at £8,000 and the annual expenditure at £500.

At Llanfair parish church, Vale of Clwyd, on Thursday in last week, a new organ was dedicated. The instrument, which has been paid for out of a fund gradually accumulated during the last 23 years, when the restoration of the church was finished, has been built by Messrs. Beale and Thynne, of London.

As a further indication of the growing importance of typewriting, it may be mentioned that the School Board for London has just placed with the Yost Typewriter Co., Ltd., a large order for Yost typewriters for instruction purposes in the evening classes. Typewriting is a popular subject both with students and teachers, and in the present case the number of typewriters requisitioned by teachers was far in excess of that which the committee in charge of the matter had power to allocate. We may add that the Yost Typewriter Co., Ltd., are removing about Oct. 7 to larger premises at 30, Holborn Viaduct, E.C.

The brass tablet to commemorate Leeds being raised to the rank of a city, to be placed in the council chamber, behind the mayoral chair, in Leeds Town Hall, has been finished. The design and execution has been intrusted to Messrs. Rothwell and Co., of Leeds and Bradford. The plate is 4ft. 4in. long, and 3ft. 4in. wide. The plate has a flowing border cut in relief, and set off on a blue ground. In other parts scarlet, black, and green are used, and the tablet is finished with brass sides instead of the usual wooden frame.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to The Strand Newspaper Company, Limited.

TERMS OF SUBSCRIPTION.

One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India, £1 6s. 0d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front-page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No Front-page or Paragraph Advertisement inserted for less than 5s.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page Advertisements and alterations in serial advertisements must reach the office by Tuesday morning to secure insertion.

Situations.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., LI., LIII., LIV., LVIII., LIX., LX., LXI., LXII., LXIII., LXIV., and LXV. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Received.—J. C. Watkins.—One Who Knows.—N. S. J.—E. D. and Co.—F. R. (Newbury).—W. M. and Co.

Correspondence.

BUILDERS' CLERKS' INSTITUTION OF GREAT BRITAIN.

To the Editor of the Building News.

Sir,—It is now definitely determined to start this institution. It is proposed to hold a meeting at Cannon-street Hotel, at four o'clock, October 26th next; but to enable this to be done, all those intending to join please write to the undersigned at once. A full prospectus will be sent on application. The objects of the Institution will be to assist good and reliable men to obtain berths with firms in London and the provinces at fair and equitable wages, and to enjoy other benefits, which will be fully detailed in the prospectus.—I am, &c., Henry Hodling.

Acacia Villa, Queen's-road, Wimbledon.

A portrait in oils of Mr. Thomas Horn, C.E., the first statutory chairman of the Vestry of Westminster, who has resigned office after services to the parish extending over forty years, has been placed in the large council room of the Westminster Town Hall.

At the quarterly meeting of the committee of the North Wales Counties Lunatic Asylum, held on Friday at the asylum, Denbigh, it was decided to write to Messrs. Ellison and Son, Liverpool, to the effect that the Commissioners in Lunacy had approved of the plans for enlargement, and that the committee would meet them on the 29th instant.

In our notice last week, p. 538, of the reopening of St. Peter's Parish Church, St. Alban's, after rebuilding under the direction and at the sole cost of Lord Grimthorpe, we omitted to mention that the works were carried out by Messrs. Longmire and Burge, of Osnaburgh-street, N.W., Mr. Hubbard was the foreman of works, the clerk of works being the late Mr. Karbery.

Intercommunication.

QUESTIONS.

[11438.]—**Discharge of Pipe.**—How many gallons of water per diem will be discharged by a 4in. pipe 20,460ft. long, having a fall of 167ft.?—Rho.

[11439.]—**Floor for Dancing.**—Will some reader kindly give sketch or particulars describing how a floor which has the peculiar swinging or oscillating movement (for dancing) is constructed?—Presto.

REPLIES.

[11437.]—**Concrete Floor.**—(10ft. spans). If "Safety" will make his stable floor a total thickness of 7in.—viz., 5in. of coke breeze, 4 to 1, and 2in. of granite concrete, 2 to 1, with ⅜in. square rods twisted and placed 4in. c. to c., and within an inch of the bottom, he will have a floor six times the strength required for stables. The upper half of his floor will never fail him, its compressional strength is so great; and the rods not being able to slip in consequence of the twist, will more than make up for the weakness in tensional strength of the lower half. If he wishes to use steel joists, he will find 3in. by 1¼in. by 15in. c. to c. give him equally good results with half the weight as his 7in. by 2¼in. 2ft. apart. The strength necessary for stable floors is 2cwt. per superficial foot safe load.—Philip Hobbs, Newcastle-on-Tyne.

Legal.

PARISH COUNCILS AND DISQUALIFICATIONS.

THE Local Government Act, 1894, in sec. 46, sub. (*i*), provides that a person shall be disqualified from being elected or being a member of a council of a parish if he has within five years before his election made a composition or an arrangement with his creditors. In a recent case coming from the district of Tavistock (*Times*, August 8), the point was raised as to whether this clause would apply to disqualify an individual member of a firm which had made such an arrangement with its partnership creditors. The special case stated found that James Dockett, whose election was in question, had been in partnership with his brother, John Dockett, and the firm not being successful, they both executed a deed of assignment for the benefit of their joint creditors. None of the debts were owing by James Dockett separately, and he had paid the trustee for the firm's creditors a total sum of £350, which had been accepted in satisfaction of all claims against him. It was also proved, as a fact, that the intention of the parties was to assign only the partnership property, and to register the deed as only affecting the firm; and that, in other words, James Dockett was solvent, and had made no arrangement with his own creditors.

The judges, after argument, held that there was a disqualification, and on that James Dockett must be declared as not having been duly elected. Mr. Justice Day held that on the face of the deed there was an arrangement between James Dockett and all his creditors, and this came within the meaning of the statute. Mr. Justice Wright laid down the broad rule that, when a partnership makes an arrangements with its creditors, the members of that partnership also make an arrangement with their creditors under the Act. Of course, in law, each partner is legally liable for the payment of the whole of the debts of the firm, and so it is difficult to distinguish an arrangement with their creditors from one with those to whom he is only personally liable. In English law we do not yet recognise a firm as a distinct corporation separate from the partners of whom it is composed, as they do abroad, and so the argument is not so easy as it would be upon the Continent. At all events, there is now no doubt as to a partnership failure disqualifying individual members from being elected to parish councils.

Fred. Wetherfield, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

B.—Partnership.—Trade Name.—Set Off.—If the sums owing by A to F and G were on account of the business he carried on under the firm's name, then these creditors can set off those sums as against what they now owe to the firm trading under the same name, and which business A has since sold to E, especially as no notice was given of the change of owners; but A may be liable to E for the amounts.

Mr. George Batty, contractor, of Berwick-on-Tweed, will be nominated as Sheriff of that borough on November 9th.

LEGAL INTELLIGENCE.

Caution to Drain Repairers.—E. A. Wright, of 51, St. George's-square, Upton Park, was summoned at Woolwich Police-court, on Saturday, by the Plumstead Vestry, for repairing a drain in such a way as to be a nuisance. Joseph Goss, of Ramsey-road, Leytonstone, the workman who executed the repairs, was summoned for the like offence. John Rance, sanitary inspector, said he complained to Wright, the agent of the property, of the defective drain, and he promised to attend to it. Witness afterwards found that a loose pipe had been placed over a broken joint, so that both sewage and sewage gas could escape. Earth had got into the drain. The improper repairs were executed by Goss, who had since done the work properly. Mr. Kennedy dismissed the summons against Wright, and fined Goss £5 and costs, telling him it was one of the worst cases he ever heard of. If he had not been a poor man he would have fined him £10.

Charge of Conspiracy against a Sub-Contractor.—At Westminster Police-court, on Tuesday, David Atkins, sub-contractor, of Wellington Buildings, Commercial-road, Pimlico, surrendered to bail for further examination on charges of conspiring with a man named Joe Riley, not in custody, to defraud Mr. Henry Wright, builder. The accused was continuously employed from May till September on the bricklaying work of houses which the prosecutor is building at Culford-gardens, Chelsea. Prisoner was paid by the rod of brickwork, and had from 15 to 25 men at work for him. In September Mr. Wright made the discovery that though only 491,000 bricks had been used, he had been charged for the laying of 800,000—a difference of 73 rods of brickwork. The weekly payments for the work had been passed on the certificate of Riley, in the employ of the prosecutor as measuring clerk, and of him an explanation was demanded. Riley absconded, and wrote to prosecutor saying that he had betrayed his trust through drink and gambling. Atkins continued his sub-contract, paying out of his own pocket for his men for two weeks after irregularities had been found out. On his behalf it was urged there was no evidence of collusion with Riley. Evidence was given that the accused received some £300 in excess of the amount he was entitled to, and that against this was to be set off £71 worth of work done since, and not paid for by the prosecutor. The prisoner, who reserved his defence, was committed for trial to the sessions, bail in £100 as before being allowed.

The Eyre Estate Arbitration.—Lord Balfour of Burleigh opened an inquiry at the Surveyors' Institution, Westminster, on Tuesday, as arbitrator in the matter of the trustees of the Eyre Estate, St. John's Wood, and the Manchester, Sheffield, and Lincolnshire Railway, to assess the value of certain properties acquired by the railway company for the purposes of their line into London and the projected station in Marylebone, the total area being put down at 46 acres. Sir E. Clarke, for the trustees, gave an outline of the claim, which he described as the largest ever submitted to an arbitrator under the Lands Clauses Act. The estate was originally the property of the Knights of St. John of Jerusalem, and was afterwards seized by the Crown. Towards the close of the 17th century it fell into the hands of the ancestors of the present owners, the Eyre family, and he proposed to show the damage and injury inflicted upon the estate by the passage of this railway through its entire length. The trustees claim £450,000 as compensation. Sir J. Whittaker Ellis afterwards gave evidence, estimating the depreciation to property not taken at £50,047.—On Wednesday, Mr. Edward Tewson was called. He valued the properties to be taken at 20 years' purchase, and the injury to those remaining at £45,030.

In re E. Holdsworth.—A petition has been filed in the Bradford Bankruptcy Court against Edwin Holdsworth, of Storr Hill, Wyke, and carrying on business as a builder and contractor under the style of Holdsworth Bros. The liabilities are expected to amount to about £6,000, and the assets to £600 or £700. The debtor's firm were the contractors for the Cleckheaton Town Hall and the filter-beds for the Bradford Corporation at Denholme. It is stated that they lost considerably on the latter work, and to this they largely attribute their failure.

In re F. Backhouse.—A meeting of the creditors of Francis Backhouse, Goole, was held on Monday at Goole. The gross liabilities amount to £13,600, of which £3,501 is put down as fully secured; £8,246 is owing to the creditors partly secured, and £145 6s. 5d. to preferential creditors. The liabilities amount to £3,741. The assets are estimated at £856, leaving a deficiency of £2,884. The debtor attributes his failure to depreciation in the value of house and shop property at Goole, to loss on contracts, and interest on borrowed money. The Official Receiver pointed out that the bankrupt had been a speculative builder, and started at Winterton, in Lincoln, in 1869. The bankrupt had kept no books (except a day-book), and no record had been kept of his contracts. It was resolved that the debtor be adjudicated bankrupt.

WATER SUPPLY AND SANITARY MATTERS.

Arbroath, N.B.—The Arbroath Burgh Commission received on Monday a report from Mr. James Wilson, C.E., Edinburgh, on the water supply of the town. It stated that, as the result of a three months' continuous pumping night and day, the supply from the Nolt Loan Wells and from the experimental well at Warslap had diminished, the former from 171,000 to 141,000 gallons per day, and the latter from 211,000 to 130,000. The quantity from the Warslap well could not now be put above 125,000 gallons. The commission, by this test, had proved that a sufficient quantity of water could not be got from the gravel bed into which the Nolt Loan Wells and the Warslap Well had been sunk, the total supply being only 11 gallons per head per day. Mr. Wilson therefore advised the commission to abandon the pumping altogether, and give Parliamentary notices for proceeding with the gravitation scheme already recommended by him. After a discussion, the report was approved.

East London Water Supply.—Colonel Ducat, R.E., and Dr. Barry have completed their inquiry on behalf of the Local Government Board by inspecting the waterworks of the East London Company. They were accompanied by Mr. Bryan (engineer to the water company), Mr. A. R. Binnie (engineer to the London County Council), and Mr. Lovegrove (surveyor to the Hackney Vestry). The party drove first to the chief pumping-station and filter-beds in the Lea Bridge-road, where they were taken round the works by Mr. Bryan, and shown specimens of the company's fittings. They examined the method of connecting mains and service pipes in use by the company, and the means of controlling the supply through any section of pipes. They then drove to the storage reservoirs at Walthamstow, where the large new works are in progress. The East Warwick reservoir was first inspected. This is one of the new reservoirs on which the company relies to bring their storage up to 1,200,000,000 gallons. The plans were prepared immediately on obtaining the Royal assent to the Water Bill in 1894, and the contract signed with Messrs. John Aird and Sons on March 28. Within a fortnight £10,000 worth of plant was on the spot, and very rapid progress has already been made in excavating the bed of the reservoir and constructing the embankment. When completed, the area will be 40 acres, and the storage capacity about 250,000,000 gallons. From here the party proceeded to the Racecourse reservoir, the level of which is being raised about 10ft. This work is approaching completion. Finally, the inspectors visited the Hagger-lane pumping-station, near Woodford, and examined a new covered reservoir in course of construction.

Manchester Sewage.—The Mersey and Irwell joint committee have granted a further period of six months to Manchester for the completion of her sewage scheme. The city surveyor states that the amount actually paid up to the 19th ult. by the corporation was £556,540 17s. 3d. The total estimated cost of the existing works was £700,000, and, roughly speaking, there was about £100,000 worth of work in course of construction. If no difficulties were met with it would take at least twelve months to complete the work. A portion of the sewage is treated at the filter-beds at Davyhulme, and Sir H. Roscoe said the effluent was of an exceptionally good character. There is also in operation a costly plant for the chemical treatment of the sewage and for sludge pressing, and additional land has been reserved for future tank extension. At present only thirty acres are devoted to the filter-beds; but the Local Government Board has sanctioned the sum of £25,000 for the construction of the first section of artificial filters on 60 additional acres.

Rhyl and its Water Supply.—In consequence of the rapidly-increasing summer and winter population of the Rhyl district, the urban district council, who are the owners of the water service to the town, have decided to take steps to increase the delivery of water from the reservoir. Mr. F. Storr, Wrexham, who has been consulted, recommends the council to lay a new 8in. main from the bottom of the hill on which the service reservoir is situate to the elevated ground just outside Rhyl, with a new 12in. main from the latter point to the centre of Rhyl; also to construct an elevated tower, so that a pressure of 80ft. may at all times be given at Rhyl. It is estimated that a 9in. main will cost £4,750, a 10in. £6,110, and the elevated tower about £2,500. An additional reservoir for storage purposes will also have to be built.

Scunthorpe Water Supply.—At a meeting of the Scunthorpe Urban District Council on Thursday, the 10th inst., the report of Mr. Stevenson, C.E., London, was read. Mr. Stevenson, who had been engaged to examine the bore-hole and beck or spring in Rough Bottom Plantation, recommended that two bore-holes of 9in. diameter should be sunk and a reservoir of 600,000 gallons capacity placed on the hill a short distance to the east of the proposed pumping station. He estimated the cost of works, mains, and reservoir at £18,870, exclusive of land, water rights, and way-leave.

York.—A short time ago Mr. James Mansergh, the engineer in connection with the recent sewerage scheme, was asked to report on the condition of the sewer ventilation, which has, in places, been found to be offensive. He remarks that the old sewers were in a foul condition, and contained deposits which the normal flow of sewage could not displace. The free outlets have, however, changed this condition, and large quantities of long-standing deposits have already been swept into the new sewers, and this will continue for some time. Every rain-storm leaves them so much to the good. For ventilation purposes, the new sewer system of the city is divided into six parts. On the new sewers there are 441 manholes and ventilators. The length is 17 miles 527 yards, and as there are 354 open ventilators on them, there is one on an average every 86 yards, or the usual allowance of 20 per mile. On the old sewers there are 331 manholes and ventilators. The length is about 45 miles, and as there are 217 open ventilators on them there is one on an average every 365 yards—that is, only one-fourth the number per mile provided on the new sewers. Mr. Mansergh believes that the principal part of the offence lately complained of is due to the cleansing of the old sewers which is going on, and that this will right itself in time. His advice is to wait the natural process of cleansing which is going on. If any surface ventilator is peculiarly offensive, and no special cause therefor can be discovered in the sewer it serves, the remedy is to erect a shaft rising to a sufficient elevation above the road. In the old sewers the number of ventilators should be considerably increased.

STAINED GLASS.

Merchiston, N.B.—St. Michael's Established Church, Merchiston, has been embellished with a large stained-glass memorial window, placed to the memory of his wife, the Hon. Gertrude Hope, by Mr. James Hope, W.S. It occupies the east end of the church, and has been treated in the style prevalent in the early part of the thirteenth century. The window is one of three divisions, and has been filled with two tiers of subjects, the three upper ones being "The Descent from the Cross," occupying the central opening, and scenes from the life of Moses and St. Paul on either side. Below these are placed representations of the women bringing children to our Lord, and incidents from the life of Ruth and Dorcas. The work has been carried out under the superintendence of Mr. John Honeyman, A.R.S.A., of Glasgow, at the studio of Messrs. Ballantine and Gardiner, Edinburgh.

CHIPS.

The parish church of Fawley, South Hants, is undergoing renovation by Mr. Talling, of Fawley, under the superintendence of Mr. Davy, of Cadland. The whole of the ancient stonework is being cleaned and the walls distempered.

New schools for infants, which have been erected for the Eling School Board by Mr. T. J. Jukes, of Freemantle, from designs by Messrs. Mitchell, Son, and Gutteridge, of Southampton, architects to the board, were opened on Monday.

The Local Government Board have granted the corporation of Rochester permission to borrow the sum of £40,000 for sewerage works.

Additions to the village schools at Thorverton, Devon, were opened last week. Mr. J. Jerman, Bedford-circus, Exeter, was the architect, and Mr. Harry Pearse, of Woodbury, the contractor.

On Saturday, at Hinckley County Court, the Nuneaton and Chilvers Coton District Council sought an injunction restraining the Hinckley District Council from polluting Sketchley Brook. The case was adjourned pending inquiry respecting a sewerage scheme, prepared by Mr. Everard, of Leicester, and estimated to cost £3,000, which the Hinckley authority propose to adopt.

On Thursday in last week the foundation-stone of a mission room was laid at New Bricket Wood. The chapel will be 36ft. by 32ft., built of yellow stock brick with red facings, and Gothic in style. Messrs. J. and W. Savage are the contractors. Mr. J. Tanner is clerk of the works.

The corporation mace at Oxford, it seems, is the largest in the kingdom, 64½in. high, Winchester being bracketed in the second place of honour with London, also 63in. Portsmouth's great mace is 48in., that of Southampton 54in., Basingstoke 37in., Andover 20in. in length.

The Prince of Wales has presented to the parish of Babingley, part of his Norfolk estate, an iron church, with thatched roof, in place of the church of St. Felix, built centuries ago upon the foundation of one of the oldest churches in the country. The new church is close to the village, and more convenient than the present edifice, which is in ruin beyond repair.

Our Office Table.

The Technical Education Board of the London County Council have issued a report on "Apprenticeship in the London Building Trades," drawn up by Mr. F. Oldman, of the National Association for Technical Education. He states that the number of apprentices is very small, there being only about eighty, nearly half of whom belong to the carpentering and joinering division, among some 12,000 journeymen and labourers, the important cause of this scarcity seeming to be the difficulties of discipline. If the boys are guilty of misconduct, the employer has no remedy save the legal one, which is both troublesome and expensive, and therefore but rarely resorted to, and the absence of real control thus resulting is in every way prejudicial. It is estimated that if some control could be exercised by a board or competent authority acting as an intermediary between the employer and the parent something might be done to lessen the evil. As these conditions do not obtain in the case of learners as distinguished from legally indentured apprentices, there is less hesitation in employing them, and they form, perhaps, the chief source from which the trade is recruited. The employers fully recognise the advantages of some satisfactory apprenticeship system, and it is suggested that the Technical Education Board might perhaps bring pressure to bear upon the master builders to consider the question seriously. Trade unions also might issue certificates to those members of their trades who had served a proper apprenticeship; while good would be done by distributing, perhaps as prizes, the standard technical works of the trade, which are usually too expensive for the average learner or young journeyman to provide for himself.

The Hampshire Field Club has undertaken an interesting work at Winchester. Under permission granted by the late Bishop, Dr. Thorold, who was a member of the club, explorations are being made of the foundations and plan of the ancient Castle and Palace of Wolvesey, the residence for centuries of the Bishops of Winchester. The cost of this work is met by a grant from the club funds, and the excavations are being made under the capable superintendence of Mr. Norman H. C. Nesbitt, A.R.I.B.A., who has discovered sufficient to enable him to draw a plan of the Norman Palace, though this has yet to be in part verified by laying bare evidences of the actual work. The work in hand will, when completed, furnish reliable data for a more complete history of one of the most interesting buildings—now in most abject ruin—in a county rich in treasures of this kind. The plan of the building and the report of Mr. Nesbitt's careful researches will be published in the *Papers and Proceedings* of the club. The members paid a visit to Wolvesey on Wednesday in last week, when Mr. Nesbitt and Mr. T. W. Shore explained what is being done.

Mrs. May Morris Sparling lectured at the Birmingham Municipal School of Art on Friday evening on "Mediæval Embroidery." Mr. E. R. Taylor (head master of the school) presided, and, in opening the proceedings, said the school was already deeply indebted to a great man—Mr. William Morris—and on the present occasion they were honoured with a visit from his daughter, who had kindly promised to instruct them in an art in which she was an expert, and on which she was an authority. Mrs. Morris Sparling said she desired to take her hearers back to a period when, as far as they could tell, needlework decoration seemed to have reached its best and most intellectual development, when it had its recognised guilds and schools, its famous workers and masterpieces. After pointing out how the people of the Middle Ages combined with a fantastic and restless temper a boldness and strenuousness of purpose, apparently in striking contrast, Mrs. Sparling said the lighter works of an energy like this had their significance and their place in history. Embroidery played an extremely important part in that time, and when one remembered the beauty of the work, and the devoted labour which was bestowed upon it, one was indeed inclined to speak with some bitterness of the Later Renaissance in the art. Ecclesiastical embroidery in the Middle Ages was no holiday pastime for the ladies. When undertaken by amateurs it was worked in as business-like and thorough a manner as in the church schools or lay guilds themselves, and in its design were repeated the characteristics of the time. She confessed to being considerably shocked at the poverty of modern church work, everything appearing to be just a little better than it really was. It would be preferable to cover the altar with plain linen, to paint the walls white, and confess a poverty with no vulgarity in it. Mrs. Morris Sparling then explained the technique of embroideries of different periods, the lecture being illustrated by a series of lantern views of photographed specimens.

The department of Egyptian and Assyrian antiquities of the British Museum has been recently enriched by the addition to its collection of a quantity of interesting remains from Egypt, Babylonia, and Armenia. Among these is the skeleton of an Egyptian mummy. The remains are those of a man of middle age, of the Eleventh Dynasty, about B C. 2666. Two fresh sandstone tablets are among the most beautiful specimens of hieroglyphic carving in the Museum. One of these is an Imperial decree issued by Seti I. (B C. 1366), the father of Rameses II. This decree is inscribed upon a large tablet measuring 4ft. by 2ft. 8in. The second tablet measures 6ft. by 5ft., and is a funereal stele for a chief of the prophets. The most valuable additions, however, are the fragments of inscriptions taken from the tomb of Tehuti-Hetep at El-Bersheh, presented to the Museum by the committee of the Egypt Exploration Fund. In the Babylonian section a gate-socket, made of black diorite, with an inscription to Gudea, and a portion of a Babylonian sacrificial bowl, also of diorite, with an inscription of a priest-king who ruled in Lower Chaldea about B.C. 4500, are the chief additions. The latter inscription is now the oldest Babylonian one in the Museum. The most recent find in Armenia is represented by a sacrificial bowl of sandstone, 2ft. in diameter, inscribed in Armenian cuneiform with the words, "Sarduri, son of Ishpunish, this house has built."

The museum of the Edinburgh Botanic Society will shortly be in possession of a segment cut from the section of a very large Wellingtonia (*Sequoia gigantea*), obtained for the Natural History Museum, South Kensington, last year. The tree, cut down in 1892 near Fresno, California, was 276ft. in height. The section recently set in a central recess on the east side of the great Central Hall of the parent Museum at Kensington is about 15ft. in diameter, and perfectly sound to the centre, showing distinctly 1,335 rings of annual growth, and is thus of great interest as affording exact evidence as to the age of this species of tree. The still larger specimens sometimes met with are almost always hollow within, and hence the number of rings cannot be counted. The wood is of too soft a character to be of much value for commercial purposes.

At this period of the year the question of how to protect our cisterns and pipes from the effect of frost is one of apparent importance. Canvas, straw, hair-felt, sawdust, &c., have been used for this purpose, with more or less benefit in the past, but all these materials have two disadvantages—their liability to decay and their natural tendency to harbour vermin. A substance well adapted for this purpose is the glass-like fibre produced from blast-furnace slag, now widely known as "silicate cotton" or "slag wool." This article is absolutely imperishable, a most powerful non-conductor of both heat and cold, and exceedingly inexpensive. For lagging cisterns or boilers it can be packed at very trifling cost under a casing of wood or sheet-iron. The strips are supplied in rolls five yards long, 4in. wide, and from ½in. to 2in. thick, or special sizes if desired, at prices from 6½d. per yard run, according to thickness. They are, of course, equally adaptable for either cold or hot pipes, and are frequently applied to superheated pipes, on which no other non-conductor can stand. They are manufactured by Messrs. Frederick Jones and Co., Perren-street, Kentish Town, N.W.

An improved method of construction for asphalte has been patented by Mr. James Wetherill, of Henley-road, Batley, late borough surveyor of Keighley. The present mode of preparing asphalte is by softening the pitch with creosote oil or coal-tar, so that when cold it shall be tough, and not brittle in any way. This, as is well known, melts with the heat of the sun in summer on a clear day, and runs out of the joints of the paving on the surface of the road, filling up the channels and gullies. In cold weather and frost the material becomes very brittle, and crushes with the vibration of the traffic passing over the road, and is afterwards removed by the scavengers, thus leaving the joints of the sets only partly full, and so allows the water to get under the sets and loosens them. Mr. Wetherill's patent improved asphalte is made in the ordinary way, with the exception that less oil or tar is used, and lime is added, thus hardening it in summer and softening it in winter. It is claimed for it that it will change as the weather changed from hot to cold, and will always keep a tough and reliable joint impervious to wet and frost. In the case of wood blocks, it allows of the expansion and contraction of the wood, and when grit is thrown on the surface of the roadway to prevent slipping, part of it will become firmly embedded in the asphalte. It will also, it is said, keep a full joint, and so prevent the splintering of the edges of the sets and wood blocks, and greatly prolong the life of the material used, and reduce the cost.

At the last meeting of the Leeds City Council, a member protested against the action of the streets committee in appointing three gentlemen as valuers in addition to Mr. Fawcett, who was arbitrator on behalf of the corporation. The chairman of the committee said the corporation had laid down the principle that they would only employ men who would not appear in any case against them, and members of the council were aware that two well-known valuers refused their services on such terms. They decided to engage the experts for all the cases, and asked was it conceivable that local gentlemen would for a guinea per case allow themselves to be excluded from every case on the other side? He contended that the procedure of the committee had been the most economical. The total amount of the claims in the 30 cases (out of 63) which had been settled was £87,808 6s., and the amount for which they had been settled showed a reduction of £39,475 16s.

The great tunnels of the world will be surpassed by the Simplon, which, when completed, will be 11 miles in length. The Hoosac, the first great railroad tunnel, begun in 1854 and finished in 1876, is one of the four great mountain tunnels, and is 4½ miles in length, and the mountains it bores are 2,504ft. and 2,212ft. above the sea level. The others are Mont Cenis, St. Gothard, and Arlberg. Mont Cenis is 7⅝ miles long, St. Gothard 9¼ miles, and Arlberg 6⅜ miles. It took 14 years to construct the first, nine years to build the second, and five years to complete the last named. These facts and figures are given in an article recently published by Mr. Robert Jamison in the *Chautauquan*. With the compressed-air rock drill greater achievements are probably in store.

It is not expected that the Arc de Triomphe will stand out free from the scaffolding now round a large portion of it in less than ten months' time. M. Esquie, the State architect, has viewed the staging erected, and reports that the stone used in construction is very bad in quality, and that the cornices and portions of the frieze are much dilapidated. The restoration of the reliefs will, he estimates, cost £12,000, but the work cannot go on until the Chambers vote the requisite funds. At the same time, those who object to the periodical encumbering of the famous monument with wooden beams and planks, are told to recollect that frequent repair is necessary.

The arrangements and details of a cold-room or ice-chamber of a wholesale meat house are described in a New York journal. The brick walls are insulated by boards and building paper, with air spaces between. The studding to the brick walls is 2in. by 4in., sheathed with 1in. matched boards, which in turn are covered with a double thickness of building paper, and, lastly, with a second and outer sheathing of inch matched boards. The furring forms an air space between the outer brick wall and the board sheathing. There are thus three sheathings: one of board furred from brick wall; a second one of paper, with air space made by inch strips; and a third inner sheathing of inch boards, also kept free of the paper by a furring of inch strips. The window openings have 2in. by 4in. strips, top, bottom, and sides built into the masonry. There are four sashes to each window, and air spaces between them. The jambs are of planks, closely fitted to the brick reveals, with paper between, and also to the insulation sheathing described. The roof is sheathed with two thicknesses of matched boards, with a double layer of paper between, and the same is repeated below the ceiling timbers.

MEETINGS FOR THE ENSUING WEEK.

Friday.—Architectural Association. Conversazione at the King's Hall, Holborn Restaurant. 8 p.m.

Saturday.—Builders' Clerks' Institution of Great Britain. Meeting for Organisation at Cannon-street Hotel. 4 p.m.

CHIPS.

Probate of the will of Mr. George Knowles, of Shipley Moor, and formerly of Bradford, architect, and a member of the Shipley Local Board, who died on the 26th July last, aged 79 years, has been granted to his widow. The net value of the personal estate is £3,210.

A new organ which has just been built in St. Peter's Parish Church, Woolton, by Messrs. Forster and Andrews, of Hull, was opened on Friday. The organ is inclosed in an oak case with ornamental frontal pipes, and cost about £1,400.

The Aberdeen Harbour Board adopted, on Monday, plans for the improvement of Torry harbour, expected to cost £4,700.

M. Nénot was elected, on Saturday, a member of the French Academy of Fine Arts, Section of Architecture, in the place of the late M. Ancelet.

Mr. G. F. Watts, R.A., at the suggestion of the Kyrle Society, has presented to the Missions to Seamen Institute, Poplar, an original chalk drawing of his famous picture "Hope." The drawing will hang in the large recreation room of the institute.

Additions have been made to the Nelson relics at the Royal United Service Institution, among them being the bedstead that Lord Nelson used on board the Victory.

At Sandwich the mayor and corporation have under consideration a scheme for constructing a steam tramway from the town to the sea front. The promoter of the scheme is Mr. Stevens, the engineer for the recently-completed Rye and Camber tramway.

The parish church of Ewerby, near Sleaford, has undergone a restoration, mainly at the cost of the Earl and Countess of Winchilsea. The chief feature is the new roof, which has been constructed of oak, cut twelve years ago from the Haverholm Estate, and valued at £1,000. The altar, reredos, lectern, pulpit, and chancel furniture generally are new. The total cost of the restoration is about £2,500. Mr. F. Pattinson, of Ruskington, has carried out the work, and Mr. C. H. Fowler, F.S.A., of Durham, was the architect.

New banking premises are about to be erected in the Thoroughfare at Woodbridge, for Messrs. Bacon, Cobbold, and Tollemache, from plans by Mr. T. W. Cotman, M.S A., of Ipswich.

At St. Helen's Church, Sefton, on Friday, a new stained-glass window was unveiled in the west end of the north aisle. The work has been executed by Messrs. Lavers, Westlake, and Barraud, of Endell-street, W.

At the Exeter County Court, on the 10th inst., Mr. Charles Brealy, builder, of St. Thomas, sued Messrs. Starkey and Knight, of Tiverton, to recover £50 under a contract and 15s. 5d. for extras. Judgment was given for the plaintiff for the 15s. 5d.; but for the defendants on the claim for £50, as the surveyor to whom the matter had been referred was of opinion that the work had not been carried out according to the contract.

The introduction of mechanical motive power for Glasgow Corporation tramways has been under consideration almost ever since the concern was taken over by the town council over a year ago. A specially-appointed sub-committee has now definitely decided that mechanical power shall be adopted, although the specific form has not yet been fixed upon. It is probable that different methods will be utilised on the various routes, as may be most suitable for the gradients or localities.

The Duke and Duchess of Sutherland left Dunrobin Castle on Friday by special train for Forsinard and the north coast of Sutherlandshire. They drove down Strathalladale, along the route of the proposed light railway from Forsinard to Portskerra. The survey and plans have been completed, modifications having just been made on the plans so as to cheapen the cost and ease the curves, and they have now been submitted to Mr. Murdoch Paterson, the consulting engineer; and after his examination and revision of the estimates the necessary application, with plans and certificates, will be lodged with the Board of Trade before November 30th.

On Wednesday week a new organ, which has just been placed in Woolton Church at a cost of £1,400, was formally opened. The instrument has been built by Messrs. Forster and Andrews, of Hull, from the specification of Mr. E. Townsend, Driffield. It is inclosed in an oak case, carved to match the screen filling in the south side of the chancel, and the ornamental pipes in the chancel and nave are decorated in gold and French grey.

Trade News.

WAGES MOVEMENTS.

Swansea.—New rules governing the relationship between the master builders of Swansea and operative carpenters and joiners were signed on Saturday by representatives of both parties, and the strike, which has lasted 15 weeks, terminated. One of the new rules provides that if any alterations are desired in the rules they shall be effected by five months' notice, to expire May 1. The rate of wages is to remain at 8d. per hour.

The Skilled Labour Market.—The monthly memorandum of the Labour Department of the Board of Trade says that in most of the important industries the state of the labour market continued to improve during September, and the percentage of unemployed in unions making returns is lower than at any period since 1891. The building trades continue busy in most districts, the percentage of unemployed members in unions making returns having fallen from 1·8 in August to 1·6 in September, compared with 3·6 in September, 1894. On the whole, the furnishing and wood-working trades are well employed, and the percentage of unemployed union members has fallen from 2·7 in August to 2·6 in September, compared with 4·7 in September, 1894.

A number of specimens of oak carvings from old houses recently pulled down in Ipswich have been added to the collection in the Museum of that town.

The town council of Christchurch, Hants, have under consideration a scheme prepared by their borough surveyor, Mr. Walter Knapp, for the sewerage of the town. The proposed works would cost, it is estimated, £15,476.

The Seven Incorporated Trades of Aberdeen inaugurated, on Friday, additions and alterations that have been made to their building, Trinity Hall, Union-street, the scheme costing about £12,000. The marble staircase is regarded as the finest of the kind in the North. The vestibule ceiling is divided into eight panels, surrounded by Gothic mouldings, in the centre of each being a representation of the trades' coat-of-arms. A supper-room, lighted from the south by four stained-glass windows, has been added, while a number of new rooms and the rearrangement of others complete the scheme.

The water supply of Leeds has been augmented by the laying of an additional main, 30in. in diameter, between Swinsty and Eccup reservoir, a work which has been completed under the supervision of Mr. Thomas Hewson, the city engineer, this week. Henceforth the gravitating supply of water to Leeds will be by three 30in. mains from Swinsty reservoir, and, excepting on very rare occasions, there will be no pumping required at Arthington. For the better supply of water to the high-level districts of Beeston, a main is about to be laid from the high-level pumping main at Whingate. The laying of this main will cost £1,000, but it will form part of the mains which are to be laid in connection with the high-level service which it is intended to bring from the Washburn valley by new reservoirs to be built there. These reservoirs will not be completed for about seven years.

The enlargement and renovation of St. Peter's Church, Pembury, was celebrated by reopening services held last week. The chancel has been opened out into a newly-erected organ-chamber, choir-stalls have been placed in the chancel, and the new chantry has been made a continuation of the north aisle. On the south side the vestry has been correspondingly enlarged. The walls of the chancel have been redecorated, and the chancel floor has been laid with tiles. The organ has been removed from the west end of the church to the organ-chamber. The alterations have provided extra accommodation for 70 adults. The church has also been redecorated, gas has been laid on, and hot-water apparatus has been put in. The diocesan architect, Mr. Philip Day, prepared the plans; and the work has been carried out by Messrs. Penn. The cost has been £1,200.

A public lavatory has been constructed by the St. Giles's District Board of Works at the Holborn end of New Oxford-street. It is placed beneath the roadway at a depth of 14ft., and the superficial area is 1,500ft. The work has been designed by Mr. G. Wallace, C.E., engineer to the board, the contractors being Messrs. C. W. Killingback and Co., of Camden Town. The sanitary arrangements have been carried out by Mr. G. Jennings, of Palace Wharf, Lambeth. The convenience is ventilated by means of Blackman's air-propeller, worked by water power, the waste water being used for flushing purposes. The roof of the convenience is formed with rolled steel girders and trough-plates, supplied by Messrs. J. Westwood and Co., of Millwall, who also supplied the staircases, which are formed of iron framing, fitted with Andrews's patent reversible treads. The net cost was about £2,500.

LAVERS and WESTLAKE.
PAINTED GLASS WINDOWS.
MONUMENTAL BRASSES.
MURAL DECORATION.
ENDELL STREET, BLOOMSBURY, LONDON, W.C.

FAMBRINI & DANIELS,
Manufacturers of IMPERISHABLE CONCRETE MASONRY for
CORNICES, STRING-COURSES, MODELLED PANELS, AND EVERY STONE-WORK REQUISITE.
LANDINGS and Plain or Moulded and Mitred STEPS, durable throughout.
WORKS AND OFFICES: LINCOLN.

DOULTING STONE.
CHARLES TRASK & SONS.
(THE DOULTING STONE COMPANY),
DOULTING, SHEPTON MALLET.
London Agent:
E. A. WILLIAMS, 16, Craven Street, Strand, W.C.

HAM HILL STONE.
The attention of Architects is specially invited to the Durability and beautiful Colour of this material.
Quarries Well Opened; Quick Despatch Guaranteed; Stonework Delivered and Fixed Complete. Samples and Estimates Free.
Address:—
THE HAM HILL STONE COMPANY,
NORTON, STOKE-UNDER-HAM, SOMERSET.
London Agent:—
Mr. E. A. WILLIAMS, 16, Craven-street, Strand, W.C.

JOHN GRUNDY,
HEATING APPARATUS MANUFACTURER.
ESTIMATES FREE. SUCCESS GUARANTEED.
Foundry: TYLDESLEY, MANCHESTER.
Showrooms and Workrooms:
TYLDESLEY BUILDINGS, TORRENS STREET, ISLINGTON, N.
West End Showrooms: 57, WIGMORE STREET, LONDON, W.
Chief Office:
30, Duncan Terrace, City Road, London, N.

WM. OLIVER & SONS,
MAHOGANY, WAINSCOT, WALNUT, TEAK, VENEER, and FANCYWOOD MERCHANTS,
120, BUNHILL ROW, LONDON, E.C.
The most extensive Stock of every kind of Wood in Planks and Boards, dry and fit for immediate use.

TENDERS.

⁂ Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender; it adds to the value of the information.

Axminster.—For the supply of 450ft. of 6in. water main, for the rural district council:—

Dening and Co., Chard	£67	10	0
White, F., Colyton	61	10	0
Parsons, W. B., Axminster... ...	59	10	0
Frost, A. "	51	17	6
Otton, F. " (accepted)	48	7	10

Bedford.—For the supply of 200 cast-iron electric-lamp columns, for the town council:—

Bradley, W., Brighouse, Yorks (accepted)	£449

Bexhill.—For the erection of business premises St. Leonard's-road, for Mr. Joshua Taylor. Mr. J. B. Wall, architect:—

Gold, C. H., Bexhill (accepted) ...	£787	0	0

(Lowest tender received.)

Bexhill.—For the erection of corner premises, Sackville and Western-roads, for Mr. A. Pritchard. Mr. J. B. Wall, architect:—

Padgham and Hutchinson	£1,290	0	0
Gold, C. H. (accepted)	864	0	0

Bexhill.—For alterations and additions to Nos. 1 and 2, Congressbury-terrace, for Mr. Hoile. Mr. J. B. Wall, architect:—

Newman, W. G.	£393	0	0
Gold, C. H.	375	0	0
Barker and Rogers (accepted) ...	369	0	0

Blyth, Northumberland.—For pulling down and rebuilding the Croft Arms, for Mr. Hugh Reid, Waterloo. Mr. W. E. L. Thompson, 1, Turner-street, Blyth, architect:—

Barron and Temple (accepted) ...	£1,040	0	0

Blyth, Northumberland.—For the erection of a dwelling-house, for Mr. W. Charlton, solicitor. Mr. W. E. L. Thompson, 1, Turner-street, Blyth, architect:—

Barron and Temple (accepted) ...	£941	0	0

Bromley-by-Bow, E.—For providing and fixing a new vertical boiler and hot-water coils in the Alton-street School, Bromley, for the London School Board:—

Potter and Sons (Ltd.)	£135	0	0
Davis, G.	130	0	0
Cannon, W. G., and Sons	125	0	0
Wontner-Smith, J., Gray, and Co.	109	18	0
Vaughan and Brown...	108	0	0
May, J. and F....	105	0	0
Clarke and Son, Featherstone-street, E.C. (accepted)	84	0	0

Builth, Radnorshire.—For carrying out street improvements, for the urban district council:—

Jones, J. M. (accepted)	[illegible]	[illegible]	0

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXIX.—No. 2129.

FRIDAY, OCTOBER 25, 1895.

INTERESTING HOUSES.

WHILE the Building News Designing Club is engaged on the drawings for a country house, a great many questions connected with planning and design will naturally suggest themselves. Many of these are familiar enough: they have been considered and answered, in books and lectures and articles, ever since architectural literature began. Of course, the answers are not final or exhaustive. Manners and modes of living change; circumstances vary, and the solutions of a problem which were satisfactory fifty years ago may be very inappropriate to-day. Moreover, the questions which have received most attention are what go by the name of "practical" ones—questions, that is, relating to comfort, to health, convenience, and the like. Matters of this class are never long forgotten. They are things of the body; and the body may be trusted to assert its claims in season and out of season. They get the first hearing; they nearly always take the lead in deciding for the architect what is and what is not to be. And yet it does not do to listen to them too exclusively. Even the modern man has a mind, though sometimes a very small one; and when his body has been waited on, and coddled and fussed about till there is no possibility of doing any more for it, this mind is apt to assert itself and make him uncomfortable. In all the mechanical luxury he has brought together, it finds nothing for itself. He has built a house, but not a home. There is no soul in it: he sickens of its splendour, and wishes himself, perhaps, in some interesting old cottage he knew as a boy.

Ninety per cent. of modern work is wearisome even at first sight. There is not an idea in it which we do not know by heart. Its very monstrosities and absurdities are not original, but only the stock ones of the period; and the "ornament" under which they try to hide themselves is the same flat, lifeless stuff we are hourly wishing to get away from. It is odd that new work should be nearly always stale, and old work nearly always fresh; but so it is. In close connection with this fact is another—that new work is generally very ornate, and old work very plain, and yet the old is as beautiful as the new is ugly. A modern house, very often, gives one the same sort of impression which a modern picture gave to the farmer in *Punch*, "Why, the paint on this picture would come to five pounds, let alone the mon's time in laying it on." Just so: it is the cost of the "paint," of the materials, the mouldings, the decorations, which usually forces itself on the attention in the modern house. The "man's time in laying it on," the architect's skill in putting it together, was obviously a minor matter. What strikes everybody, is the lot of money it must have cost.

There are some old buildings which leave the same impression; but they are comparatively few. Modernism, it is true, began to come in with Queen Elizabeth, or perhaps even earlier, with Henry VIII. But except in the show-houses of the richer nobility, it did not make much progress for another century, and in some districts the farmer and the cottager kept clear of it down to quite recent times. They had no money to spare for finery. The village mason could not make himself an everlasting memorial by magnificence. Yet he did not wish his inventions to be quite undistinguished, and as he could not put ornament into them, he put thought, which was infinitely better. He left us in each, not a lot of stock patterns selected out of some manufacturer's catalogue, but some little fancy of his own pure brain, which nobody had exactly thought of before, and nobody has copied since. It was generally, too, a fancy which had some unpretending beauty about it. It did not exhibit, as so many contemporary attempts at novelty do, only the originality of ignorance. It was the work of a man who knew what his fellows had done in like cases, and who used this knowledge to do something equally good, and yet altogether different. Let us take a few examples of interesting old houses, and note a point here and there which makes them interesting.

Round London, as soon as we get beyond the boundaries in which the more rigid building regulations are in force, we find ourselves up to the eyes in what passes for half-timber work. The jerry-builder, and his brother, the jerry-architect, have both discovered that it is cheap and attractive. Inferior Swedish wood, used thin and painted over, with inferior rough-cast as a filling-in, makes a great show; though a painful one, when the maker daubs its quarterings over with reddish-brown, in violent discord with his red bricks, and puts his sashes into half-mourning by a white line round a dark frame. But how sickening all this mechanical effort at the picturesque rapidly becomes! There is no thought, no spirit, no heart in it. At the best, the same commonplace sets of lines are repeated in cottage after cottage, through street after street. Bad construction, bad design, and absence of all effort at better, characterise the great bulk of suburban building. They are making half-timber work a by-word, as they formerly made stucco; and none will soon be poor enough to do it reverence. Turn from this to one old specimen of it—we all know it at a glance—the entrance to Stokesay Castle. It has been measured, and drawn, and photographed from this point and that point, as if no one who saw it could help taking down some sort of memorandum of it. Yet every sketch attracts us. It never grows stale; it seems always to have more ideas in it than we have yet realised. How is it that we can admire it so long? The general grouping is of the simplest. There is an oblong building, roofed in one span, with a gable at each end. It stands sideways to the road. It is of two stories, of which the upper one overhangs, perhaps, a foot. The entrance archway is in the centre of the longer sides. In strictness, it is not an archway, for it is covered, on the front face, by a carved beam resting on two moulded posts. The upright timbers of the lower story are strong and massive, and set near together. They are framed into a sill at top and bottom, and a horizontal piece is halved across them. There are two or three short braces, obviously structural, and not decorative, and windows are inserted here and there. So much for the lower stage. Above it, on the wall of the upper room, the timber-framing is arranged in an unusual and yet unpretending pattern. The freshness of its design is the first thing that strikes the spectators. The wall is divided into squares of about 3ft. by stout vertical and horizontal framing, and then four rather lighter braces, forming a lozenge, are inserted into each square. There is no cusping, no circular cutting even, below the level of the eaves, and yet anything fuller of effect and individuality is seldom to be seen. But if the arrangement had been quite as uniform as our previous description would make it appear, the eye would soon have understood it, and seen through it, and sickened of it. This is just what a good artist everywhere expects, and guards against. If his work is to impress you at the first view, it must look simple; and yet, if it is to impress you long, it must not *be* simple. This is just what happens at Stokesay. The first impression is that you are looking at 16 lozenge-shaped figures inclosed in squares. But when you look again, you find that there are only 15 lozenges, and that one of the squares contains instead a T-shaped form. This is not all, for you next discover that two more of the lozenges, and only two, are divided into triangles by slender uprights, which bisect them. Finally, it turns out that no two of the figures are quite alike. They vary by slight shades in width, and the timbers which form them vary by slight shades in thickness. They were never "sawn die-square," as the mechanical modern architect specifies his to be, and the result of it all is that there is an endless variety of line about them which one never quite sees through, and, therefore, never wearies of.

The sixteen squares, again, are divided into two sets by irregular uprights, which frame-in a window over the archway. The modern architect's natural idea would have been to make this centre to a still richer pattern than those which adorn them. But the ancient builder knew where to leave off. He felt that some relief was wanted here, that he had put in as much pattern work as could really be enjoyed, so he went back to plain, ordinary construction for a little while. Half a dozen vertical timbers, short and long, with unequal spaces here and there between them for lights, make up the central feature of his façade. But he did not see why, because for the moment he had given up making his timbers into patterns, he should renounce every sort of decoration at this important point. What he did was to put in some which does not do away with the generally irregular effect of the centre, and yet which is very beautiful when you do see it. He carved the surfaces of his principal timbers just at this point. Then above this centre he put a gable, and there he went back to his patterns of oak framing, and made them richer than before. Here they are curved and cusped. But, seeing that the richer a form is, the less repetition it will bear, he only puts five of them instead of sixteen, and he varies these considerably in size and shape. His gable finishes with a barge-board. The modern man would probably have pierced this with tracery richer still. But the ancient one knew that he had put in quite tracery enough, and his barge-board is straight and unbroken, but covered with delicate carving. Looking at the whole design of this entrance, one realises more and more its skilfully concealed richness. There is nothing flashy about it. It does not seem at first half as costly as it is. It is a lesson in reserve, in proportion, in informality.

Most of all, however, it is a lesson in invention. Its author has really given us something out of his own mind, which, if not better than more familiar types, is, at least, good as well as new. He has got a new effect out of very simple lines, in his timber patterns, and has worked out another new idea successfully, by making the central bit of his elevation the plainest part of it. He, having a castle in hand, has done his work in a fairly elaborate way. But other architects of old made their work interesting by mere freshness of fancy, with hardly any elaboration at all. A couple of square chimneys set diagonally, with a bit of Gothic panelling for their base, are enough to give individuality to the Old Hall at Rough Lee.[*] A stepped gable as a base for other chimneys does the same at Kirby Hall.[†] Two or three lozenge-shaped chimneys splayed off into squares, and a seven-light window with brick mullions and a peculiar pointed arch above them, produce the same result in an old house at Eltham, Kent.[‡] Some great, flat-topped, bay windows give a soul of its own to Rakedale Hall.* At Canon's Ashby, the distinctive feature is an oriel high up in the principal gable, with a single-light window adjoining it on each side. Hoghton Tower, Lancashire, has a polygonal bay corbelled over to gabled roof. Newton, Yeovil, has its windows between, and not in, its gabled bays or projections. Great Chalfield has a semicircular oriel of Tudor date, with a cresting instead of a parapet. Gayton Manor† has polygonal bays, set back, in the attic story, to rectangular ones. One might go on endlessly with such examples. Almost every old house shows, in some feature or other, a treatment peculiar to itself. This is at the bottom of its individuality, its interest. But this is not all. Anybody, if he likes, can treat some feature in a building as nobody ever did before, and as nobody will ever wish to do again. The peculiarity of old work is, first, that the treatment, however original, impresses us as tolerable, and even agreeable; and next, that the whole design is so shaped and modified as thoroughly to harmonise with it. If these two conditions are only satisfied, the more originality our young architects can give us the better.

---

[*] See Building News, July 31, 1891.
[†] Ditto ditto Jan. 24, 1885.
[‡] Ditto ditto June 23, 1882.

STREET IMPROVEMENT.

THE rapid increase of street traffic has rendered it compulsory on the authorities of our larger cities to widen the thoroughfares whenever any occasion presents itself, such as the demolition of business premises, destruction by fire of buildings, clearance of old crowded dwellings; and this widening, in its turn, has created the necessity of providing, for the safety of crossing pedestrians, small paved areas or "islands" in the centre of the roadway or at certain intervals. The great use and safety of these harbours of refuge from the incessant street traffic cannot be overrated, particularly by all timid, nervous or infirm people. Another improvement has been the enlargement of the intersections or centres of traffic by removing all properties at the corners, and by making circuses like those of Ludgate-circus, Piccadilly-circus, and Oxford-circus. The London County Council have not been neglectful in forming these centres whenever the clearing of old premises enabled them to do so. In the centre of this circular area a paved "island," with a central lamp-pillar and posts, has been placed; but why have not the Council gone a little further, and covered in the space by an ornamental pavilion roof, which would afford a welcome shelter to pedestrians in rainy weather? Perhaps it will be argued that such shelters would afford a refuge for "loafers," and be little used by those for whose benefit it is intended. Similar objections have been urged against providing seats in open spaces and parks, and in railway stations; but we are by no means convinced that, with proper police supervision, these difficulties are insuperable. In some towns roofed spaces have been erected, and in several Continental cities they are to be found amongst other accessories of public convenience. An interesting and instructive lecture was recently given before the Franklin Institute by Mr. Paul Gerhard, C.E., in which that gentleman sketched a very comprehensive scheme on the "Laying out of Cities and Towns." The gist of the lecturer's remarks is that municipal authorities should map out a general scheme of improvements on practical and æsthetic principles, affecting not only the planning of streets and the growth outwards of towns, but the architecture of the buildings to be erected, and the embellishments of the streets, squares, and gardens—a very large scheme, and almost visionary in the case of old cities, whose main thoroughfares and buildings are fixed, and the growth of which is mainly by the addition of outlying districts. London supplies us with an example of a city already cast in a mould, unalterable in many respects, and which admits only of piecemeal additions and improvements. Mr. Gerhard's remarks, however, refer to old as well as new towns, and in this connection they are suggestive. Under one aspect he dwells on the extension of ancient cities by the alteration of the older parts made necessary by the increased internal traffic, to be done only by the widening of streets and a reconstruction of narrow and crowded portions. Even American cities of comparatively recent date grow up in haphazard manner, and it is admitted render the application of any principles or plan out of the question. Comparing European with American cities, the author is compelled to admit the superiority from an architectural point of view of the former, the more beautiful and ever-changing street perspectives, the location of monumental buildings, the more picturesque arrangement of the streets and the garden elements. The "American city streets," he says, "lack architectural effects; we have too many dull, stupid, and monotonous rows of houses, each house identical with its neighbour, and in the business portions, the ugly sky-scrapers of many stories shut out the light of day, the blue of the sky, and the pure air of heaven, while there is a lack of prospects and outlooks of ever-varying views and of impressions of beauty." The "rectangular" system of street laying-out, it is also admitted, does not meet practical requirements, and is very inartistic.

The requirements of the problem relate to traffic, to building, and to sanitation. It is fortunate, says our author, that in street architecture the art requirements coincide with those of hygiene. Generally it is so; lofty and commandings buildings require a large area of site, for obvious architectural reasons; a wide street is more capable of architectural effect than a narrow one, and is equally favourable to hygiene; a noble square has an architectural as well as sanitary value. Everything, too, which assists to embellish a city has a hygienic influence. It would take us far beyond the limits of these remarks to discuss the suggestions made by the author. In the planning of a new town axiomatic principles can be laid down, such as the main centres of traffic, and the leading lines of streets in accord, not only with the requirements of traffic, but for architectural effect. We may also arrange for radial and diagonal lines, for belt traffic; for the pedestrian apart from the vehicular traffic, for heavy truck or waggon traffic, as well as for lighter passenger vehicles and tramway lines, and determine the width of streets according to their use and length. The problem, as applied to the ordinary English city, is very different: we cannot apply general principles; all we can do is to improve the main streets when circumstances are favourable, and apply to the outlying and newer districts convenient means of communication. Now and then a central artery can be widened, at first partially and then throughout, as the City Commissioners of Sewers have done in Ludgate Hill, and the L.C.C. are doing in the Strand and other streets by setting back the building frontages. These are opportunities which may not occur again in a century. A new street from the Strand to Holborn is a foregone conclusion. All we say is: Make it equal to the occasion by studying its best direction, even should it have to deviate from a straight line, and endeavour to make all the main centres in its progress as convenient and artistic as possible. Other and equally important lines can no doubt be suggested to connect the great thoroughfares north and south; but how much better would it be to make use of as many of the older streets as possible—widen them if we like—and make the intersections rallying points for traffic and also guides to the visitor and pedestrian. Again, in erecting our new public buildings, we should be following a useful principle to endeavour to place them in or near those localities which have become centres of traffic or business; buildings like the L.C.C. offices would be desirable for many reasons in the Strand, or near Charing Cross, and it is necessary in planning a new thoroughfare, or widening an old one, to have in view the probable requirements of public offices, vestry halls, free libraries, polytechnics, and courthouses in the locality, and provide large squares or sites for them. In the suburban or outlying districts too much is left to chance. We have, for instance, good residential localities spoilt or deteriorated in value by the erection of objectionable factories, chemical works, and fever hospitals—buildings which ought to be situated in parts sufficiently isolated from residential estates. These are anomalies which in the near future will have to receive more attention.

In the reconstruction of town thoroughfares, more attention ought to be given to sanitary wants, ample subways for sewers, water, gas, and electric wires, easy removal of refuse from the denser neighbourhoods, means for its speedy destruction, a system of pipe mains with shut-offs, hydrants for cleansing the streets, water troughs, and fountains, and other public conveniences. Our present system of conduits for electric lighting and telephonic communication in our street pavements is far behind that of other countries, while our gas and water mains and sewer-pipes are generally buried deep into the roadway, requiring extensive and obstructive excavations every time there is a leakage, or a new house connection has to be made. Such bungling arrangements are a discredit to our sanitary science. In a great city other amenities are called for: plans should be assigned for public shelters, the planting of our streets and squares; positions for street clocks, pumps, lighting columns, letter-boxes, pavilions, automatic boxes. Why these useful accessories should be left to mercenary or enterprising companies, and our streets spoilt by their erection in undesirable places, instead of being made artistic adjuncts, is a question for every municipal body which has the design and embellishment of their city at heart.

RIVAL SCHOOLS.

IF matters advance as they have been developing in the minds of professional educationists, artists, and technical school promoters, architecture will soon be under the thraldom of schools; we shall have three or more distinct ideals of education, all clamouring for public support and favour. In the future the youthful student will be too well looked after; he will have competing schools enlisting his attention, and catering for his wants, and this motherly regard for his education and welfare will leave him very little to do for himself. What with the examinations of the Institute, the professional classes and studio of the Association, the Department of Architecture, Construction, and Modern Practice at King's College, the similar one at University College, the technical and handicraft schools, and the contemplated London County Council school, he will have plenty to choose from—rather too many for his own peace of mind. At least, he will be able to select which school suits his own predilections and tastes. But what we doubt is whether all this solicitude for the rising architect is likely to make him a better artist or a more efficient professional adviser, and these are the two qualifications which mostly concern the public as our patrons. As yet there is no agreement as to what kind of school is the best for the architect. Those who have authoritatively written and spoken on the subject are at variance on these points. Three distinct ideas of how the future architect is to be taught prevail. There are the advocates of the Professional school, inculcated by the Institute progressive examinations and the Architectural Association classes, who say that the professional man must be versed in all those special sciences and subjects which are more or less connected with building construction and architecture; he must learn the characteristics of styles and professional practice; secondly, there are the advocates for art and handicrafts who maintain that it is a mistake to burden the student with knowledge which ought to be learned in the same way as his grammar and arithmetic, and which do not help him as an artist; thirdly, there are those who are the exponents of the official mind, who would train the student in the practical application of office duties and construction, and prepare him for the work of district or municipal surveyorship. We cannot expect a young man entering the profession to avail himself of all these kinds of instruction; it would be simply impossible. The remarks made by Mr. W. D. Caröe in his opening address at the A.A. are to the point. He asked, "Shall we oppose the new tests of the Institute examinations as those of merely stereotyped efficiency, and formulate a scheme on different lines?" No doubt this would be the wish of a great many, who know that their artistic powers cannot be developed or improved by answering any number of examination papers, who detest cramming which would allow the most superficial knowledge to pass for real talent. Inadequate it must be; still, what is called "stereotyped efficiency" is better than incompetence and ignorance, and this efficiency gives a guarantee to the public. For those, we are told, who look no further than an "official guarantee of efficiency," the examinations are a safeguard. Yet there are others who see farther than mere competence in solving an equation or distinguishing a style, who want master builders and artistic directors. These can only be known by the work they have actually designed and directed.

---

* See Building News, Oct. 22, 1875.
† Ditto ditto Dec. 30, 1881.

The Art and Handicraft ideal sets something more real and related before the student; it invites him to prove his capabilities for the profession by evidence of actual design and work in studio and workshop. The young man, say this school, who can put his artistic powers into execution on the bench or the mason's banker, and set out his own work, who can model in clay his carved caps and spandrels, who can frame and put together trusses, set out and work his tracery and mouldings from his sketches or drawings, exhibits his art and technical skill in a manner at once convincing and practical. The examination paper questions on these subjects may test the memory and the theory of the candidate, but they altogether fail to bring out or develop his artistic power or feeling. An intimate practical acquaintance with materials and their handling for certain purposes and proper treatment lies at the very root, as we know, of good design. How can the examination paper deal with the suitable application of material and its treatment to any given purpose? It may draw out from the student the qualities of the best material, its properties and strength, but it cannot test the candidate's power of converting or treating it in any given detail. The only way, for instance, by which the architectural ability of the candidate can be tested in a question of moulded work or vaulting, is to give him a block of stone, and expect him to set out the work so as to cut it with the least waste, and to show how the springers are to be worked on the shaft. The institution of handicraft classes is one means of teaching the handling of materials and their right treatment. In such classes as those of the Trades Training School, Great Titchfield-street, established by the Company of Carpenters, the instruction given to masons, bricklayers, carpenters and joiners, plasterers, and others is practical; but every student can also exercise his own artistic skill or design in setting out a gauged arch, or in executing a door or window to his own design. Execution plays a great part in design. A good design implies no unnecessary expenditure of material, and a simplification of workmanship. Unless a man can show how his design can be executed, the mode of cutting the material, of making the joints, and of framing, he cannot have learned his art. Design is now taught in a very different way, as if material and jointing and labour were to be entirely subordinated or concealed altogether. By the ordinary buyer of furniture, for example, the most complete disguise of the construction is thought a virtue, and esteemed as a *tour de force*. Then, lastly, the official order of educators are seeking to give that kind of instruction which will make the best administrators, the most competent business men for official appointments. Is the talked-of London County Council school to be of this description, or will other counsels prevail? Building law statutes, Acts of Parliament are, according to some men, more important than all else, and to be crammed into the heads of the candidates. The learning of these Acts alone is a tax on the receptive faculty of the student. We do not undervalue the importance of a thorough acquaintance with building law as it applies to easements, construction, and sanitation; but the extension of the courses which he will be expected to go through—these further instalments of professional literature will not be regarded approvingly. And the question is, Are we to have better architecture and better building than we have had? This seems to be the point which is just now forgotten. If professional status and decorum, high art, handicraft, and business are to be thus severally looked after, we may surely assume an advanced and highly developed type of architect in the future. But can we expect anything of the sort? We cannot develop all these acquirements in the same individual; if we make him an accomplished professional man, he will probably be nothing better than a prig, and look down on all handiwork; if we cultivate his artistic ability, he will never be any good out of his office or studio. High professional or official attainments have seldom been accompanied by any great artistic ability, nor have they always been synonymous with successful practice. The school can only arouse the dormant talents; develop, but never create them. Hence the student of to-day must choose his own line of study. Anything is better than the commercial-professional groove into which so many are content to work, which makes the percentage system the main thing, and takes the trade catalogue as the easiest means of satisfying the client. The only way of lifting him out of this groove is to instruct him in principles of workmanship or handicraft, which will enable him to see the defective design of the ornamental terracotta panel and of the stock castings which come under his notice. The tempting and attractive catalogues of moulded brickwork and terracotta and keramic ornament, architectural woodwork, and iron castings are proofs that our systematic schools of design do not provide the best means of instruction, and that the architect is not master of those manufactures over which he ought to exercise artistic control. Cast-iron bridges, verandahs, railings exist and are erected which violate every principle of good taste in spite of architects. Buildings are put up which defy all good arrangement and design and disfigure the landscape even by men who append letters after their names, and the public are still satisfied. We hear of few remonstrances if a monster store or block in flats is erected which utterly destroys the outline of another edifice. All this we see going on around us in total indifference to what the architect has to say. We cannot think that these things ought to be if the profession were really alive to their own interests. The discerning public would never be satisfied with these abortions if they could see the profession taking a lead, showing what can be done. By making art more a reality than an abstraction to be talked about, they could do something to win it back from the hands of those who are making it merely a commercial substitute for the genuine article.

CLUNY MUSEUM.—VI.

By May Morris.

ON JEWELS.

THE jewel-room of the Cluny Museum is rich not only in contents, but in outward aspect. As I sit in the window-seat here, my eye is pleasantly filled with the low tones of full rich colour; the afternoon sun pours in across the floor and touches the jewelled crowns of the Gothic kings, their mysterious purple stones swaying slightly with the vibrations of the street outside that chance to reach this quiet room; the golden altar-piece from Bâle gleams against the dark green woodland tapestry that covers the walls, while the trees outside the window glitter in the clear, bright air. I see, too, from the arched doorway beside me, through the range of galleries, a long vista of low roof-beams, and the same pleasant, sunny light striking across the dark polished floors.

It is difficult to give in words any idea of the romantic beauty of these nine golden crowns of the 7th century. For nearly twelve centuries they lay buried near Toledo, before they were discovered and brought here, though on the same spot fourteen small crowns of gold trellis-work had been previously found and sent to the Mint at Madrid to be melted down—a fate which many a priceless treasure has shared in the dark age of the early 19th century. Most of these crowns are thought to be votive offerings; but the largest was possibly that worn in life by the Gothic king, Reccesvinthus, whose name it bears. It consists of a broad band of gold, richly worked and bordered with flat stones set mosaic-wise. It is set with large polished stones, 30 sapphires of the greatest baauty, alternating with 30 fine pearls. All round it hang little chains carrying great letters of cloisonné gold, forming the legend *Reccesvinthus rex offeret.* Below the letters hang square-set stones, and below them again pink sapphires in pear-shaped pendants. Through the centre of it all passes a slender chain, from which a jewelled cross hangs, an adornment for kings, elegant in its costliness.

The crown is attached by four chains of elaborate work to a clustering ornament of massive gold like the cup of a flower, which in its turn upholds a marvellous capital of rock crystal finely carved, from which rises the crystal ball, and finally the chain which supports the whole.

It is difficult to say wherein the beauty of this strange mass of gold and shining stones lies. There is nothing very definite to lay hold on, but yet it is one of those things that move by their remoteness as well as by their splendour, by their association with the growing race whose richly decorated architecture seems foreshadowed in their wealth of ornament. We are reminded of the wonderful jewels the early romance writers described in the most picturesque words they had command of—without much exaggeration after all perhaps—or too great strain upon imagination.

A splendour of another kind, not less interesting, though scarcely so romantic in appearance, has found a lasting resting-place in this little room—the great golden altar-piece of Bâle. It was given to the cathedral of the city by the Emperor, Henry II., in the first years of the 11th century, when in gratitude to his patron saint (St. Benedict), who had cured him of a painful illness, he rebuilt it and enriched it as a lasting monument of the efficacy of prayer.

Many other rich gifts also he bestowed, says the chronicle. A crucifix containing a drop of blood of the Redeemer and a fragment of the true Cross, a scrap of the blessed Virgin's garment, relics of the Holy Sepulchre of the

Apostles and several Saints, the imperial throne, too, encrusted with gold, silver, and ivory, and the insignia of the emperor, a consecration vestment with the imperial mantle, and a crown of silver-gilt to be suspended in the choir. For all their munificence to the church and for their deeds of piety, Henry and his wife were canonised, rest their souls! But the later history of this golden treasure is curious, and deserves a brief mention. During the Reformation it lay *perdu* with the rest of the treasure, and safe from zealous hands, in the subterranean vaults of the cathedral; but from 1529 to the beginning of this century the town of Bâle retained possession of the ornaments and sacred chalices, in spite of the representations of the bishop and his chapter, who wanted them back under their care. Then in 1834, when Bâle became divided into two independent cantons, Bâle-Ville and Bâle-Campagne, the treasure had to be divided, too. The golden altar fell to the share of Bâle-Campagne, whose worthies with characteristic commonsense and absence of any romantic humbug put it to the hammer. The Swiss mind is intelligent if venal: let us give it due credit. The Spanish Government melted into unmeaning and voiceless lumps of gold the fourteen golden crowns, priceless for their interest and rarity, which were the result of the first search for Gothic treasures near Toledo as described above. This was merely brutal and stupid: Bâle-Campagne, if the prestige of possession of an historic monument was nothing to them, saw that the thing had a peculiar market value, and sold it to the highest bidder. Posterity is the richer for this commercial commonsense, for they might have hacked it up for firewood and the gold on it.

The golden Rose of Bâle, from the same treasure, was also acquired by the museum;—a wonderful piece of goldsmith's work, of very different time and style, fanciful and precious as a jewel stolen from fairyland. It is of early 14th-century work (given by Pope Clement V. to the Prince-Bishop of Bâle), and represents a rose-tree, whose blossoms have precious stones for the dewdrops in their centres, with leaves curiously worked; all in a state of preservation.

It is impossible to include the jewelled caskets, reliquaries; rings, secular, episcopal, and pontifical; the Merovingian jewels, the carved ivories of early date that fill the cases in this room. Yet of things ecclesiastical, note specially a lovely reliquary of French work, in silver gilt and enamelled, set with stones and fine pearls, the back covered with an enamel of Jesus Christ, with a knight and lady kneeling at His feet in adoration. Among the adornments of the laity, note a rich girdle of silver-gilt bosses (the Icelanders do similar work for their women's wearing today), sewn on to velvet, which is lined with cloth of gold. The work is crisp and delicate, like all work of the 14th century, and the clasp and pendant laid with flowers and leaves in high relief, set with stones. And, further, the remarkable clasp decorated with enamel and precious stones; a great crowned eagle, his body and spread wings covered with pearls, rubies, sapphires, and jacynths, a piece of 14th-century work, notable both for its beauty and its admirable state of preservation. And the jewel caskets of carved and gilded ivory, of engraved steel, of silver decked with gold and jewels! One might think there were not enough precious stones in the Far East to satisfy the Mediæval woman's passion for glittering toys—rings for their long fingers; jewels for their necks; pearls to set round the caskets to hold them! Modern women keep their treasures at the bank, or in strong boxes of strictly utilitarian appearance; then, they kept them in lovely boxes, themselves usually inclosed in less sumptuous boxes or cases of *cuir bouilli* while travelling, for you could not leave your most treasured possessions behind you then while travelling far and wide, the luxury and refinement of the 14th and 15th centuries not including any very great security of personal belongings.

Yet this same luxury and refinement was widespread among the higher bourgeoisie, as well as among the nobles, as is amply testified by the literature of the time, which always gives full and lengthy details of the home-life in all classes. A satire written in the reigns of Charles V. and Charles VI. of France, gives a long list of the expenses attendant on the marriage of a gentleman. Women will insist on having "gowns of gold, of silken cloth, crowns and chaplets of fine gold, and silver pins." And one enumerates the toilette she must have: "Bags of precious stones, knives with imagery on them, pincushions engraved and enamelled, pelisses, rings, and clasps. A room, when I am with child, fair and well ordered, hung with white camelot embroidered; comb and mirror of ivory"; and so she goes on. Then she goes through the household wants; an interesting list, which I should like to give entire, even detailing the kitchen outfit, with its spoons and pots, and stores of herbs.

> Encore ne t'ay-je pas ouvert
> Qu'il fault escrins, huches, et coffres.

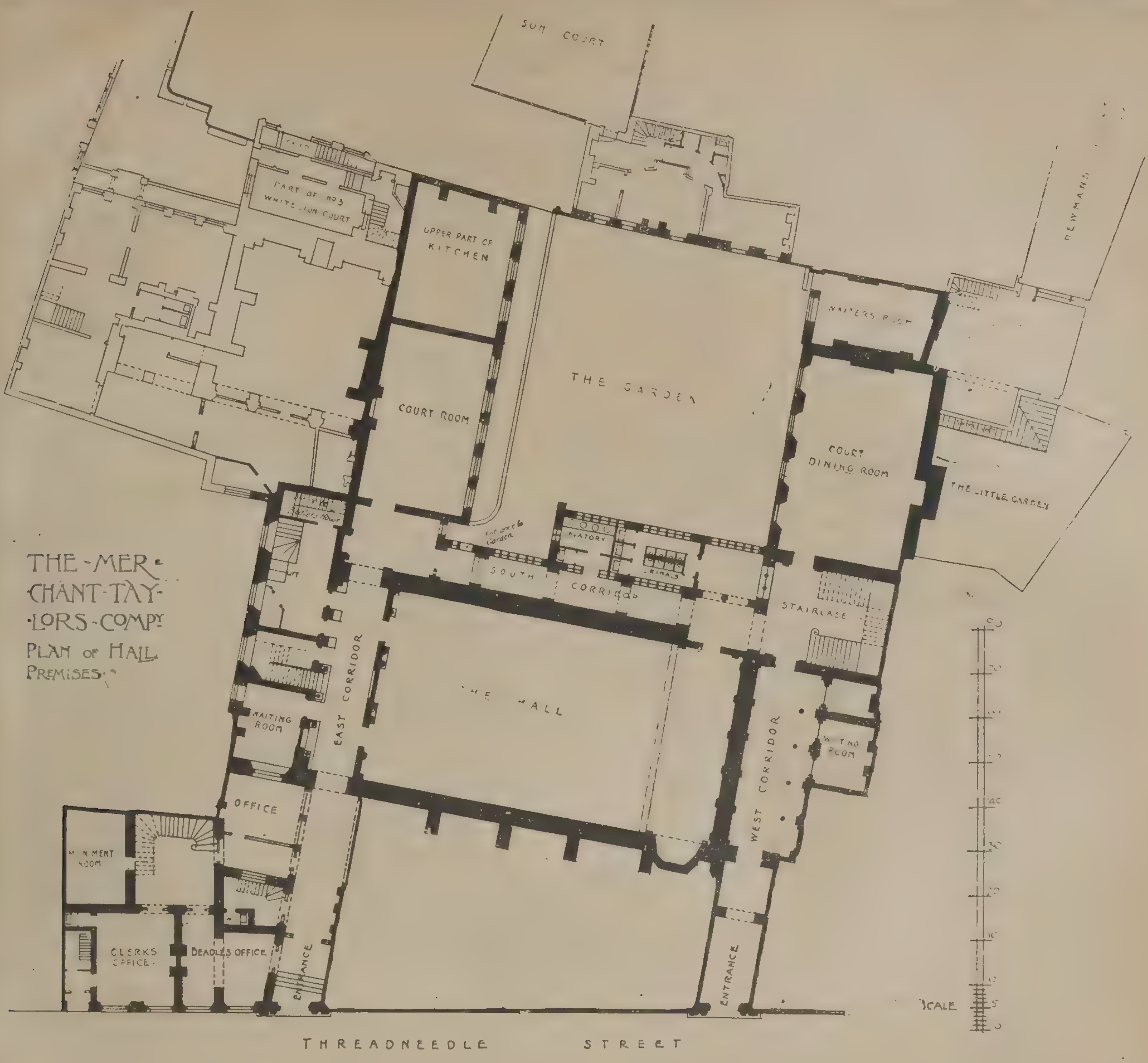
She goes on: "Still I have not discovered to you that there are wanted caskets, chests, and coffers." The author finishes by remarking, that marriages that involve all this expense are a great piece of folly.

This mixture of refinement and simplicity, as we should measure both, in Mediæval home-life, is everywhere visible. The ladies sometimes sit on the floor; but it is on furred rugs and silken embroideries. The floors are perhaps strewn with rushes; but the rushes are often scented with spices, or mixed with fresh-cut flowers. "She passed before, and he after," says an old romance, "they crossed the tower, and came into a great room laid with little rushes, which were sweet as with all the spices of the world spread thereon." ("Le Roman de la Charrette.") In another story, a lady, expecting her sweetheart, "to the hostel cometh, the fire lighting, and spreading rushes and flowers on the floor." People ate with their fingers; but had perfumed water poured on them from a gold or silver ewer. The severe lines of their richly-carved wooden benches were partly hidden with subtle cushions of tapestry and needlework. They had few personal ornaments and trifles, but those they possessed were exquisite for the style and workmanship on them.

There is a charming picture of lazy chateau life in the 14th century, quoted from the "Cronica del Conde Don Pedro Niño," by Viollet-le-Duc, in his interesting notes on feudal customs. We get a description of the castle, with its gardens, its woods, ponds and river, all most important surroundings at a period when the castle, with its vassalage, was self-supporting, and trusted almost entirely to its own resources for the livelihood of many scores of people. The Captain Pero Nino is welcomed to the castle of an old admiral of France, whose wife is of noble birth, and has in the castle domain her own *ménage* and seignorial manor apart from her husband's, though connected with his, and kept up with much ceremony. She had ten *demoiselles de parage*, or maids of honour, nobly attired, whose sole duty was to look pretty and attend on the lady. This is how they spent the day: they rose in the morning, and went to a wood near by, each with her rosary and book of hours, and prayed apart; then plucked flowers in the woodland, and went back to hear low mass. Coming out of the chapel, a silver bowl was brought containing chickens and larks and other roasted birds. Those ate who wished, and drank some wine. Madame herself ate rarely in the morning, sometimes a mouthful out of compliance to those around her. Then she rode out with her maidens and all the knights and gentlemen there assembled, and they betook themselves to the fields, and made green garlands, and sang virelais, rondes, complaints, ballades—songs of all kinds known to the *Trouvères* of France, singing in divers voices sweetly harmonising. Then back to dinner, which was eaten amid pleasant discourse and the diversions of jongleurs. After the Blessing came dancing for an hour, Madame giving her hand to the guest, Pero Niño, and to each cavalier a damsel. Then an interval of wine and spices, and the afternoon siesta. Rising therefrom, they assembled again, and went with the falcons heron-hunting along the fair river. Madame then gets off her "hackney," and gives signal for a picnic in a meadow, "and they took from the baskets chickens, partridges, cold meats, and fruits, whereof each ate. Then they made fresh garlands, and back to the castle singing sweet songs. The night at hand, they supped, and Madame went to the fields afoot to frolic, and they played bowls until the night was black. By torchlight they re-entered the hall; the minstrels came, and there was dancing far on into the night. Then were brought fruit and wine, and taking their leave, each one went to sleep." Practical and active-minded as the French bourgeoise to-day, this Norman *grande dame* of the 14th century ruled and ordered all her husband's affairs and her own, the old admiral, a rich and great lord, "meddling with nothing, as his dame sufficed thereto."

ABERDEEN UNIVERSITY EXTENSIONS.

THE quatre-centenary of Aberdeen University was celebrated yesterday (Thursday), when the extensive enlargement of the ancient buildings was inaugurated. Through the munificence of the late Dr. Charles Mitchell, of Newcastle, the University authorities were enabled to include in their scheme a new graduation hall and tower, both of which were inaugurated yesterday, as well as the departments of anatomy and surgery. The fine old staircase, which leads to the former hall of Marischal College, is now transformed into a picture gallery. This room forms an approach to the great Mitchell Hall beyond, which measures 116ft. by 40ft., and 42ft. high. At the east end of the hall there is a window, 20ft. wide by 32ft. high, filled with Perpendicular tracery. Dr. Mitchell caused it to be filled with stained glass representing, by means of heraldry as well as figure subjects, the history of Marischal College. The glass of the window was designed and executed by Mr. Spence, Rathbone-place, W., assisted in the heraldic scheme by Mr. P. J. Anderson, University librarian. In addition to the large east window, the hall is provided with ten side windows—five on each side—filled with granite tracery and stained glass, with heraldic devices representing the history of King's College. The walls are built of granite ashlar, the inside surface being dull polished, and set in gilt pointing. The granite used for the interior is from the Corennie Quarries, and of a pink hue. The mouldings at windows and arches are also of granite, axe-dressed, and the shafts of the pillars, both at the pillars and the piers between the windows, are of polished red granite. The lower part of the wall, up to the height of 15ft., is panelled in oak, and the flooring is laid with oak and walnut parquetry. The roof is also of oak, arched, and is richly ribbed. There are upwards of 200 carved oak bosses at the intersection of the ribs, and each boss is fitted with an electric lamp. Along the centre of the ceiling is fixed a series of shields emblazoned with devices representing benefactors of the University; five of these are left blank for future donors. There is a small gallery round three sides of the hall, the front of which is one mass of oak carving of the richest description. The gallery is projected from the wall without pillars, and forms a canopy over the sofa seats, which are ranged under it on both sides of the hall. The west gallery accommodates a large organ, built by the Electric Organ Company, Birkenhead, upon their new system, driven by electricity. The archway between the two halls is to be draped with painted tapestry. Besides the electric light on the ceiling, there are to be lights grouped around the capitals of each of the ten side pillars. The hall will accommodate 1,200 seated, and the area is filled with chairs made by the Bentwood Furnishing Company. The Mitchell Tower, which is also finished, is executed in granite. It measures 39ft. 6in. in breadth on each face, and from the level of the upper quadrangle it rises to the height of 230ft., and 250ft. from the lower. Four octagon turrets rise to the top at each of the four corners, each terminated by two tiers of crocketed pinnacles, the upper circling round the tapered points, being also richly crocketed. From the centre of this group of four turrets, a central pinnacle rises. This pinnacle is also constructed of granite, and is carried up from the foundation in the centre of the tower. It accommodates the staircase, and at its very top is a look-out chamber or belvidere, which visitors daily make use of. The clock faces the quadrangle. The dial is 7ft. in diameter, and illuminated. The striking bell weighs 34cwt., and was supplied by Messrs. Evans, of Birmingham. The four sides of the tower are pierced by three windows of large dimensions, filled with Perpendicular tracery. The floor under the hall, on the level of the quadrangle, contains a suite of rooms for the accommodation of the Students' Union. Entering under a piazza at the north side of the tower, a wide corridor leads to a cloakroom, dining-hall 55ft. by 25ft., luncheon buffet, with counter with rouge marble top; behind which are situated two stewards' rooms for service; and above, in an intermediate floor, is a dwelling-house for the steward. Beyond the buffet, in continuation of the same corridor, is a billiard and smoking-room, 20ft. by 30ft., then the Students' Representative Council room, and at the extreme east end a large hall with gallery on three sides, provided with a stage and division lobbies at each side on the model of the House of Commons. This room measures 40ft. by 60ft., and 20ft. high, and



will serve the purposes of a reading-room and news-room, as well as a concert-room and debating hall. The floor of the Students' Union is of pitch-pine blocks. The rooms have high dadoes of "Liberty's" arras cloth, each room being in a different colour. The walls above are painted in "duresco" in various colours. The windows are glazed with cathedral glass and lead quarries. All the rooms are heated and supplied with fresh air by means of Key's system of mechanical ventilation. On the floor under the Students' Union, on a level with the lower quadrangle, is the new anatomy department. The dissecting-room measures 75ft. by 53ft., and 25ft. high. The walls from floor to ceiling are lined with ivory-coloured glazed tiles, with several border lines of brown and yellow polished slate slabs, to act as blackboards, fastened to the wall level with the tiles at a convenient height. The floor is oak on the block-flooring system. The new surgery department consists of a lecture theatre, 28ft. by 52ft.; practical room and museum, preparation and instrument-room, diagram-room, and professors' rooms. The benches in the surgery room are arranged in amphitheatre style, and the walls are lined with white glazed bricks. The room is lighted from the roof, and, like the other departments, is ventilated and warmed on the mechanical system, and fitted with electric light. Adjoining the dissecting-room is a large laboratory, 40ft. wide by 50ft. long; a smaller one separated by means of a revolving partition, professor's private laboratory, and professor's own room; a lecture-room, 40ft. by 35ft.; and a museum, 44ft. by 30ft. In addition to these there is an anthropological museum. There are three large departments far advanced, comprising botany, pathology, and chemistry, and these will be completed early in the spring. When these are finished, the whole of one side of the quadrangle will be complete as far as the present scheme goes, leaving the opposite side of the quadrangle still to be dealt with. This side is proposed to be devoted to the large departments of natural philosophy, medicine, and the faculty of law. It is also intended to erect an administrative block in the front facing Broad-street; but money for these two latter portions of the scheme is not yet forthcoming. The cost of the whole works, as already commenced, is £104,225; but in order to complete the scheme there is required a further sum of £40,000. The architect for the enlargement and remodelling of the buildings has been Mr. A. Marshall Mackenzie, A.R.S.A., Aberdeen.

CITY GUILDS.—XI.

[WITH PHOTO-LITHOGRAPHIC ILLUSTRATIONS.]

THE HALL OF THE MERCHANT TAYLORS' COMPANY.

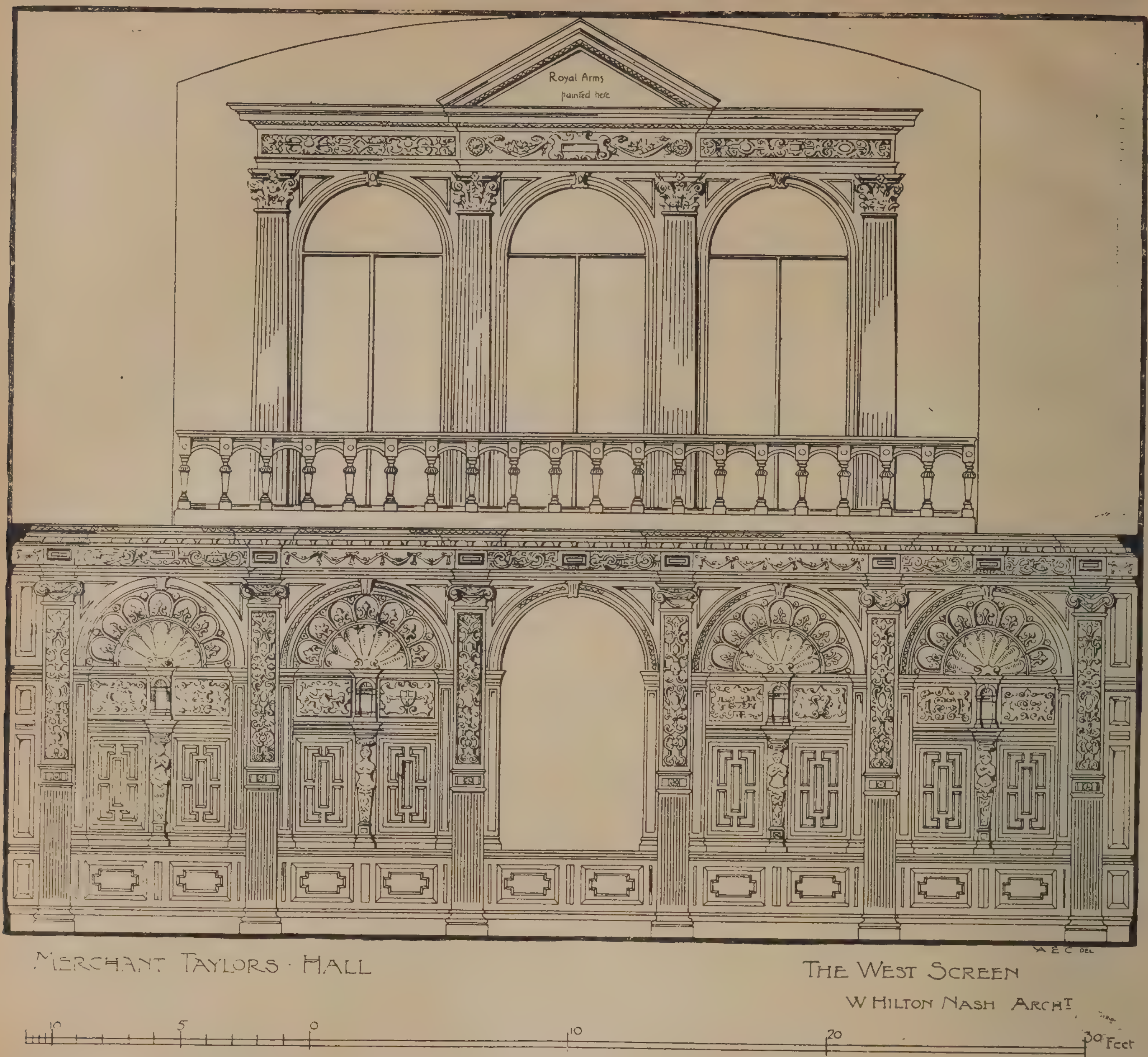
THE architect of this great London company, Mr. W. Hilton Nash, F.R.I.B.A., has been good enough to contribute the following account of its history and buildings:—

This ancient and interesting hall stands on the site of some premises which were purchased by the Merchant Taylors' Company in 1331, from Crepin, the tenant at that time being Sir Oliver de Ingham, who died whilst defending Bordeaux against Philip of France in 1344.

The Great Fire of London destroyed the greater part of the hall premises, and melted most of the plate, but the original walls remain in places. The present hall (which replaced Ingham's Hall in the 15th century) is 82ft. in length, and 43ft. in width and height, and has all the characteristics of a hall of the 14th and 15th centuries—viz., the corridor or ladies' chamber, the daïs or raised platform, the recess for the buffet, the floor or marsh, which was formerly strewn with rushes, the screen at the east end, and the minstrels' gallery over it. The stained-glass windows are filled with the arms of the former members of the Company, including several of the kings of England, from the year 1404 down to the present time. Many noted political and social gatherings have taken place in this hall. Henry VII. attended the election of master and wardens in the year 1506, and was present at the annual feast held on the Nativity of St. John the Baptist, the patron saint of the Company, the proper title being "The Worshipful Company of Merchant Taylors and Linen Armourers, of the Fraternity of St. John the Baptist."

In the year 1607 James I. and his son, Prince Henry, were entertained, and in the ancient records of the Company we read that: "At the upper end of the hall was sett a chayre of state where his Majestie sat and viewed the hall, and a very proper child well spoken, being clothed like an angel of gladness with a taper of Ffrankinscence burning in his hand, delivered a short speech contayning eighteen verses, devised by Mr. Ben Jonson the Poet, which pleased his Majestie marvellously well. And upon either side of the hall, in the window neere the upper end, were galleries or seats made for Musique, in either of which were seaven singular choice musicians playing their lutes, and in the ship which did hang aloft in the Hall, three rare men and very skilful, who sung to his Majestie."

The Master of the Company having presented the King with a purse of £100, and the Prince



MERCHANT TAYLORS · HALL

THE WEST SCREEN

W HILTON NASH ARCHT

one of £50, the guests departed—not, however, before they had partaken of the banquet which was provided for them. We also find the following memorandum, which is highly amusing:—Mem.: "That it was agreed that £50 should have been given to the Queene, but by reason that she came not, £50 was saved."

The present kitchen, which is thought by some to have been the old Hall of the Company, measures 37ft. by 31ft., and is about 30ft. high. What remains of the architecture is of 16th-century type, the most noticeable feature being the arcade on the north side, which consists of three openings, with low four-centered arches, moulded with two sets of double ogees, divided by a hollow, and above them are three large windows. The south side has a window-like opening now bricked up, the east side two doorways, and the west side one doorway and a two-light window with the remains of tracery, but now built up. There are some Perpendicular corbels at a great height, which probably helped to support the woodwork of an open timber roof, no doubt destroyed at the Fire.

The crypt is perhaps the most ancient and interesting feature in the building. The walls are formed of chalk and ragstone. There are three bays groined with plain splayed ribs, springing from corbels moulded and carved with heads. The spandrels are filled with squared chalk. The style is of the 15th Century, probably about the time of Henry VIII. This crypt is about 12ft. below the street level, and may have been a cloister from the street to the chapel.

Some of the earlier records of the company take us back to the year 1267, when disputes arose between the Merchant Taylors and the Goldsmiths' Company, and in 1484 a series of street fights took place between the Merchant Taylors and the Skinners' Company, for precedence, and Lord Mayor Billesden ordained that "for norishing of peas and love" each Company should take precedence in alternate years, and feast each other annually, and this custom has been kept up for 400 years. These riots are illustrated in the stained-glass windows of the corridor on the south of the hall, the three subjects being "The Controversy," "The Award," and "The Feast."

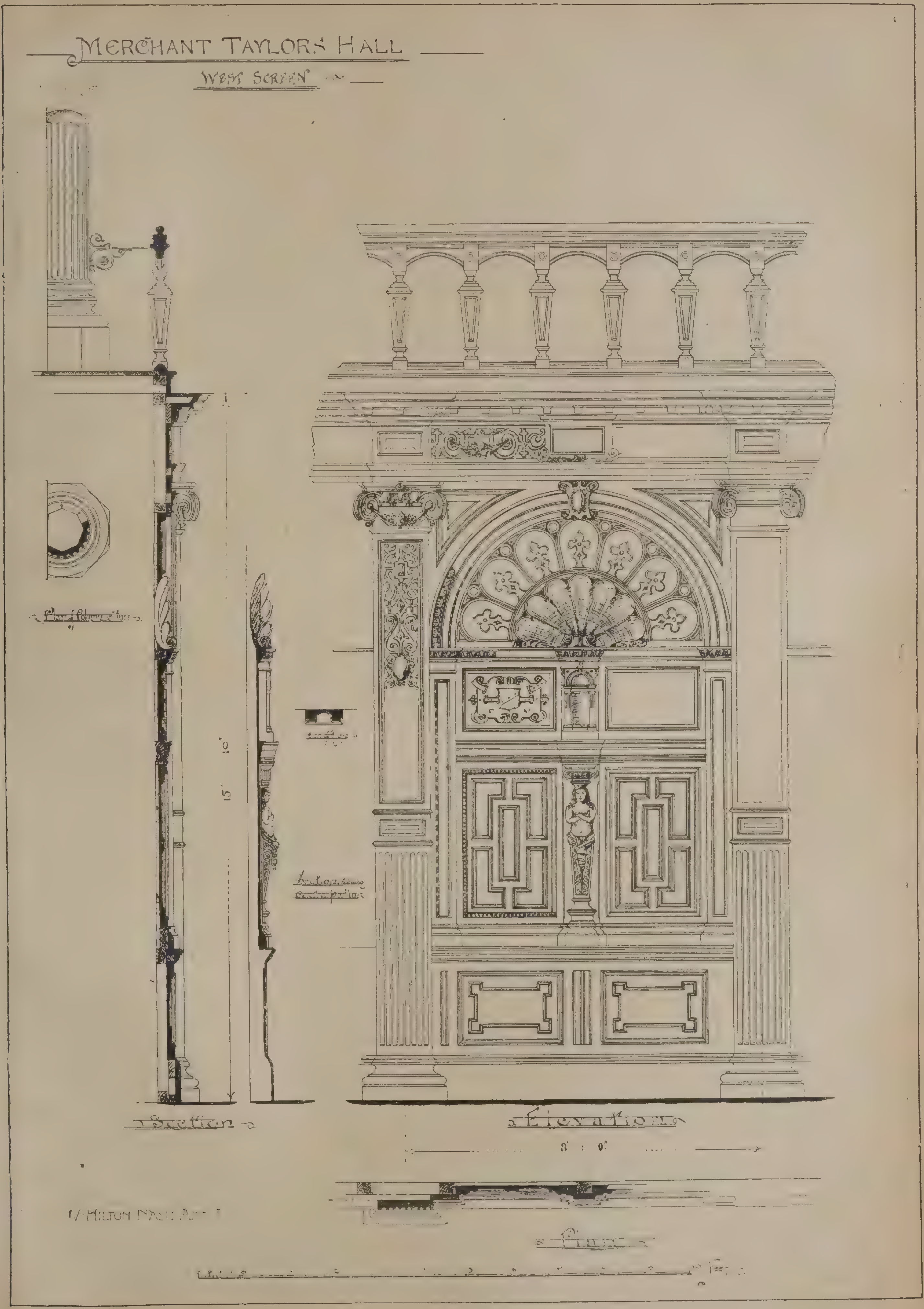
The general arrangement of the buildings is round a quadrangle or garden, as it has been called for many years, the banqueting hall being on the north, the library on the south, the court-room on the east, and the court dining and drawing-room on the west.

In the gallery over the hall are two hearse-cloths of Italian fabric, which were used in earlier days at the burial of a brother of the mysterie. That to the left hand dates about 1490 to 1512. In the centre is depicted the baptism of Our Lord, with St. John the Baptist kneeling and baptising, and an angel holding the Saviour's robe. On each of the sides is an Agnus Dei surrounded by rays, with the Baptist holding the Lamb and a scroll, *Ecce Agnus Dei*, then angels bearing the Baptist's head in a dish with another scroll, on which is written "Caput iohis Baptist i disco." At each end is a pair of shears open.

On the shorter borders, one exhibits the Baptist's entombment, his headless body being placed in the sarcophagus by three men in rich dresses, and the other the decollation, and in the centre is the body, with the executioner exhibiting the head, and Salome holding the charger to receive it. The costume of the figures is of that period, the swordsman, of a landsknecht, with a cap and feathers, a vest slashed, and tight-fitting hose. Salome is dressed in a long gown, over which is a jacket trimmed with ermine.

The hearse-cloth to the right is of somewhat later date, 1520-30. The centre is cloth-of-gold velvet; the pattern is in purple and gold, and the outer parts of the field are entirely covered with gold and silver embroidery, while the borders have subjects connected with the life of St. John the Baptist, the patron saint of the Company. Both these specimens of embroidery are of very fine workmanship, and were probably executed in England.

There are several interesting pictures in the various rooms and corridors—viz., a portrait of Henry VIII., by Paris Bordone; a portrait of St. John the Baptist, in the style of Murillo; portraits of the Duke of Wellington, by Wilkie; Lord Eldon, and the Duke of York, and one of the Younger Pitt, by Hoppner, given to the Company by the Pitt Club. In the drawing-room are two portraits by Kneller (Charles II. and James II.), and two by Thomas Murray, of King William and Mary. Among the other portraits are Charles II., by Vandyke, Sir Thomas White, and portraits of former Masters of the Company, by Kneller. In the committee-room is a portrait of Sir A. Reynardson, a member of the Company, who was Lord Mayor in 1649, and refused to proclaim at Cheapside and the Exchange the order of the Commons of 17th March, "for abolishing the King's office." When summoned to the Bar of the House, he pleaded his oath of allegiance, and was degraded, fined, and im-


MERCHANT TAYLORS HALL
WEST SCREEN
Plan of Column & Base
15' 10"
Section through centre portion
Section
Elevation
8' : 0"
W. Hilton Nash Archt
Plan
Feet

prisoned in the Tower for two months, but he adhered to his duty.

Unfortunately, the fire destroyed a great portion of the company's treasures in the way of plate; but some valuable specimens of the 17th and 18th centuries still exist, among which is a circular rosewater dish about 18in. in diameter, parcel gilt, engraved with flowers, scrolls, and strap work of the Elizabethan period, and the date is probably 1575. The Company's Mace also was saved, and is recorded to have been made in 1597 at the cost of the Beadle, who had lost the old one, and also the silver yard measure, by which for some centuries the London cloth measures were corrected. A pair of large frosted silver loving cups, made in 1680, are very handsome, and have frequently been filled with the spiced drink called "sack," of which Sir John Falstaff was so fond.

[Within the last few years the interior of the great hall has been enriched with elaborate panelled wainscot work, executed by Messrs. Dove Bros., the builders, from the designs of the Company's architect, Mr. W. Hilton Nash, F.R.I.B.A., whose drawings we are enabled to reproduce with the above particulars. The screen behind the daïs is a specially rich piece of work. We shall give further details of this oak panelling at an early date, with some other views specially taken for this series.]

THE TURNERS' EXHIBITION.

THE specimens of hand-turning in wood at the Mansion House, now on view under the auspices of the Worshipful Company of Turners, are of more than average merit. The judges who have awarded the prizes include the Past-Master, J. J. Holtzapffel, Assoc.M.Inst.C.E., the Upper Warden, Mr. Alfred Bevan, Past-Master Mr. W. Brindley, F.G.S., and Mr. A. Murray, city surveyor. Their report speaks of the general excellence of exhibits, and they consider the work submitted shows "continued progress in the desirable qualities of design, beauty, ingenuity, and novelty, and not less in the necessary qualities of utility, fitness for their intended purposes, and excellence of workmanship." They observe in some exhibits that the art of turning seems misapplied. The first prize, the Silver Medal and Freedom of the Company and five guineas, is awarded to George H. Alderton, Brighton, for a tripod workstand that can be turned to several uses, a lady's workbox, table, or flower-stand. The design consists of a tripod of elegantly-shaped legs, finishing with scrolled ends at the top, and cloven feet at the bottom, carrying a vase-shaped workbox, the lid of which forms a small table when inverted, with a workbox underneath. It is executed in polished walnut, and is an excellent piece of work. The design is simple, and the contour and mouldings tasteful. The second prize (bronze medal and five guineas) is given to R. H. Isaacs, Kingsland, for a collection of square-turned balusters of creditable workmanship and design. These are square and oblique in section, and the mouldings are good. The third prize, certificate of merit and five guineas, goes to W. Gleeson, of Cardiff, for a hall lamp-stand —a fluted shaft upon massive turned and ornamental base, with a turned vase-shaped holder for lamp. The fourth prize, of similar value, is awarded to Alfred Miller, of Walthamstow, for a collection of decorated spiral balusters of pine and walnut, executed with various overlays. The fifth prize (a book) is awarded to Geo. Olley, sen., Euston-road, for oval tables. They are well proportioned, and of simple character. The upper oval tray, with moulded edge, rests on two turned legs on a small four-legged table. They are executed in mahogany, and the workmanship is excellent. W. Watson, of Hornsey-road, receives the sixth prize for mahogany brackets, left unpolished from the tool, and the work exhibits skill in turning a rather difficult shaped piece. Six other prizes are awarded. The apprentices are not very numerous. H. Burbidge, jun., Coventry, receives the first prize for a softwood candelabrum or flower-stand, clever as a feat of turning, but lacking in refinement, and W. Arnold, of the same town, the second prize for an oak umbrella stand. We notice also the work of three previous first-prize men. A pair of polished mahogany fluted pillars for lamp stands of massive proportions, by Chas. S. Swift, Euston-road, have been sold to the Lord Mayor. In the amateur competition we may refer to the case of 16 ornaments, boxes, &c., by the Rev. C. C. Ellison, of Bracebridge, Lincoln, which receives a first certificate of merit. These exhibit wonderful dexterity in lathe work, and the workmanship is more excellent than the design. Four other amateur turners received certificates. In many of the exhibits, especially those of the apprentices, we notice a desire rather to display feats of skill than a study of the right application of lathe-work to the particular objects, as, for example, in the elaborate lamp and umbrella stand on one of the tables. The prizes will be presented by the Lord Mayor this afternoon in the Egyptian Hall of the Mansion House at three o'clock.

COUNTY LUNATIC ASYLUMS.—XXXI.

By George H. Bibby, F.R.I.B.A.

SPECIAL BUILDINGS.

IN my last article attention was directed to those special buildings for the recreation and comfort of the subordinate officials, which, although highly desirable, are too frequently omitted from the asylum, and often for reasons of economy.

There is yet another class of building that should form an adjunct to every large asylum, and that is a block for the exclusive use of those nurses engaged especially for night duties; and as the number of these in the largest asylums is not large, the buildings need be of moderate extent only. For instance, there are but nine male night-attendants, and fourteen female night-nurses at the Hanwell Asylum, where there are about 2,000 patients; and there are twelve male night-attendants and twenty-two female night-nurses at the Banstead Asylum, where there are also about 2,000 patients.

I believe it is the general custom in many asylums for the day-attendants to come on duty in the summer at 6.30 or 6.45 a.m., and for the general business of the institution to be in progress very shortly afterwards, and it will be obvious that if the night nurses and attendants going off duty at that time are to secure a proper rest after their night's anxious, and frequently dangerous and unpleasant, watch, that this would be most advantageously found in buildings placed at a suitable distance from the workshops, noisy and violent patients, and also away from apartments occupied as day and mess-rooms, &c., by day-attendants. The precise locality would vary greatly with the arrangements for each asylum, but perhaps an upper floor over the offices and board-room, &c., might be suitable, and a block of buildings near to the chronic wards has, in the case of at least one large asylum, been adopted as a suitable position for the night-nurses' buildings; but even many large asylums are quite without any suitable accommodation for night attendants, who, therefore, have to occupy bedrooms and dormitories connected with the day attendants' apartments, and consequently are liable to be disturbed, or otherwise have to occupy cottages at possibly an inconvenient distance (not only as regards their own comfort, but as relating to the requirements or advantages to the asylum on occasions of emergency).

The class of accommodation to be provided for night attendants of both sexes will be perceived if it be remembered that the wages of the male attendants are frequently about £43 per annum each, with board, lodging, washing, and uniform (if without these allowances, about £78 per annum is paid). The wages of the female night nurses is usually about £34 per annum, with board, lodging, and washing, and it is for this class of official that two separated blocks of buildings should be erected, one for each sex, with, if practicable, mess-rooms, day-rooms, a sufficient number of bedrooms, and offices, &c., wholly apart from the day attendants, and for their exclusive use, and in as quiet a part of the institution as may conveniently be arranged. A ground plan of a night nurses' home, to be formed with a connection to one of the corridors of an asylum, is shown on Fig. 47.

The accommodation on the ground floor includes one mess-room (with kitchen and scullery adjoining), a sitting-room, four bedrooms, an annexe for water-closets, &c. The whole of these apartments could be shut off by a door at A, thus securing means of absolute seclusion and quiet. On the upper floor are six bedrooms, store-room, linen-room, bath-room, and a repetition of the sanitary arrangements shown below, the whole giving a suitable accommodation for ten female night nurses. The accommodation for the male night attendants might be arranged for in a similar building on the males' side of the institution. On Fig. 48 is shown the first-floor plan of this arrangement, and a second floor might be added in the case of a large institution, or where a large proportion of night-watchers would be required.

The whole block for the night nurses would thus be almost, or quite, independent of the remainder of the asylum as regards its purpose as a residence for persons whose vigilant watching at night is of the utmost importance to the patients and officials generally, and which vigilant watching is not likely to be fully attainable unless the night attendants are properly housed and provided for.

The night attendants in the epileptics' wards, for instance, are directed to go at once to every patient in a fit, so as to place him in a position of safety against suffocation, and should not leave the patient until the fit has ended; and other patients have to be watched at night for a variety of reasons affecting their own safety and comfort, and that of all with whom they may be associated in the ward dormitories; and the slightest want of care upon the part of the attendant might terminate with serious accidents, suicide, or homicide. The necessity for a close inspection of many of the patients at night is very great. For instance, epileptics are liable to turn on to their faces during the night when their fits come on, and suffocations from this cause are certainly not unfrequent. Various appliances have been provided for the purpose of preventing this, including porous pillows, through which the patients may breathe, even though they do turn upon their faces; but the best precaution against such accidents is thoroughly vigilant watching, and this cannot be attained if the night attendants have too many patients to look after; if their hours of work are too protracted, or if proper provision for their comfortable board and lodging be not arranged for.

A building specially arranged for the purpose of a central electric station might, in the case of large asylums, be added. Probably the best position for this would be near to the main boiler and engine-rooms. In asylums of moderate size, probably the general engine-room would be suffi- to accommodate the dynamos, &c.; but now that the great advantages of electric lighting for asylums have been clearly approved, and as special asylum officials are permanently employed upon the maintenance, repairs, and working of the electric-lighting system, it would appear desirable that large installations should be separately worked in a special building erected for the purpose, where apartments would also be provided for the necessary repairs of the electric signals, alarms, telephones, and all work of a kindred nature, of which there is a great variety in extensive institutions, and where further employment in the future may be developed when *electric* cooking, ventilation, and heating, &c., have been sufficiently advanced so as to become economical necessities.

Such a building might contain, in the basement, a battery-room, a room for steam, gas, or oil-engine, with dynamos, the areas of these being dependent upon the number and description of lights or other electrical power required.

Upon the ground floor might be provided an apartment for the manufacture and repair of the electric bells, telephones, telegraphs, water-level signals, lighting fixtures and wiring, alarms, electric thermometers, and other electric appliances. This room would be of great service in connection with all asylums lighted by electricity, but situated at a considerable or inconvenient distance from a town, and adjoining this apartment should be a store-room of moderate size to contain a supply of glass globes, casings, cleats, screws, brasswork, wiring, and duplicates of all parts liable to require frequent or occasional renewal.

A small residence for the asylum electrician might be conveniently arranged for in connection with, and form a portion of, the electric supply station buildings.

Another special building (only likely to be required in connection with very large asylums) is a fire-station, with residence attached for a fireman, and from which a fire brigade would be organised, the male and female attendants being all instructed as to the use of the internal hydrants of the asylum, and the best modes of procedure in the event of an outbreak of fire. In large institutions a fireman should be on duty both day and night, for few things can be more terrible than an asylum on fire. The excitement of the

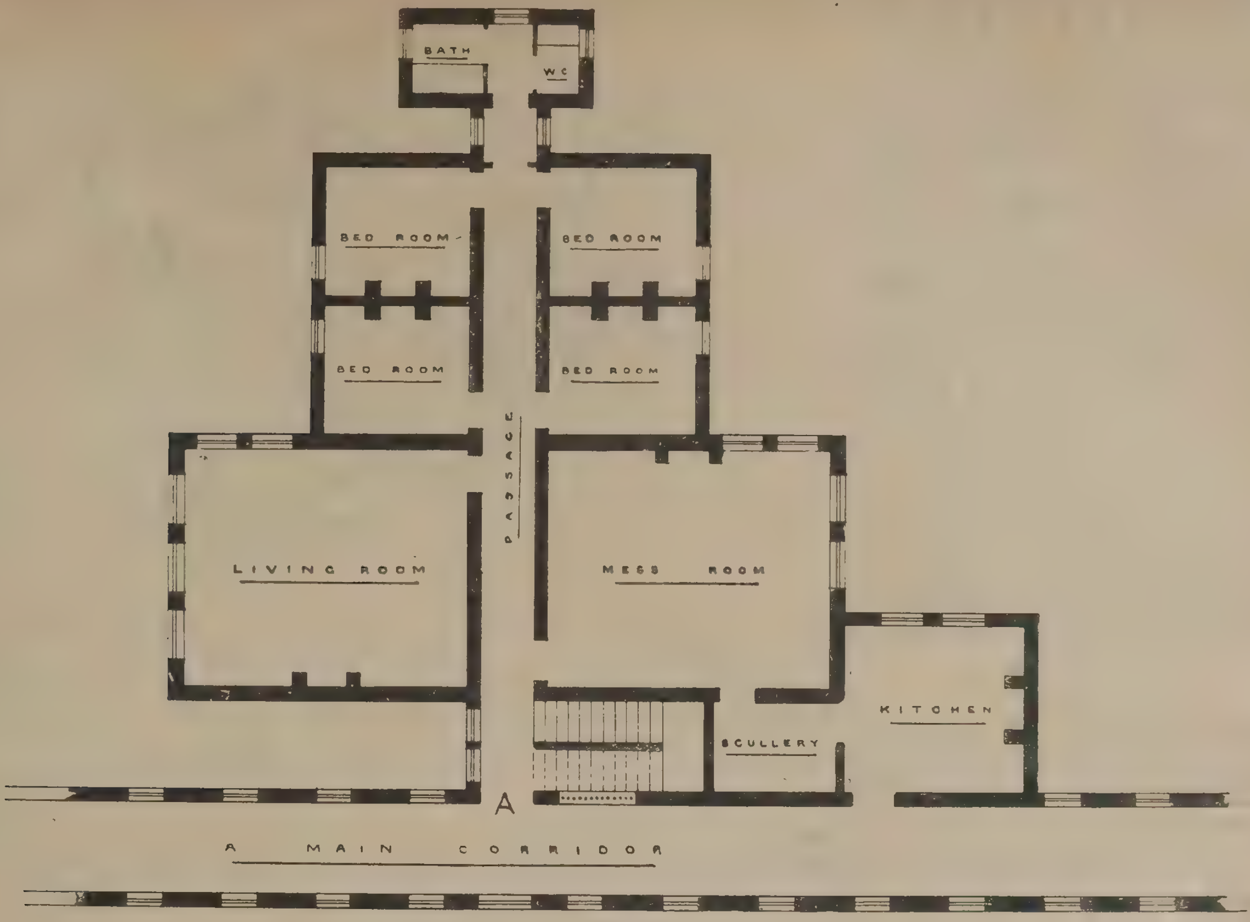


Fig. 47.

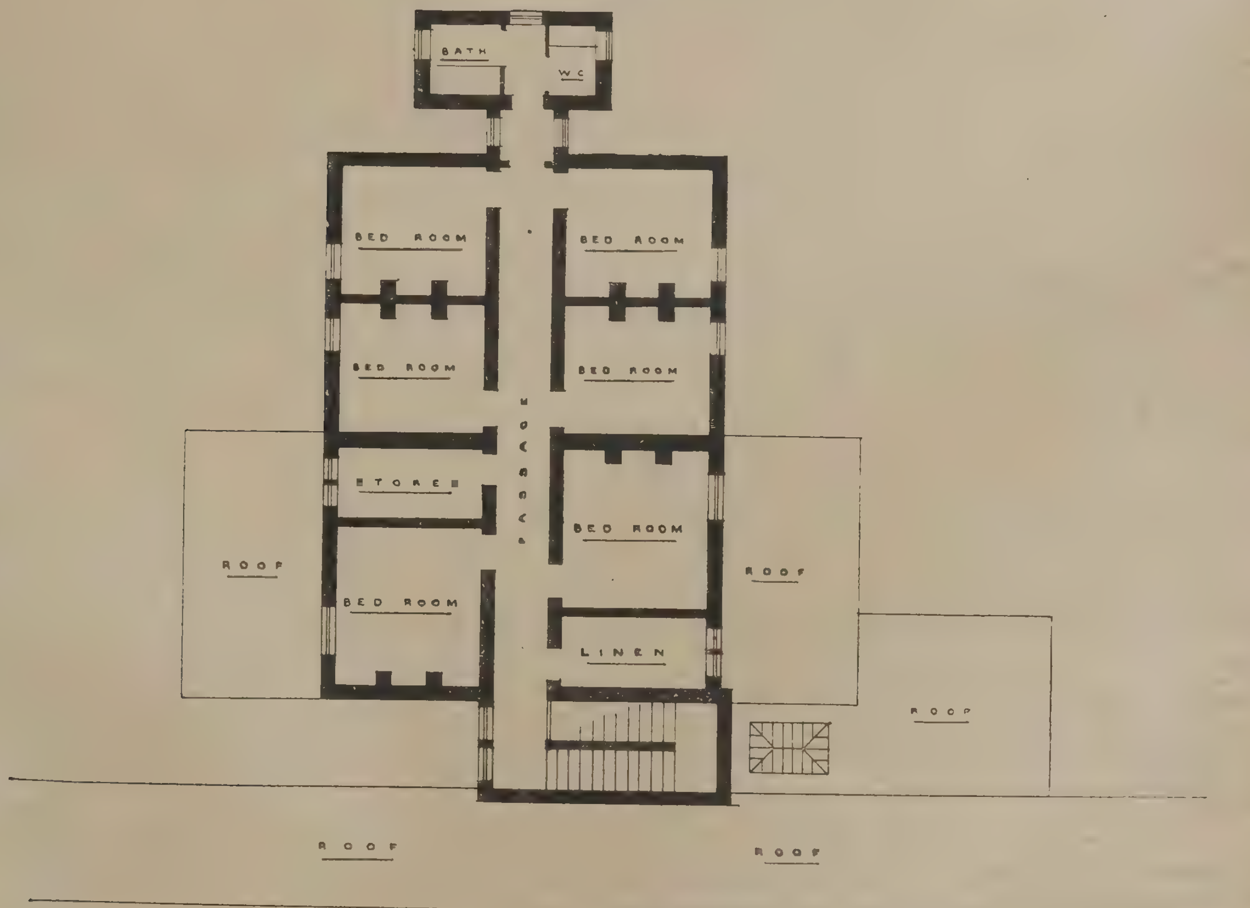


Fig. 48.

patients on such occasions has led to great disasters, and the position of both patients and officials is one of special trouble, having in view the very great difficulty (and at short notice) of placing the former temporarily in a position of safety without the risk of escapes or other mischief arising from the excitement of the moment.

I have in a previous paper given some particulars respecting the hydrants and fire appliances required in an asylum; but, as these are extensive, adequate provision must be made for a spare supply and for necessary repairs. These might either be carried out in a room attached to the fire station, or otherwise. in the fitters' room, usually placed near the general engine-room.

An efficient fire-alarm is an absolute necessity, and the best kind is an electric apparatus, which should be regularly tested and kept in good working condition. One of these should be provided in every ward and every department throughout the institution, and should, if possible, be connected with a steam-whistle or horn, so as to be heard in every direction, and at the same time specially bring up the engineer and fireman.

The fire brigade should be frequently brought out to practice under the direction of the chief engineer, who is usually the official charged with directing operations in the event of an outbreak or alarm of fire.

The great object in connecting the fire-alarm with a loud steam-whistle or horn is to bring assistance from all the available men in the locality, for if the fire be a serious one, it is obvious that the double duty of securing the patients' safety and subduing the fire might prove to be more than the attendants and nurses on duty could accomplish, especially should the outbreak of fire occur during the night.

Great care should be observed that all the water-mains used in connection with the hydrants, both within and without the asylum, be thoroughly well protected from the risk of becoming frozen during winter weather; the fire-pumps should be worked by engines, and should be of ample power to reach all heights of the asylum, and gravitation alone should not be relied upon as a sufficient means of forcing the water to the required elevation.

(*To be continued.*)

THE FRENCH ACADEMY OF FINE ARTS.

THE Académie des Beaux Arts, at its annual meeting on the 19th inst., presided over by M. Ambroise Thomas, awarded the following prizes and medals :—

Painting.—First Prix de Rome, M. Antoine Larée; 1st second Prix de Rome, Paul Albert Laurens; 2nd second Prix de Rome, Jules Guinier.

Sculpture.—First Prix de Rome, M. Hippolyte Roussel; 1st second Prix de Rome, Silvain Salières; 2nd second Prix de Rome, Victor Ségoffin.

Architecture.—First Prix de Rome, M. Auguste Patouillard; 1st second Prix de Rome, Armand Duquesne; 2nd second Prix de Rome, Tony Garnièr.

The Prix Leprince is also awarded to the laureates of the first Grand Prix de Rome in each section of art.

Prix Dechaumes, £60 to M. Blanchard, architect.

Prix Landry is shared by MM. Boverie (statuaire) and Dusquesne (architect).

Prix Bordin, £60 to MM. Defrasse and Lechat, for their work entitled "Epidaure"; a second prize, £20, to M. Clausse, for his work "Basiliques et Mosaiques Chrétiennes"; a third, £20, to M. Fauré, architect, for his "Theory of Proportions in Architecture"; and a fourth prize of the same value to M. Havard, for his publication entitled "Les Arts de l'Ameublement."

Prix Achille-Leclerc, £40, to M. Debat, architect, with honourable mention to MM. Arfridson and Tronchet.

Prix Duc, to M. Josso, architect, with honourable mention to MM. Bauhain and Wable, architects.

Prix Desprey, £40, to M. Loiseau-Pousseau, for a marble statue entitled "Esclave Empoisonnée."

Prix Henri Lehmann, to Mdlle. Elizabeth Sourel, for a water-colour composition, "Le Sommeil de la Vierge."

Prix Bailly, £60, to M. Laloux, architect, for his construction of the church of Saint Martin de Tours.

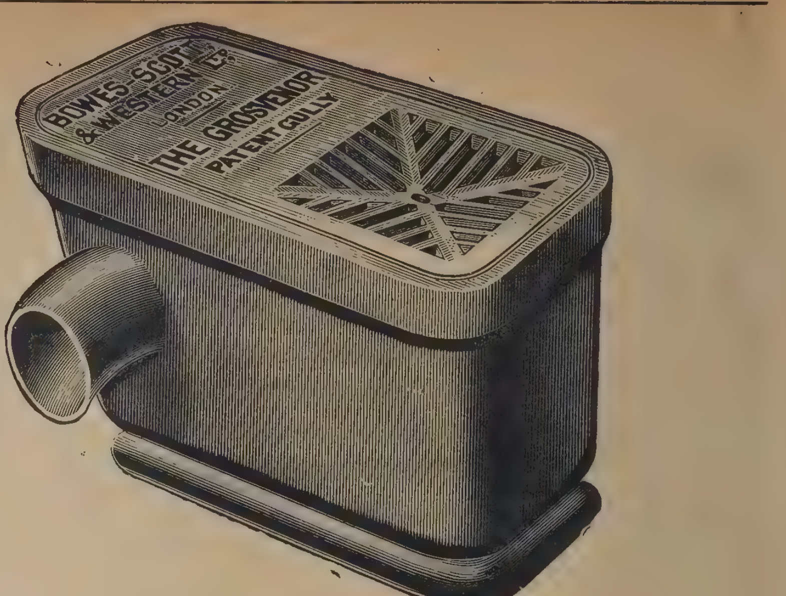
Prix Houllevigne, £200, to M. Nénot, architect, for his construction of the Nouvelle Sorbonne.

Foundation Saintour, £120, to M. Pillet, engraver in medals.

A number of less important prizes and medals in the various sections of art were awarded, and also annual medals to the pupils of the Ecole des Beaux Arts in the sections of painting, sculpture, and architecture.

M. Ambroise Thomas pronounced a short speech, putting forward his praise of the Academy of France at Rome, and the happy influence of the Italian school shown in the work of some of the prize-winners.

The secretary of the Académie, Count Delaborde, read a very interesting notice on the life and works of the sculptor Chapu, the *séance* terminating with the execution of the musical piece entitled "Clarisse Harlowe," which has won for its author, M. Letorey, the first grand prix for musical composition this year.



THE GROSVENOR PATENT GULLY.

THE above illustration represents the Grosvenor Patent Gully of Messrs. Bowes, Scott, and Western, Ltd., Westminster. The gully has been specially designed for receiving surface water, lavatory wastes, yard and stable draining, &c. It consists of a large receiver which can be cleaned out without unsealing this trap, and a special point is that this trap is sheltered, and therefore, should supply of water to gully fail, it will not evaporate so readily as in a gully where trap is exposed. A cleaning eye is provided on outlet to allow obstruction to be removed should such occur between gully and drain.

This gully is in use at a number of H.M. barracks, schools, &c., and should prove of much use to engineers and architects, who are anxious to secure the best and latest gullies for their work.

OBITUARY.

WE regret to announce the death of Mr. DANIEL CUBITT NICHOLS, M.S.A., F.S.I., of the firm of D. Cubitt Nichols and Sons, 3, Howard-street, Strand, a member of the Tribunal of Appeal under the London Building Act, 1894, which occurred at his residence, No. 3, Upper Montague-street, Russell-square, on Thursday in last week. Mr. Cubitt Nichols, who was in his 71st year, was for many years adviser to the Home Office in relation to the Artisans' and Labourers' Dwellings Act, 1875, and other matters, and was surveyor to several large London estates. He joined the Surveyors' Institution in January, 1875, as a Fellow, and was a member of Council at the time of his death. He has also been a member of the Society of Architects since 1886, and had served upon its council. He was formerly an Associate of the Royal Institute of British Architects, but withdrew many years since.

THE death is announced of Mr. HARRY G. W. DRINKWATER, F.R.I.B.A., of 2, St. Michael's Chambers, and 8, New-road, Oxford, who died while staying at Wokingham on professional business. He was a pupil of the late Mr. G. E. Street, R.A., and in 1873 he gained the Royal Academy Medal for measured drawings of the tomb of Aylmer de Valence at Westminster Abbey; these were given on two sheets of photolithographs in the BUILDING NEWS for August 22, 1873. He had carried out many works in Oxford, including the new theatre. He had been a member of the London Architectural Association for nearly 30 years, and a Fellow of the Royal Institution of British Architects for the past 13 years. For many years he was churchwarden of St. Philip and St. James's, Oxford, and his professional advice was always at the service of the various societies of which he was a member, especially of the Central Church Schools Council, and of his own parish in particular, where he was secretary and treasurer of the schools and a trustee of the parish institute.

MR. J. W. TREW, until recently head of the firm of J. W. Trew and Sons, architects and surveyors, of Broad-street, Bristol, died, of paralysis, after a long illness, on Friday, the 18th inst., at Poole, Dorset, at the age of 72. Mr. Trew had retired from business some two years, being one of the older practitioners in Bristol, and some 25 years ago laid out and superintended the erection of Russell Town, now an important suburb of Bristol, and other large building estates at Moorfields, Redfield, St. George, and Brigstocke Estates were also laid out by him, and latterly the board schools at Windmill Hill and Temple Back were erected from the firm's designs, as also the Brunswick Schools and Lecture Hall, and similar buildings in and around Bristol. The business will be continued by his sons at 22, Broad-street, Bristol, by Mr. A. R. F. Trew, M.S.A., and at Gloucester by Mr. J. Fletcher Trew, M.S.A., architect and civil engineer.

ON Saturday afternoon, Mr. JOHN SUTTON, 50 years of age, one of the best-known architects in Southport, was found dead in Mr. Iddon's warehouse, of London-street, with the top of his head blown off, and a double-barrelled breech-loading gun, with one barrel loaded, by his side. At the inquest, held on Monday, an open verdict was returned, the evidence not conclusively pointing to accident or suicide. Deceased, a native of Southport, was articled in the office of the late Mr. Mellor, architect, of Sutton, and became his partner in a very lucrative series of undertakings, a connection which lasted until the death of Mr. Mellor. Along with his partner, deceased was joint architect of the Southport Market Hall, St. Luke's Church, Southport, and the conservatory of the Botanic Gardens, Churchtown. Since his partner's death, he had acted as joint architect of the church of SS. Simon and Jude, High Park, Southport, and of the schools in Wennington-road, opened in 1893, and had carried out many private works. A man of great activity, he had been for some years past the vicar's warden at Holy Trinity Church, Southport, and he held various offices in the Masonic body. Some extensions in connection with Trinity Church now in progress had engaged his attention lately, for he had virtually retired from work for profit. For many months his health had given rise to anxiety—indeed, he suffered from a wasting malady that must have ended fatally. He leaves a widow and family.

CHIPS.

A new seaside resort is about to be created on the Yorkshire Coast at Sandsend, at the mouth of a ravine eastwards of Mulgrave Woods. The Marquis of Normanby, who is the owner of the estate, has appointed Mr. E. H. Smales, architect, Whitby, to act for him in the selection and laying-out of building sites, and the commencement of the building operations.

The foundation-stone has been laid of an annexe for idiots and imbeciles at the Middlesex County Asylum, Wandsworth Common. The additions, which include the increase of the accommodation from 1,080 to 1,484 beds, remodelling of the laundry arrangements and workshops, will entail an outlay of £99,500. Mr. Rowland Plumbe, of Fitzroy-square, is the architect.

The custodians of the Truro Cathedral Building Fund report that the amount available for a recommencement of the building of the cathedral is now £12,812 2s. 3d.; but no mention is made whether it is proposed in the immediate future to resume operations.

The erection of the higher grade school which is to be established at Bethesda, Carnarvonshire, under the provisions of the Intermediate Education Act for Wales was commenced on Tuesday. The contact, which approximates £3,000, has been let to Messrs. Hughes and Sterling, Liverpool, Messrs. Willink and Thickness, of that city, being the architect. The site, with £200, has been granted by Lord Penrhyn.

CONTENTS.

Interesting Houses 583
Street Improvement 584
Rival Schools 584
Cluny Museum.—VI. 585
Aberdeen University Extensions 586
City Guilds.—XI. 587
The Turners' Exhibition 590
County Lunatic Asylums.—XXXI. 590
The French Academy of Fine Arts 592
The Grosvenor Patent Gully 592
Obituary 592
The Building News Directory ... ... xi.
Our Illustrations 593
Architectural and Archæological Societies 593
View of Westminster Bridge from York Buildings ... 612
Engineering Notes... 612
Building Intelligence 613
Correspondence... 614
Intercommunication 614
Legal 615
Legal Intelligence 615
Water Supply and Sanitary Matters 616
Statues, Memorials, &c. 616
Our Office Table 617
Meetings for the Ensuing Week 618
Tenders 620

ILLUSTRATIONS.

THE HALL OF THE MERCHANT TAYLORS' COMPANY.—COMPETITION DESIGN FOR WEST HAM TECHNICAL INSTITUTE.—LONDON, LOOKING TOWARDS WESTMINSTER, IN THE XVIITH CENTURY, BY CANALETTO.—PARISH CHURCH, ARBROATH.—THE PASSMORE EDWARDS CONVALESCENT HOSPITAL, TILBURY.—ART TREASURES FROM THE CLUNY MUSEUM, BY MAY MORRIS.

Our Illustrations.

CITY GUILDS.—XI.: THE HALL OF THE MERCHANT TAYLORS' COMPANY.

(See descriptive article and further sketches on page 587.)

WEST HAM TECHNICAL INSTITUTE AND PUBLIC LIBRARY.

Having illustrated each of the three premiated designs for this building, we do not propose to publish all the schemes submitted in the recent competition. We have, however, chosen the accompanying view of the design contributed by Mr. Sydney B. Beale as a striking illustration among the best displayed at the exhibition. His plan, too, seems to possess points which are both suggestive and well thought out.

VIEW OF WESTMINSTER FROM YORK BUILDINGS, FROM A DRAWING BY CANALETTO.

(See description on page 612.)

ARBROATH PARISH CHURCH.

The church, while nominally a restoration of the old parish church of Arbroath, erected in 1591 and destroyed by fire in 1892, is, practically speaking, a new building attached to the old spire. The site is an irregular one, at the corner of Hill-place and West Abbey-street, with an open frontage on three sides, and in close proximity to the old abbey buildings. The plan is the result of the large number of seats required in so small and irregular a piece of ground. It consists of a nave, 76ft. by 35ft., with double transepts and a chancel-aisle to the north. Galleries are placed in the double transept, and the magistrates' gallery occupies the upper part of the chancel-aisle, the lower part being designed as a session-house; but so arranged that it may be utilised for church purposes if necessary. The minister's vestry is placed on the ground-floor of the old tower, formerly the entrance to the church; the main entrance now being through the open porch at the corner of West Abbey-street and Hill-place. Internally every effort is made to emphasise the length of the nave. The walls are lined with wood to the height of the gallery fronts, and the unbroken line of the cornice passes round the church, rising only at the organ, which covers the west gable. The style of the work is the Scotch adaptation of Early English, common to the old Abbey of Arbroath and other Scotch ecclesiastical buildings; but owing to the limited cost, the aim has been to secure largeness of effect rather than richness of detail. The walls are built of local red sandstone, and the interior, with the exception of the piers and arches, is finished in rough plaster. The contractors for the work are Mr. Andrew Fife, mason; Mr. David Farquhar, joiner; Mr. Wm. Brand, slater; Mr. G. A. Campbell, plasterer; Mr. Joseph Anderson, plumber; Mr. James Keith, heating and ventilation, and the sum of their contracts amounts to about £7,000. The clerk of works is Mr. Dalzell. The east window of nave is to be filled with painted glass, designed by Sir Edward Burne Jones. The architects are Messrs. John Burnet, Son, and Campbell; and the drawing is from this year's Royal Academy Exhibition.

THE PASSMORE EDWARDS COTTAGE HOSPITAL, TILBURY.

This building, the foundation-stone of which will be laid to-morrow, is the gift of Mr. J. Passmore Edwards to the labouring population of Tilbury and Grays. The site for the hospital has been given by the joint committee of the London and India Docks. The entrance is placed in the centre of the principal front, and communicates with the hall, from which a well-lighted corridor runs right and left to the wards. The accommodation consists of a surgeon's room, 15ft. by 12ft., with dispensary adjoining; matron's room, 15ft. by 12ft., with nurses' sitting-room adjoining; two single wards, each 12ft. by 10ft.; and two three-bed wards, each 21ft. by 15ft. A building two stories high is placed in the rear of central hall, containing kitchen and offices on the ground floor, and matron's, nurses', and servants' bedrooms on the first floor. This block is connected with the main building by means of a cross-ventilated lobby, every effort being made to separate the residential part of the building from the hospital proper. Each wing is provided with a sanitary pavilion, connected with the main corridor by a cross-ventilated lobby, and the building is so arranged that one half can be used as a male wing and the other half for females, the corridor being divided by a screen framing. Each pavilion contains a bath-room, sink, lavatory, and w.c. The building is faced with red brick and Bath stone dressings, and the roof is covered with green slates. The architect is Mr. Rowland Plumbe, F.R.I.B.A., 13, Fitzroy-square, W.; and the builder Mr. J. Brown, Grays, Essex.

◆

It has been decided to erect an oak chancel screen in St. Mary's Church, Halifax, as a memorial to the late Major Stocks, a well-known archæologist.

The church of St. Elfrida, Llansaintfread-in-Elvel, Radnorshire, having fallen into ruin, a new church is being built on the same site and on the same general lines as the old one. Parts of a fine oak roof of 14th century date with cusped wind braces will be refixed in the new roofs, which are, however, identically the same design as the old ones. The new church is being built with local stone walling and sandstone dressings from designs and under the superintendence of Mr. F. R. Kempson, of Hereford and Cardiff. The old oak has been utilised in making the seats, the old bells will be rehung and the altar refixed, window tracery and some monuments will be refixed. The contractor is Mr. John Price, of Builth.

Twelve months ago the Mayor of Hanley promised a fountain for the Cauldon Grounds section of the public park in that town, the base and ordinary outline of which were designed by Mr. Mawson, in consultation with Mr. S. J. Cartlidge, of the Hanley School of Art. The fountain was executed in red terracotta at Messrs. Doulton's works at Lambeth. Mr. Rowland Morris, who carried out the decoration of the Wedgwood Institute, Burslem, was selected to execute the modelling, and his work has been completed by Messrs. W. T. Copeland and Sons, of Stoke. The late Mr. R. F. Abraham, art director, manifested much interest in the production of the work. Four griffins with outspread wings will be placed upon the plinths projecting from the central column of the fountain, the material being a special clay of a fawn-grey colour, having a smear glaze.

New co-operative baking premises at Cramlington were opened on Saturday. The buildings consist of a bakehouse 32ft. by 33ft., confectionery room 19ft. 6in. by 12ft., cooling room 18ft. by 14ft., engine room 9ft. by 14ft. Two ovens and firing passage occupy a space of 22ft. by 22ft. On the first floor is a flour warehouse, directly above the bakehouse. The ovens consist of a double pile of Jennison's hot-air smokeless ovens, and a double pile of Mason's continuous hot-air smokeless ovens, together with hot-water supply and steam prover. The contractors for the buildings are Messrs. Dixon and Simmons, Cramlington; plumbing and gas fitting, Mr. Arthur Scott, Grafton-road, Heaton. The work has been carried out from the plans of Mr. John Crone, architect, Granger-street, Newcastle-on-Tyne.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Northern Architectural Association.—The members of this association had an excursion to Sunderland on Saturday, where various buildings were visited. The party included the president, Mr. J. Oswald, of Newcastle; the hon. secretary, Mr. Arthur B. Plummer, Newcastle; Messrs. J. H. Morton, R. H. Morton, J. M. Dingle, J. W. Donald, and H. Grieves, of South Shields; Stephen Piper, H. Charlewood, J. Graham, J. Bruce, H. Cayley, M.A., C. T. Marshall, R. B. Dick, C. S. Errington, W. Sheriff, and W. W. Oliver, of Newcastle; S. M. Mold, Gosforth; G. Brumell, Morpeth; Frank Caws, G. T. Brown, and J. Spain, of Sunderland. The members met at Monkwearmouth Station, and proceeded thence in brakes. The ancient parish church of Monkwearmouth (St. Peter's) was the first place visited, the party being shown over the sacred edifice by the vicar. Messrs. Thompson and Co.'s (ship-builders) joiners' shops, for which Mr. Frank Caws was the architect, were next inspected, and the members then proceeded to view the new board schools in Chester-road. The architects (Messrs. Oliver and Leeson, Newcastle) were represented by Mr. Graham, who acted as guide to the party. St. Hilda's Church, in the same district, for which Messrs. Hicks and Charlewood, Newcastle, were the architects, was also visited, as were also the Eye Infirmary (Mr. J. W. Donald, South Shields, architect) and Langholm Tower. The architect for the latter was Mr. W. Milburn, of Sunderland. The members lastly visited the Church of St. Ignatius the Martyr, the gift to Sunderland people of the late Bishop Lightfoot, where the vicar kindly acted as guide.

◆

CHIPS.

A collection of 17 photogravures, by the Berlin Photographic Company, of the famous Rembrandts in the Cassel Gallery, has now been mounted and framed, and placed on a screen in the long picture room at the Municipal Art Gallery, Birmingham.

The foundation-stones were laid on Friday of a new Baptist church and school premises in Lancaster. The plans provide for a church, Gothic in style, with provision for 450 worshippers. Schools and a lecture-room are to be erected at the rear, the main room measuring 52ft. long by 33ft. The estimated cost, including site, is £5,000.

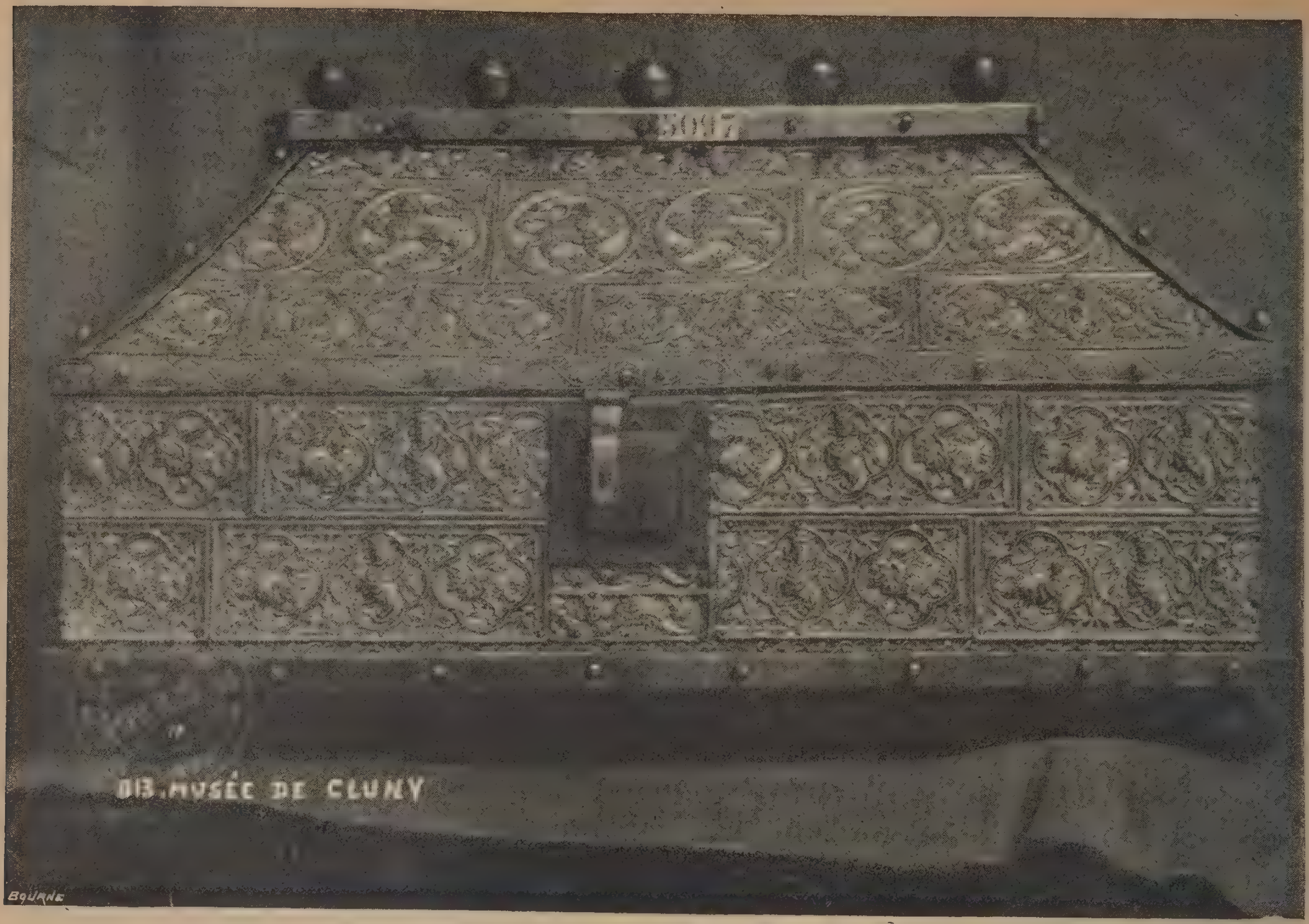
At an informal meeting of the Dewsbury Town Council, it has been unanimously resolved to request Councillor George A. Fox (of the firm of Holtom and Fox, architects, Dewsbury) to accept the office of mayor for the ensuing year. This he agreed to do. Mr. Fox has designed, with his partner, many fine public buildings, among them the town halls of Dewsbury, Burnley, and Nelson.

Sir Henry Doulton, whose firm have branch works at St. Helens, Lancs, has offered to present to Victoria Park, in that town, a fountain of terracotta. The fountain, which will be expressly designed for the site, will be about 15ft. in height, and have a fountain 15ft. in diameter. The corporation of St. Helens have accepted the offer with thanks.

Two wings have just been added to the infirmary at Bradford, and were formally opened on Tuesday. The extension comprises three observation wards, a room for night cases, additional rooms for nurses, a mortuary, a room for post-mortem examinations, and kitchen. The architects for the new wings were Messrs. Milnes and France, and the cost has been over £6,000. The contractors were: Masons' work, Mr. Wallace Daykin; joiners, Messrs. T. Taylor and Sons; and plumbers, Mr. Charles Nelson.

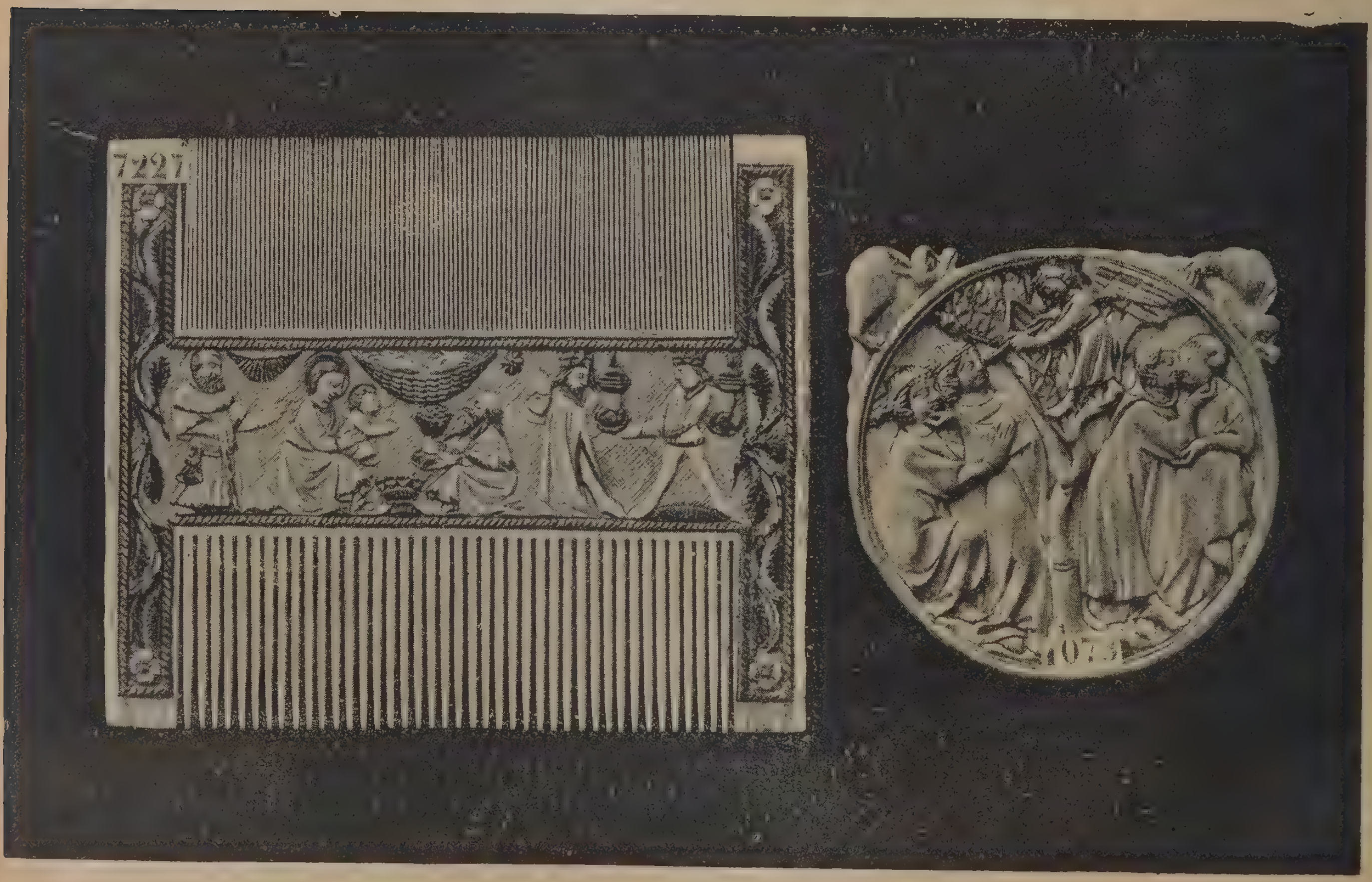
The proprietors of Redheugh Bridge, connecting the western districts of Newcastle and Gateshead, have been informed by the county authorities that the structure is unfit for heavy traffic. The bridge, one subject to a toll, was designed and built by Sir Thos. Bouch. It was commenced in 1868, and finished in 1871, at a total cost of about £53,000. It consists of two longitudinal wrought-iron lattice girders, each 838ft. long and 22½ft. high, supported on three river piers, each of which consists of four cast-iron columns. The length of the bridge is 1,453ft., and water-mains and gas-mains are carried across the structure. The owners have now to choose between the unpleasant alternatives of spending about £30,000 over repairs, or £70,000 over a new bridge.

The City Commissioners of Sewers decided on Tuesday to widen the eastern end of Widegate-street at a cost of £14,000, provided the County Council will contribute a moiety of that sum, and to widen the entrance to Great St. Helen's at a cost of £1,900.



MARRIAGE CASKET. (14TH CENTURY.) FROM THE CLUNY MUSEUM.

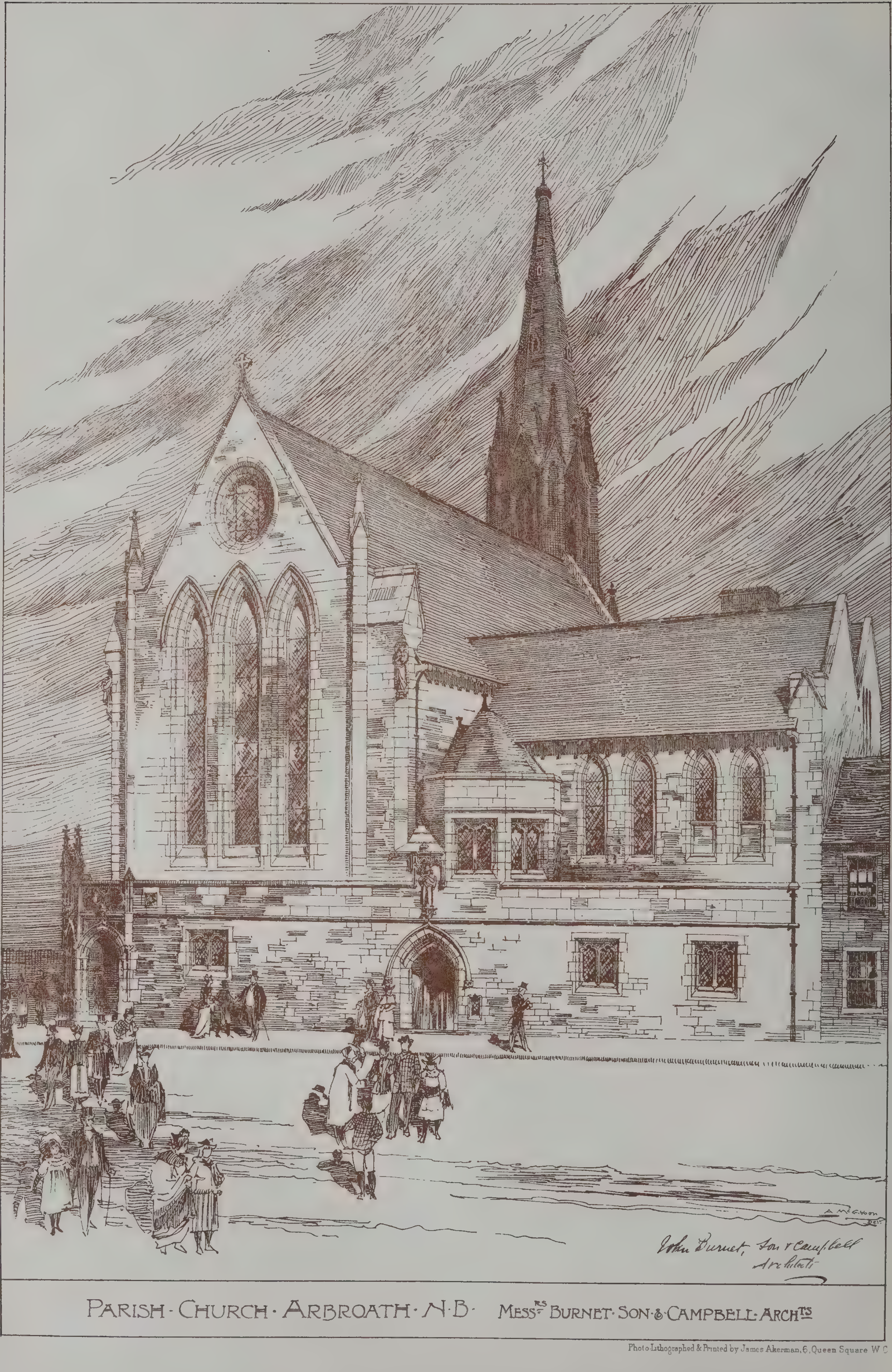
(*From a Photograph by* M. Robert.—See May Morris's Article on p. 585.)



IVORY COMB AND LID OF MIRROR BOX. (14TH CENTURY.)

(*From a Photograph by* M. Robert.—See May Morris's Article on p. 585.)

UNIVERSITY OF ILLINOIS


A. McGibbon Del.

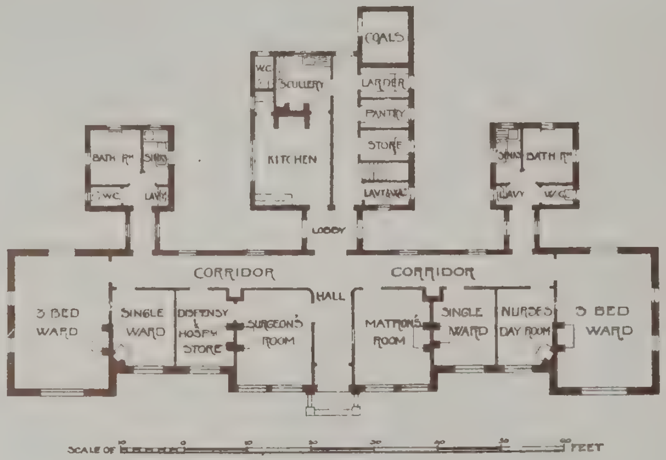
John Burnet, Son & Campbell
Architects

PARISH · CHURCH · ARBROATH · N · B · MESSRS BURNET · SON · & CAMPBELL · ARCHTS

Photo Lithographed & Printed by James Akerman, 6, Queen Square W C

PASSMORE EDWARDS,
COTTAGE HOSPITAL – TILBURY.

ROWLAND PLUMBE, F.R.I.B.A., ARCHT.



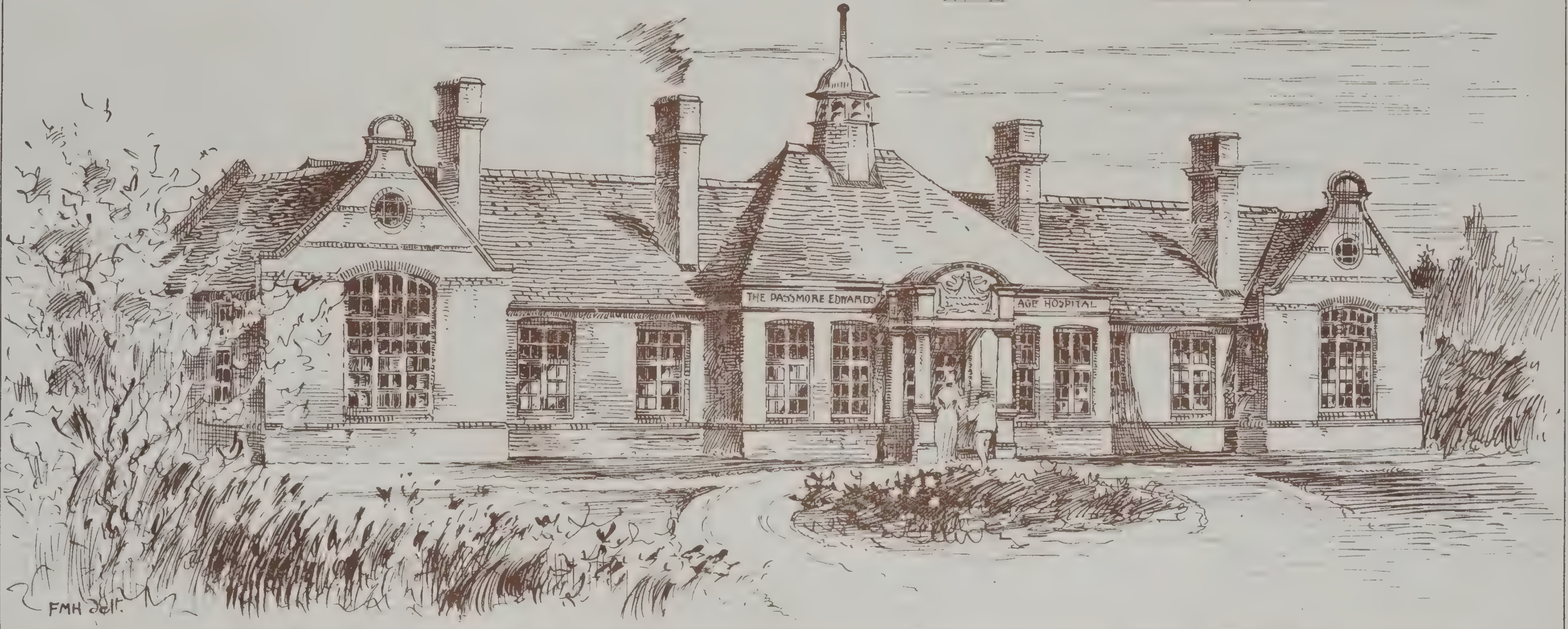
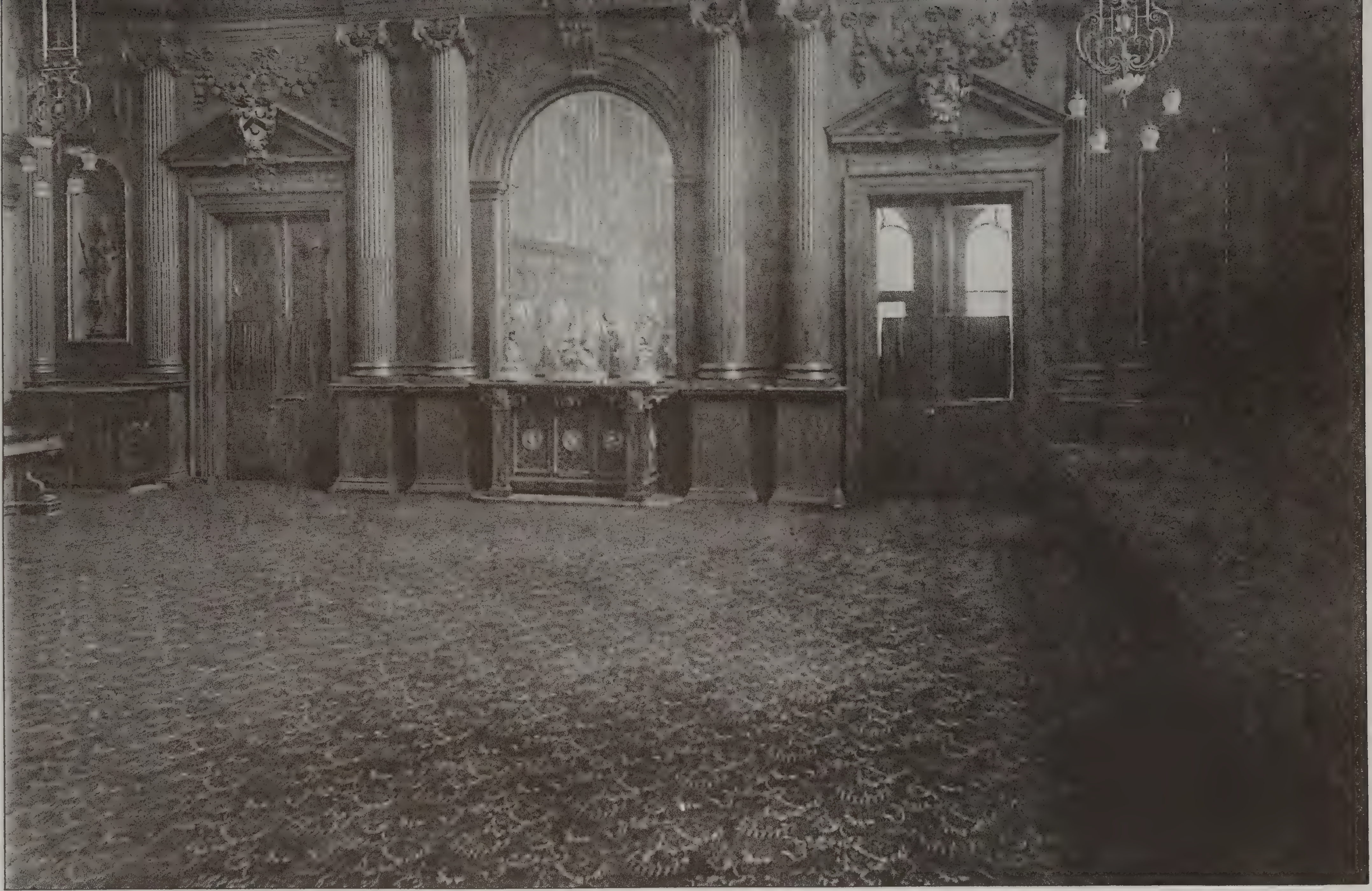


Photo Lithographed & Printed by James Akerman, 6 Queen Square W.C.

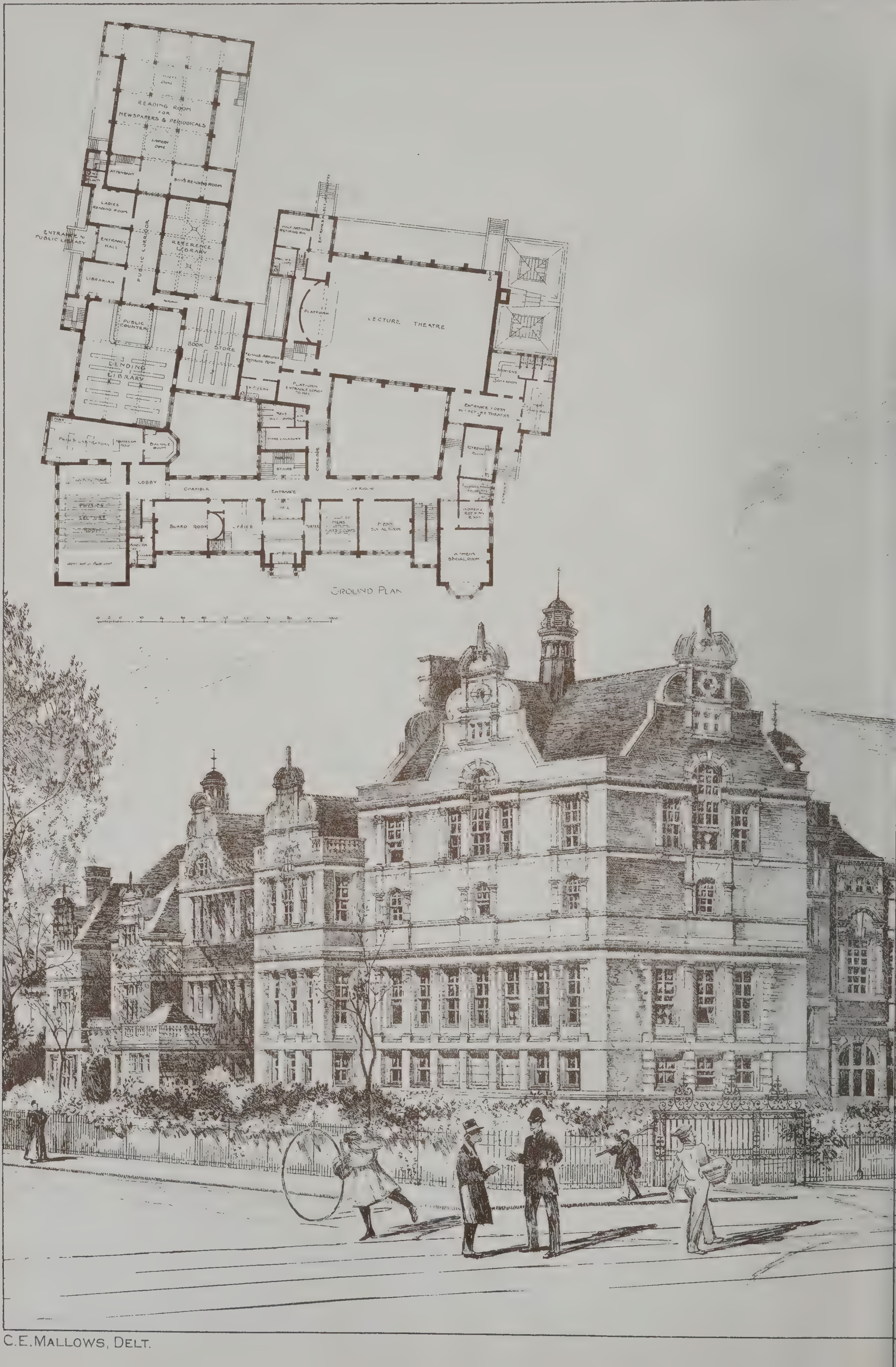


PHOTOGRAPHED WITH A SANDELL PLATE.

"PHOTO-TINT," by James Akerman, 6 Queen Square, London W.C.

THE CITY GUILDS Nº II.

THE HALL OF THE MERCHANT-TAYLORS' COMPANY. THE GREAT HALL



C.E. MALLOWS, DELT.

WEST HAM TECHNICAL INSTITUTE & FREE LIBRARY-COMPETITION.

DESIGN BY SYDNEY B. BEALE, A.R.I.B.A., ARCHITECT.

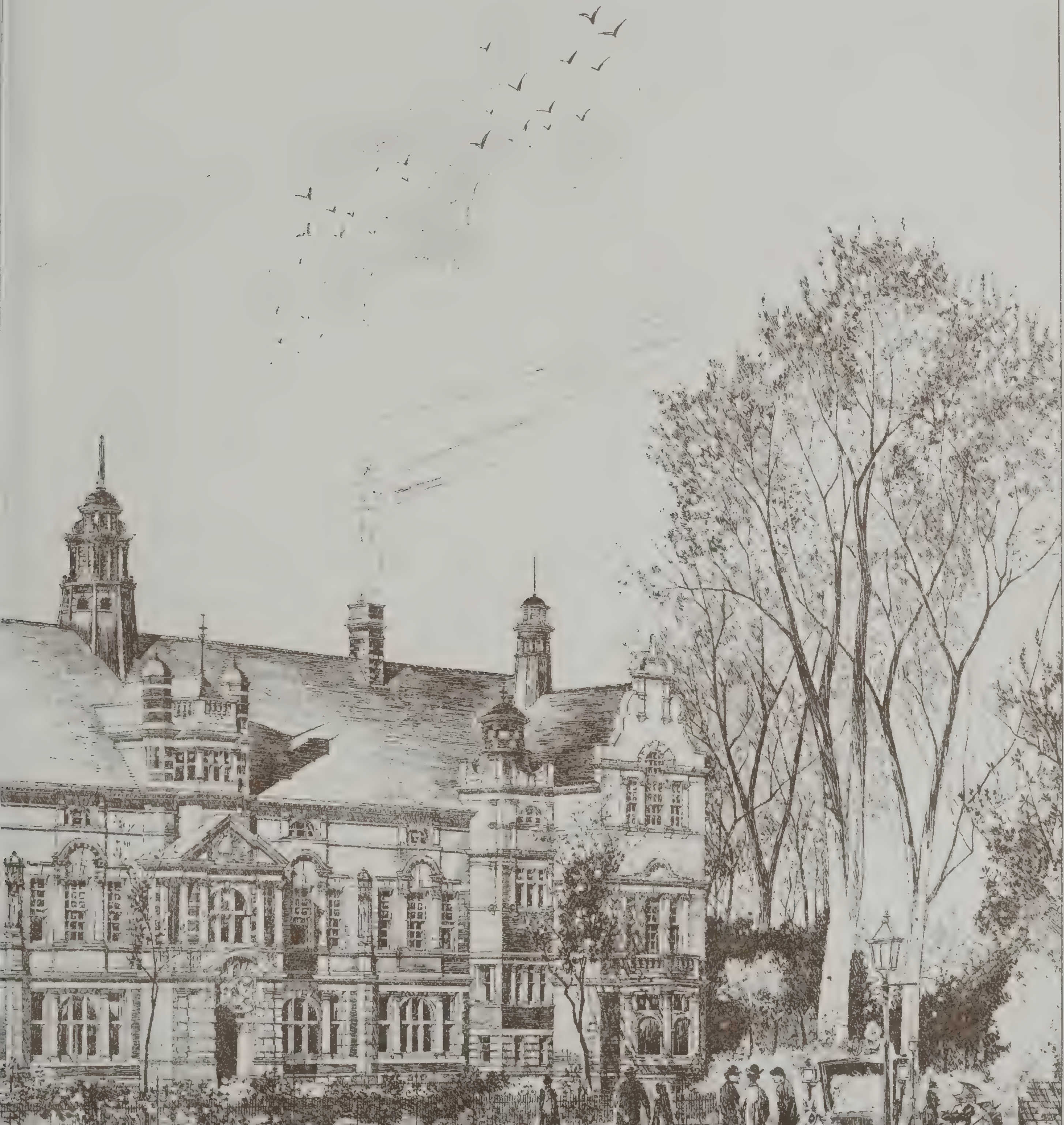
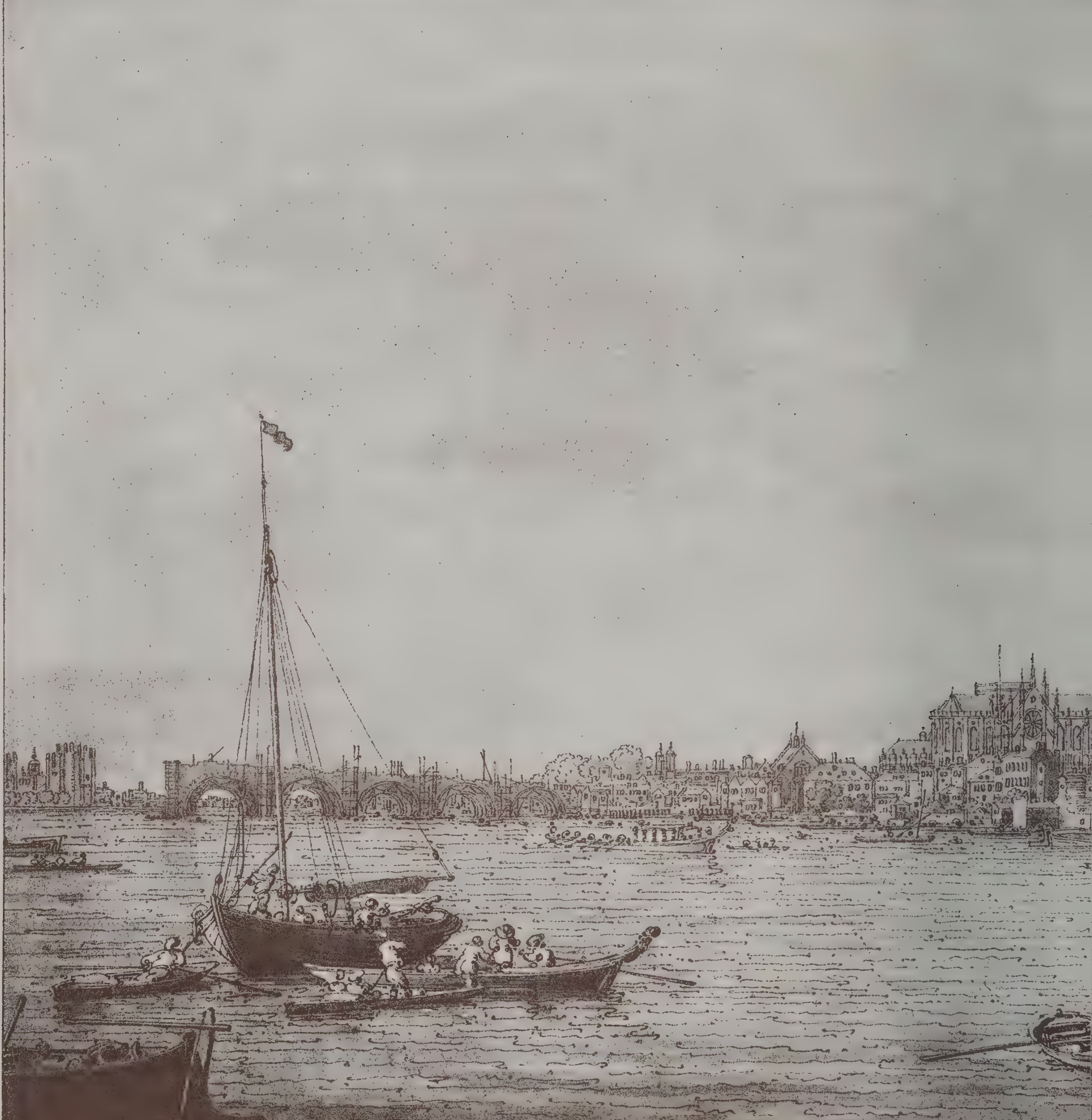
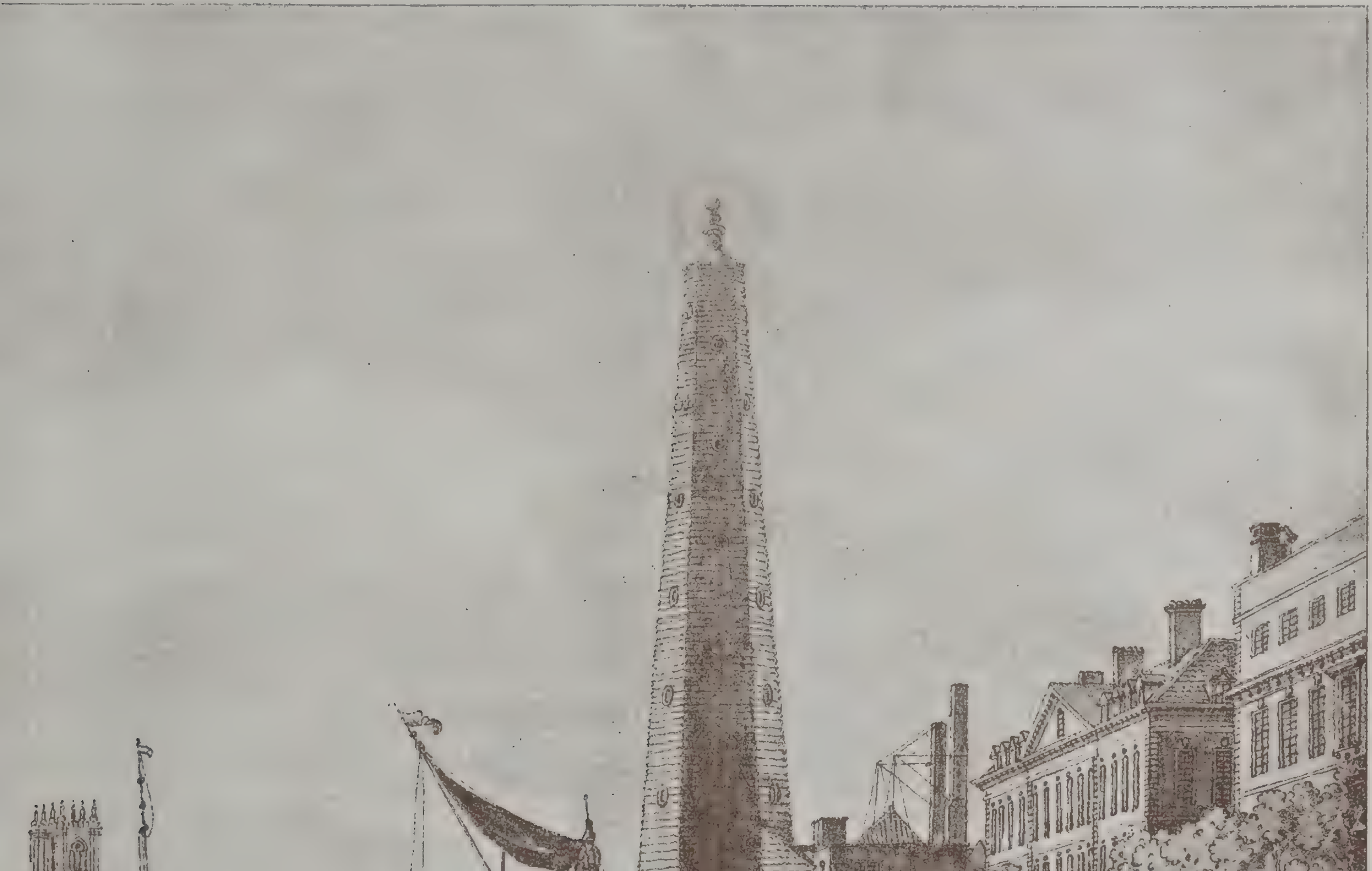


Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C.



FROM THE COLLECTION OF J P HESELTINE ESQ

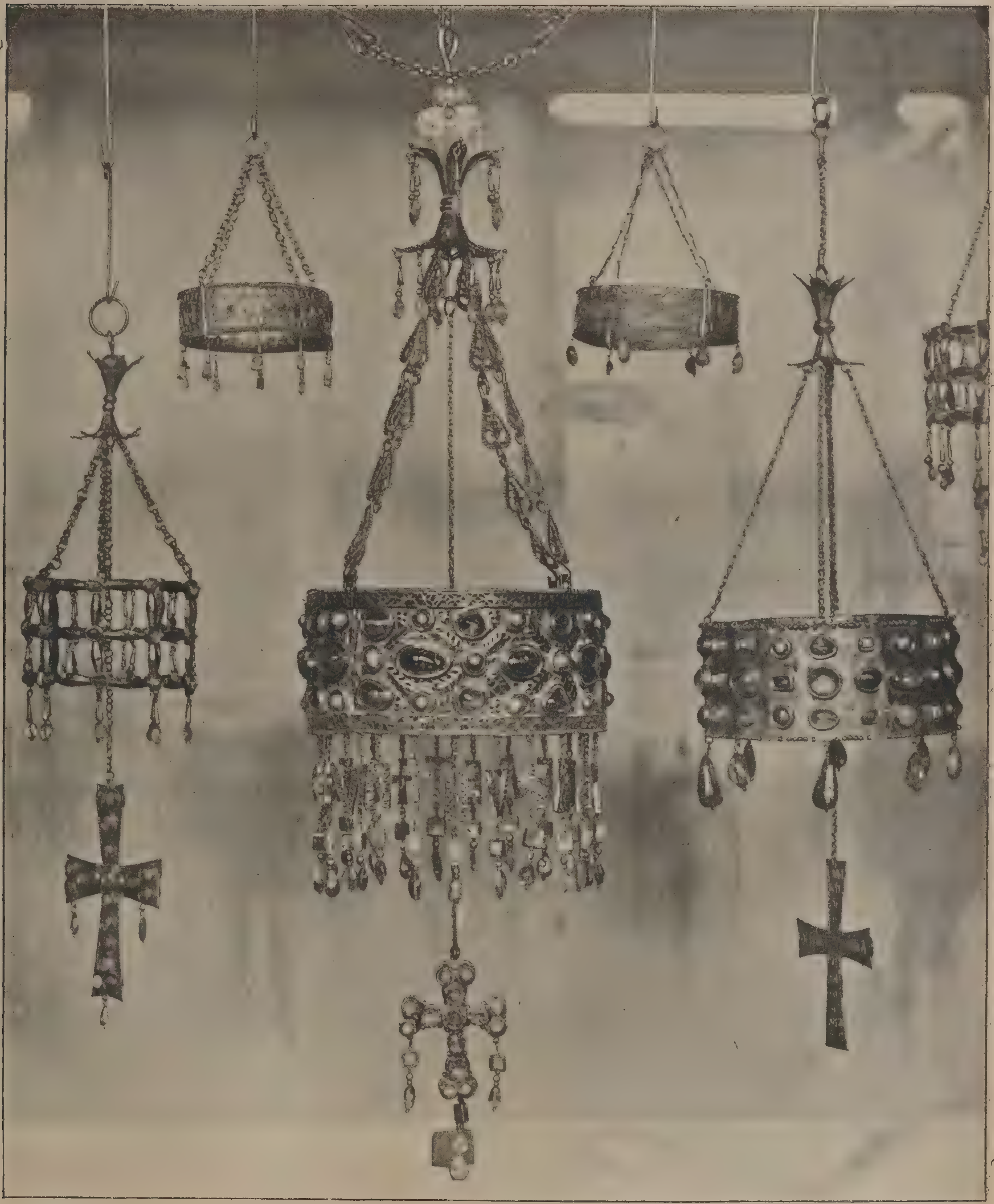
LONDON LOOKING TOWARDS WE



"Photo-Tint," by James Akerman. 6. Queen Square. London. W.C.

TMINSTER · BY · CANALETTO (B 1697 · D 1768)

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS



CROWNS OF GOTHIC KINGS. (7th CENTURY.) FROM THE CLUNY MUSEUM.

(*From a Photograph by* M. Robert.—See May Morris's Article on p. 585.)

VIEW OF WESTMINSTER BRIDGE FROM YORK BUILDINGS.

BY the courtesy of Mr. J. P. Haseltine we are enabled to present our readers with a reproduction of a water-colour drawing by Canaletto, exhibited at the recent Exhibition of Objects of Italian art in the New Gallery, Regent-street. The original drawing is in Indian ink and bistre, slightly heightened by colour, with a charming luminous atmosphere, the delicacy of which is necessarily impossible to obtain in any reproduction. The purity of the lines and the rare fidelity of drawing are, however, represented with remarkable success. Antonio Canal, commonly known as Il Canaletto, was born at Venice, Oct. 18, 1697, and died in his native city, Aug. 20, 1768. The son and pupil of Bernardo Canal, a scene-painter, he at first followed his father's profession; but on visiting Rome in 1719, when he was in his twenty-third year, he began to study from nature, and rapidly acquired a reputation as a skilful landscape painter. On his return to Venice he applied himself to depicting the picturesque palaces, churches, and canals of his birthplace. His most famous picture, "A View on the Grand Canal," is in the Louvre. Horace Walpole informs us that Canaletto came to England in 1746, when he was about fifty years of age, by the persuasion of his countryman, Amiconi, and encouraged by the number of pictures which that artist had sold in this country. Canaletto was then in good circumstances, and it was said came over here to invest his money. Walpole thinks that he did not remain in England more than two years; but in this he is mistaken, as it appears from an advertisement that he was living in lodgings in Silver-street, Golden-square, in 1752. The advertisement sets forth that "Signior Canaletto . . . . had painted Chelsea College, Ranelagh House, and the river Thames, which if any gentleman or others were desirous to see, he would attend at his lodgings at Mr. Viggan's, in Silver-street, Golden-square, for fifteen days from July 31, 1752." ("Lond. Past and Present," III. 248.) It will be seen from our illustration that Westminster Bridge was in course of construction at the time Canaletto made his drawing, and this circumstance fixes approximately the date of the view. The first stone of old Westminster Bridge was laid on the 29th January, 1739, and the last stone on the 10th November, 1750; the time occupied in the building being thus eleven years and nine months. The bridge consisted of thirteen segmental and two small semicircular arches, and cost £218,415. The bridge in the drawing appears to have been about half-finished, and this will determine the date of the picture at about the spring of 1745, which corresponds with Walpole's statement as to the year of Canaletto's arrival in England. There is a print in the Crace Collection, dated 1747, which appears to have been taken from this drawing. It is described as "The South-East Prospect of Westminster Bridge," looking westward, the City Companies' barges going to Westminster. Canaletti pinxit. Wale del. Parr sculp. 1747, 23 by 18. (Cat. Crace Coll. 1879, No. 496.) The house on the extreme right of the drawing is No. 15, Buckingham-street, where the late William Burges, A.R.A., had his offices, now in the occupation of the Charity Organisation Society, which was occupied by Peter the Great in 1698. York Water Gate, at the southern end of Buckingham-street, was erected about 1626, from the designs of Inigo Jones, for George Villiers, first Duke of Buckingham. Villiers obtained from James I. a grant or lease of the mansion in the Strand formerly belonging to the Bishops of Norwich, and the gate was then constructed in the long, embattled wall skirting the river. The Duke of Buckingham pulled down York House and erected a large temporary structure in its place, the walls of which he adorned with mirrors, and purchased, besides, Rubens' collection of pictures and statues to embellish it. In the garden was John of Bologna's group of Cain and Abel, which was given by the King of Spain to Charles I., and by him presented to the Duke. York House was sold in 1672, and was pulled down, and the present streets formed on the site. York-buildings is the general name for the streets on the site of York House; but this name is now restricted to one thoroughfare, which was originally named George-street. There appears to be no doubt that York House water-gate was designed by Inigo Jones, and not, as was suggested by the late Wyatt Papworth, by Nicholas Stone. There is a drawing of the gate in the collection of drawings by Inigo Jones belonging to the Duke of Devonshire, deposited in the library of the Institute. Nicholas Stone was a mason, although he seems to have also practised as an architect, Cornbury, in Wiltshire, having been designed by him. He was frequently employed by Inigo Jones, and appears to have carried out the masonry of York Gate, and to have carved one of the lions. The gate appears to have been suffered to fall into a state of decay soon after Canaletto made his drawings, as appears from an Act of Parliament passed in 1754, to enable the proprietors and inhabitants of houses in York-buildings to levy a rate among themselves, not exceeding sixpence in the pound, to rebuild or repair the terrace-walk and water-gate. The preamble of the Act recites that the terrace-walk and water-gate are "so greatly gone to ruin and decay, that it will require a considerable sum of money to rebuild or repair the same." It seems incredible that the gate should have fallen into such a state of disrepair so soon after Canaletto's drawing was taken, as is indicated by the preamble to the Act. The roof, which in all probability was a flat roof, covered with lead, appears to have been destroyed, and was replaced by a pantiled roof of a low pitch. The gate is now vested in the London County Council, who are about to put it in repair. The lofty structure shown in the picture, adjoining York water-gate, is the water-tower of the York Buildings Waterworks. In 1691 a company was formed called the York Buildings Waterworks Company, for supplying a part of Westminster with water pumped from the Thames at a point near Charing Cross. These works flourished for some time, but failed from competition with the more copious supplies afforded by larger companies, notwithstanding many important improvements introduced by Rennie, the eminent engineer. In 1818 the works were leased by the New River Company, and in 1829 the company was dissolved, and the works abolished. The water-tower, which appears to have been covered externally with wood shingles, was a very picturesque object, and shows how effective a mere utilitarian work can be made if there is no attempt to conceal or ornament it. Westward of the water-tower is a wharf with lofty buildings stretching away to Westminster. In the centre of the picture is Westminster Abbey, the front of Westminster Hall, the towers of St. John's Church, Westminster, then Westminster Bridge, and on the extreme left Lambeth Palace.[*] We are indebted to Mr. John Hebb, F.R.I.B.A., the Assistant Architect to the London County Council, for the above interesting information respecting the subject represented by Canaletto's drawing.

Mr. Francis N. Mundy, of Markeaton, has presented about 8½ acres of land, worth £8,000, to be devoted to recreation purposes for the town of Derby. He has also sold to the corporation, at half its value, sufficient land to form a thoroughfare between two detached portions of the town, thus saving a journey of nearly two miles by a circuitous route. There is a stream adjacent to the land, and it is intended to utilise this for public baths. The total outlay of the corporation will be between £8,000 and £9,000. Two bridges have to carry the road over the stream, and on Tuesday a memorial-stone was placed in each by the Mayor of Derby.

The chapel of Selwyn College, Cambridge, was dedicated on Friday by the Bishop of Ely. Since the foundation of the College in 1882 the services have been held in a temporary building. A permanent chapel has now been erected from designs by Sir Arthur Blomfield, A.R.A., the sum expended being £11,000. Messrs. Cornish and Gaymer, of North Walsham, were the contractors. The style is Early Perpendicular, and the work is carried out in red brick with Portland stone dressings, all the fittings being of oak. The chapel is 93ft. 6in. long by 27ft. wide, and 58ft. in height. The east window is filled with stained glass, designed by Mr. C. E. Kempe. The furnishing includes a carved western screen, with three canopied stalls on either side of the doorway, 22 stalls with canopies, on the north and on the south sides sub-stalls, and a third row of benches below. The stalls will seat about 160 persons. The lectern, a replica of the ancient one in Southwell Cathedral, is the gift of the Rev. William Selwyn, and the bell is given by the Right Hon. W. E. Gladstone.

Engineering Notes.

Weardale Extension Railway. — The new Wear Valley Extension Railways from Stanhope-in-Weardale to Wearhead, a distance of about 9½ miles, was formally opened on Tuesday. The extension, a branch of the North-Eastern system, has been constructed at a cost of £64,872 in exactly two years. The chief contract for the new line was let to Mr. J. T. Firbank, M.P., of London; the building and architectural work to Mr. R. Kitching, of Darlington; the signalling machinery is that of Messrs. Stevens, of London; and the laying of the rails and permanent way has been under the direction of Mr. W. J. Cudworth, the divisional engineer of the North-Eastern Railway, assisted by Mr. E. W. Lyall, of Darlington, the latter gentleman having been connected with the inception of the line and with the survey. Starting at a junction with the old line at Stanhope, the line proceeds, going westward up Weardale. The station buildings at Stanhope and St. John's have platforms 150 yards each long, whilst the platforms at Eastgate and Westgate-in-Weardale have platforms 100 yards each long. A new station has been built at Stanhope, but the old one will be continued in use for goods and mineral traffic. The line gradually ascends from Stanhope to the terminus, the average ascent being about 1 in 100, and the sharpest near St. John's Chapel, where it is 1 in 75. It is a line of many bridges, there being a score of these between the termini. Three are over the river Wear, one being a bridge of two spans of 75ft. near Stanhope; a second at Craig Nook, above a mile farther on; and a third near Eastgate. The remainder of the bridges are over roads and small streams. The Wear itself has needed diversion and the formation of an embankment. There have been needed some 126,000 cubic yards of earthwork; but the line has been planned so as to avoid deep cuttings, and thus it is mainly a surface line, with slight cuttings and embankments. In the quarrying of limestone and of the whinstone which is so abundant all along the course of the railway; in such lead-working as may be profitable; and in agricultural industry are the present hopes of the dale. Tourist traffic will, in all probability, be largely developed.

CHIPS.

A new pavilion, which has been erected in connection with the Aston Infectious Diseases Hospital at Witton, was opened on Friday. The new building, which, exclusive of the site, has cost about £1,000, will accommodate twelve scarlet-fever patients.

The City Court of Common Council have decided to place a marble bust of the Duke of Cambridge in the Guildhall.

New Catholic schools are being erected at Maindee, Mon., and special consideration has been given to the ventilation, which will be carried out on the Boyle system.

A once-notorious haunt of criminals will vanish with the old buildings which are about to be swept away in Newton-street, W.C., for the extension of the King's Hall. By a custom prevalent in the days of Tyburn, the malefactors here resident used, when a condemned *confrère* passed along Holborn *en route* to the gallows, to present him with a bouquet of flowers.

The equestrian statue which was unveiled on Saturday by the Emperor William on the battlefield of Wörth represents the late Emperor Frederick in field uniform and cap pointing and looking westwards, his horse stepping on the rocks which form the foundation of the monument. The rocks of the pedestal are decorated in front with the combined arms of Alsace-Lorraine, surmounted by an eagle, and in front also stand two old German warriors with hands clasped together, representing the united troops of North and South Germany. The sculptor is Herr Baumbach, of Berlin.

The Roman Catholic Church of the Holy Redeemer in Cheyne-row, Chelsea, was consecrated by Archbishop Vaughan on Tuesday. It is Italian Renaissance, and is of red brick, with Bath stone dressings and a lead-covered roof. The length is 115ft., and the width across nave 34ft., the height being 42ft. Mr. Edward Goldie, of Kensington, was the architect, and Messrs. Goddard, of Farnham, were the builders.

The Water Committee of Arbroath Burn Commission decided on Monday to instruct Mr. Wilson, C.E., Edinburgh, to look out for a gravitation supply of water, and to ascertain its probable cost, together with the probable quantity and quality.

---

[*] In the National Gallery, No. 1328 is a view of York Gate, the Water Tower, and Westminster Abbey and Bridge, by Samuel Scott, the marine painter, who died in October, 1772; the bridge is shown as completed, the foreground and river surface are more carefully rendered, and some of the architectural details are more faithfully portrayed, but the general result is to confirm Canaletto's observations in every particular. Scott's picture was purchased from the Wheeler bequest in 1891.

Building Intelligence.

Ashton-upon-Ribble.—Owing to the increased population of this part of Ashton, the existing schools have proved for some time to be quite inadequate. Extensive additions are now being carried out from the designs of Messrs. Myres, Veevers, and Myres, architects, of Preston, &c., and comprise a large room. The internal dimension of the building is 77ft. 6in. by 24ft., and 16ft. high to the ceiling. The roof will be open-timbered, carried by six curved and braced principals, supported by moulded stone corbels. Galleries and the usual school fittings will be provided. The main school will give accommodation for 116 extra scholars, and when used for entertainments, concerts, &c., will seat over 360. Attached are roomy porches, cloak-rooms, with lavatories. The total amount of the contract is £1,272. The buildings are being carried out under the personal supervision of Mr. T. Harrison Myres, F.R.I.B.A.—The corner-stone has also been laid of St. Andrew's school, Ashton-upon-Ribble. The managers have had many schemes before them, but have secured a design from Messrs. Myres, Veevers, and Myres, architects, of Preston, now being carried out. The new school is intended for the boys (the girls and infants occupying the whole of the old buildings). The school is being built of Haslingden parpoints, lined with brick, and in style to harmonise with the adjoining buildings. The main school will accommodate about 212 boys; the total amount of the contract being £1,581. The buildings are being carried out under the personal supervision of Mr. T. Harrison Myres, F.R.I.B.A.

Cambridge.—The new collegiate buildings for the Cambridge Training College for Women Teachers was opened on Saturday. The new college is situated in Wollaston-road, overlooking the University cricket ground. The cost so far has been over £10,000; but, in addition to a deficit of over £1,000 in the building fund, a further sum of £2,000 is required to build the east wing, in order to make complete provision for the staff and 50 students, to which number the college is limited. The building is carried out in red brick with terracotta dressings, and red tiles are used for roofing. The lecture-room and library are located on the ground floor, and the dining-hall, kitchen, and offices on the first floor. The architect is Mr. W. M. Fawcett, M.A., F.S.A. We illustrated the college by a plan and perspective in our issue of August 3, 1894.

Chichester.—A county lunatic asylum for West Sussex is in course of erection about a mile from this city, from plans by Sir Arthur W. Blomfield, A.R.A., and Son. The executive buildings stand in a block in the centre of a series of six blocks for the reception of the patients; the latter blocks are to be connected by underground corridors. The chapel is to cost £4,000 out of £114,669, the amount of the contract. The total expenses will probably be nearer £200,000, but the original estimate was far in excess of the latter figure. Water had been found at a depth of 400ft., and a water-tower some 100ft. in height will serve the buildings. The asylum will accommodate 450 patients, and is capable of being extended to receive another 150. Up to the present time the asylum at Hayward's Heath, in East Sussex, has been the only one in the county.

Lincoln.—The new church of St. Faith, which has been erected in Charles-street to meet the growing needs of the western part of the parish of St. Mary-le-Wigford, was consecrated by the bishop on Tuesday week. The church is 15th century in style, consisting of nave, chancel, and broad aisles the full length of the building, under three high-pitched roofs without chancel arch or other cross arches. It has been built of red brick, supplied by Messrs. Handley and Son, of Lincoln, with exterior dressings of red Dumfries stone, while the interior dressings are of Ancaster stone. It has a nave 57ft. 9in. by 25ft.; chancel, 32ft. 6in. by 25ft.; and aisles each 80ft. by 15ft., and affords accommodation for about 530 worshippers. The west façade of the church has a central window of six lights, with one of three lights to each aisle, while the aisle windows are of four lights each. The east window is of five lights. The roofs are all panelled under the rafters. The only permanent fittings at present provided are the altar, chancel-screen of oak, and choir-seats. The whole of the works have been carried out by Messrs. E. Bowman and Sons, of Stamford, from the design of Mr. C. Hodgson Fowler, F.S.A., of Durham, Mr. W. S. Goodbarne being clerk of the works. The cost has been £5,000.

Llanthony.—The parish church of St. David was reopened after restoration last week. The church is situated amid the Black Mountains, and within the precincts of old Llanthony Abbey, with which it is contemporary. It consists of nave 52ft. by 19ft., chancel 34ft. by 15ft., and north porch, and is about four miles from the monastery of Father Ignatius. The glory of the building is the nave roof; it consists of eight pairs of principal rafters, carrying two purlins on each side, supporting 56 common rafters and double-ridge pieces. The roof has been stripped. The timbers have been restored, then strengthened with iron plates, straps, and bolts, and covered with boarding felt, and the old stone tiles replaced. The floor of the nave has been lowered so as to get a step at the chancel arch; but it is still 18in. above the original floor-line, which could not be maintained. A bed of concrete has been laid over the whole area of nave, and the modern seats, pulpit, and ancient font have been refixed. The internal plaster has been retained. A small new window has been inserted in the north wall to give light to the pulpit. All the windows have new leaded lights, and a new oak door for the north entrance has been provided. The iron furniture, such as hinges, hooks, latch, ring, handle, and straps, are the entire work of Mr. Howells, the village smith, who has just entered his 76th year, was born in the Abbey Tower, and educated in the old parish church. The building is heated by one of Musgrave's stoves. Moulded eaves, gutters, square down-pipes, gullies, and drains have also been provided. The outlay amounted to about £700. The first portion of the work was executed by Mr. Pritchard, and the second contract by Messrs. Denham and Sier, Abergavenny. The work has been carried out from the plans, and under the personal superintendence, of Mr. J. James Spencer, architect, Abergavenny.

Newcastle-on-Tyne.—The printing premises, which have been erected for the Co-operative Printing Company at the corner of Rutherford-street and Bath-lane, were opened on Saturday. The building has been erected from designs prepared by Mr. F. W. Rich, of Eldon-square, Newcastle. It occupies a site containing 800 square yards, is six stories high, and is constructed of brick, with stone dressings, light being provided to the various rooms and shops by broad windows. The building is lined throughout with cream-coloured glazed bricks. The building is practically fireproof, the floors being constructed of cement concrete and steel girders, and finished with wooden blocks. The rooms and shops throughout are warmed by a system of low-pressure hot-water piping. Cellarage and paper stores are provided in the basement, and also the engine for driving the machinery. On the ground floor the sale shop is situated, together with a large paper store. The entrance to the workshops is by a separate staircase, which is also fireproof. The cart entrance and loading dock are in connection with the paper store. The first floor is occupied by the printers, who have a shop 48ft. by 46ft., and here also are the board-room and offices. The second floor forms a bookbinding shop, 64ft. by 48ft., and the third floor a composing shop, 64ft. by 50ft. A lift connects the whole of these floors, and also a paper shoot. At the corner of the site a dome, 24ft. square, rises to the height of about 100ft. above the pavement, and forms a conspicuous feature in the neighbourhood. The building is lighted with electricity. The contractors for the building were:—Masonry and joiner work, Messrs. J. and W. Lowry; slating, Messrs. Hewitson; plumbing and heating, Messrs. Walker and Son; cement flooring, Messrs. W. B. Wilkinson and Co.; painting, Mr. G. G. Laidler; electric lighting, Messrs. W. H. Holmes and Co., all of Newcastle.

Newlyn.—Mr. Leonard Courtney, M.P., opened on Monday an exhibition of pictures in the Opie Memorial Art Gallery, which has been erected by Mr. J. Passmore Edwards at Newlyn, near Penzance, for the use of the artists living there. The main portion of the building is devoted to the gallery, which measures 45ft. by 25ft. and 15ft. from the floor to top of the cornice, an extensive wall-space being thus available for pictures. On the same floor is an ante-room, the rest of the space being utilised as a landing opening out from the porch. In the basement are the reading-room, committee-room, and caretaker's apartments. We illustrated the gallery, of which Mr. James Hicks, M.S.A., of Redruth, was the architect, and Messrs. John Symonds and Sons, of Blackwater, were the contractors, in the Building News for Feb. 8 of the present year. An excellent collection of pictures has been brought together for the inaugural exhibition, and, although many of the works have been seen in previous exhibitions, they are new to the majority of West-country folk. It is essentially a Cornish show, most of the pictures representing Cornish scenery or Cornish life. The central position is given to Sir Frederic Leighton, P.R.A., who has contributed five studies, one of a female head entitled "Vittoria," the others sketches from Kynance. Mr. Stanhope Forbes, A.R.A., and Mrs. Stanhope Forbes, Mr. Frank Bramley, A.R.A., Mr. George Clausen, A.R.A., Mr. and Mrs. T. C. Gotch, Mr. Norman Garstin, Mr. Chevalier Tayler, Mr. Napier Hemy, and Mr. H. S. Tuke are among the other artists represented. Speaking at the luncheon, over which Mr. Bolitho, M.P., presided, Mr. Courtney said he was to represent for the moment Mr. Passmore Edwards. They were both Cornishmen. The Newlyn colony of artists had become known in the world: they were a school; they already had traditions. This Newlyn School wanted the assistance of a gallery in which its annual production might be seen, and where visitors to the West of Cornwall might go and discover what they were producing year by year. He was proud, as a Cornishman, that this Newlyn colony had come amongst them. He hoped they would develop in Newlyn itself a school of natives who would be a credit to those who taught them, and maintain the Newlyn School, which, though enriched from without, should also furnish from within a school for the production of Cornish artists, as well as a school in which Cornwall gave a home to artists from other parts of England.

Scunthorpe.—Under the direction of the Lindsey County Council, a new court-house, superintendent's residence, sergeant's house, cells, and stables have been erected at Scunthorpe. The site adjoins the old police-station, which has not been interfered with. The entrance to the court-house is flanked on either side by the justices' retiring-room, 15ft. square, and the witnesses' room, 15ft. by 13ft. The court-house is 55ft. by 25ft., and height to ceiling 22ft. The walls are panelled to dado height. The bricks were supplied by Messrs. Spring and Halmshaw, of Saddlethorpe, and the stone dressings from the Ancaster quarries. The ventilating apparatus has been supplied by Messrs. R. Boyle and Son, Limited, London, and consists of one of their 30in. air-pumps as an extractor, and No. 8 rectangular tube inlets with regulating valves. The wrought-iron gates and fencing have been supplied by Messrs. Hart, Son, and Co., of Birmingham. The heating apparatus is a low-pressure system, by Mr. William Mowbray, Lincoln. The buildings have generally been designed in harmony with the Elizabethan period. Messrs. Wright and Son, of Lincoln, were the contractors, and the plans were prepared by Mr. James Thropp, the surveyor of the Lindsey County Council, and Mr. R. D. Lockwood, of Scunthorpe, has been clerk of the works. The amount voted for the land and building was £6,100.

Shoreditch.—An underground sanitary convenience and lavatory, Shoreditch High-street, between Commercial-road and Great Eastern-street, was opened on Monday. It has been constructed at a total net cost of about £1,300, under the supervision of Mr. Ridyard Roscoe, surveyor to the vestry. The convenience is 60ft. by 15ft., and its floor is about 10ft. below the surface of the carriageway. The men's department contains twelve urinals, six w.c.'s, and three lavatories; the women's department at the southern end of the refuge includes three w.c.'s and one lavatory. The staircases are 4ft. wide, and the steps are faced with Mason's safety treads. The roof is constructed of rolled girders fixed upon granite stone frames. The contractors have been represented by Mr. G. B. Davis, their manager, Mr. Foreman Brown; and the plumbing work has been put in for Messrs. Jennings by Mr. Arthur Walter.

Southport.—The lady of the manor of Southport, Mrs. Hesketh, laid on Saturday the foundation-stone of Emmanuel Church, Cambridge-road, Southport. Only the contract for the central portion of the building has been let at present, and this alone will cost £11,900. Besides the site, Mrs. Hesketh has given £2,000, and other donations raise the amount promised to £9,260. Messrs. Preston and Vaughan, of Manchester, are the architects. The plan consists of a nave and aisles of five bays each of 19ft., with double transepts on each side. The clerestory, with its two long ranges of windows, will be open from end to end. The tower will consist of a ringing chamber and belfry, and will be 100ft. in height to the top of the parapet. The accommodation will be for 1,116 persons. At the ceremony the Bishop of Liverpool, Dr. Ryle, remarked that during the fifteen years he had been in Liverpool he had consecrated thirty-six churches. He should rejoice to see a grand cathedral in Liverpool, but he could not tell whether that desire would be realised. Perhaps the South African gold discoveries might cause someone to come forward with a million to buy a site in the heart of Liverpool to endow a dean and chapter.

Wakefield.—The old Grammar School building at Wakefield, which for nearly forty years past has been simply a store-house, is again to be used for educational purposes, and, with additions, was dedicated on Tuesday by the Bishop of the diocese. The building was erected in 1591 by Geo. Savile and his two sons, and from that time up to nearly forty years ago was the home of the Wakefield Grammar School. The old schoolroom, 76ft. by 22½ft., with open-timbered roof in oak, has been restored both inside and out. The additions that have been made comprise a large assembly hall, 60ft. by 30ft., opening out to the old school buildings; two new classrooms, 25ft. by 20ft.; and a teachers' room. There is also in this part of the building a senior boys' entrance, with a corridor. At the south end is another classroom, 24ft. by 20ft., with an entrance for juniors. There is accommodation altogether for 308 boys, exclusive of the assembly-room. The hall is well lighted with mullioned windows, and is heated with hot-water pipes, and there is also an open fireplace. In the basement is a gymnasium. Mr. F. Simpson is the architect.

West Hartlepool.—The Public Library was formally opened on Wednesday. It occupies of the site of 725 square yards at the rear of the municipal buildings, and forms the completion of the block, with which it is in harmony. The library consists of a one-story newsroom, 54ft. by 30ft., and 19ft. high. A panelled pitch-pine dado runs round the walls, which are also broken up by pilasters. The windows contain lead glazing above the transoms in all the rooms. The librarian's private office is centrally situated, and commands a full view of all departments. The lending library is 47ft. by 25ft., and 13ft. high. On the first floor, immediately above the lending-room, is the reference-room, 47ft. by 25ft., and 16ft. in height. The street façades are of Grosmont bricks, with terracotta dressings. The lighting is by incandescent lights. The estimated cost of the building is £3,000, and the fittings cost £500 more. The borough engineer (Mr. J. W. Brown) is the architect, and Mr. J. Davison, of Stockton, the contractor.

Wolstanton.—On Thursday, the 17th inst., the new chapel erected by the Wesleyan denomination of Wolstanton was opened. The design of the chapel is Gothic, of the Late Perpendicular period. Red bricks are used in the facing of the elevations, and the tracery and dressings are in Hollington stone. The plan of the church is cruciform, having a nave 86ft. long and 30ft. wide, terminating in an octagonal apse, and intersected with broad transepts, 30ft. wide and 25ft. deep, also two side aisles 16ft. deep. The chapel is seated for 684. The work, the cost of which will be about £4,000, has been carried out under the direction of the architect, Mr. A. R. Wood (Wood and Hutchings), of Tunstall-road, Burslem, Mr. G. A. Foster, of Longpost, being the contractor.

◆

A statue of the late Sir John Macdonald was unveiled on Wednesday, at Kingston, Ontario, the city which he represented for many years in the Dominion Parliament.

The late Mr. G. C. Benn, by his will, has bequeathed the extensive property in High-street, Rugby, known as the Shoulder of Mutton Inn, to the town, and has left with it a sum of £6,000. Of this sum £4,000 is to be spent on erecting buildings for the benefit of the town on the site of the Shoulder of Mutton, and the interest on the remaining £2,000—which is to be invested in Consols—is to be devoted to the maintenance and repair of the building.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to The Strand Newspaper Company, Limited.

TERMS OF SUBSCRIPTION.

One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India, £1 6s. 0d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front-page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No Front-page or Paragraph Advertisement inserted for less than 5s.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page Advertisements and alterations in serial advertisements must reach the office by Tuesday morning to secure insertion.

Situations.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., LI., LIII., LIV., LVIII., LIX., LX., LXI., LXII., LXIII., LXIV., and LXV. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Received.—Jas. Somers.—L. J. W.—Sculptor.—C. W.—A. T. and Co.—E. S. (Belfast).—W. F. L. Co.

Correspondence.

THE BELFAST CATHEDRAL COMPETITION.

To the Editor of the Building News.

Sir,—In your article last week on this forthcoming competition you refer to the possible chances of a Mr. "Tite Barnacle" winning it.

It is to be hoped that the assessor will insist on a "fair field and no favour" to all comers; but it is as well to remember that though the committee say they have decided to instruct the assessor to nominate six architects, it is an open secret, on the authority of the vicar, who is the prime mover in the whole affair, that two local architects and one Dublin one are to be amongst those selected. One of these architects at a preliminary meeting sent in sketch plans for the whole work and a report on same. Are any of these the "Tite Barnacle" referred to? Is the following resolution passed by the committee the back door for Mr. Tite Barnacle to come in by? "The design awarded first place by the assessor shall be the design adopted, unless it shall be found that a majority of not less than three-fourths of the committee are in favour of any other of the competing designs, in which case the latter shall be adopted."—I am, &c., Ulster.

◆

The governors of the University College of Wales met at the college at Aberystwith on Wednesday, when the treasurers reported that the appeal for £5,000 to meet the offer of a grant by Sir William Harcourt to complete the college buildings has been successful. Before the close of 1894 the whole of the £5,000 required had been promised, and the total subscriptions amount now to £5,803. The council reported that plans are being prepared by Mr. C. J. Ferguson, architect, of Carlisle and London, for the construction and completion of the whole of the college buildings.

Intercommunication.

QUESTIONS.

[11440.]—**Lead Lettering.**—When did the use of lead, now so usual for inscriptions in the better class of cemetery memorials, first come into use? I know of none more than 20 years old?—Bristol.

[11441.]—**Fungus.**—We are having a great deal of trouble with our house here for the following reason:—A sort of fungus has begun to grow around the ends of the joists in the stone basement walls, and along the exposed parts in the cellar. The ends of the joists, around which it has grown, have gone quite rotten. It (the fungus) has even penetrated through the floor, and was first found growing up one of the doorposts on the floor above. I should like your opinion as to the cause, and also as to the cure thereof. I should also inform you that the joist-ends are built into the wall with no cavity around. We have also had part of the stone wall pulled down, and find it literally stocked with a sort of root, not unlike a cobweb but stiffer and stronger.—Zero.

CHIPS.

On November 9th the provisional order recently obtained for the extension of the municipal boundaries of the borough of Taunton will come into force. The extension is almost entirely confined to the northern part of the borough, whilst upon the south there is but little deviation from the old boundary. The parishes affected are Staplegrove, St. James's Without, and St. Mary's Without. The present increase of inhabitants is but small, being approximately 1,116, and raising the estimated population from 18,026 to 19,142.

Mr. John Henry Cole, the well-known painter of Welsh landscapes, died on Sunday last in his 68th year, at the Royal Infirmary, Manchester. He was a prominent member of the Royal Cambrian Academy of Art, and his works had figured in the Royal Academy, the autumn exhibitions at Conway, Liverpool, and Manchester for many years.

The base of the cross to be erected in East Brent churchyard, as a memorial of the jubilee of Archdecon Denison, was completed last week. The sculptor is Mr. Harry Hems, of Exeter.

A reredos has been placed in the parish church, St. Just-in-Penwith, in memory of the late Mr. William Holman, the head of the firm of N. Holman and Sons, ironfounders, who was for many years vicar's warden.

A master builder, named Joseph McDermott, was fixing on Thursday in last week a small bolt beneath the tenor bell just placed in the tower of Londonderry Cathedral. While so engaged, the bell, which weighs 17cwt., was being held by means of a rope by some workmen below. Upon seeing the rope shake they let go, and the bell, which had been held mouth upwards, swung and caught McDermott, smashing his chest. Death was instantaneous.

Some workmen, who were employed in cutting a road through Watergate Hanger, a wood on the Planstead Estate, near Portsmouth, discovered, 2ft. below the surface, a tesselated pavement, apparently of Roman workmanship. It is laid in red and white tesseræ, 2in. square, in a good state of preservation; but only a small portion, about 6ft. by 4ft., has been uncovered, though it is considered probable that it forms part of the ground floor of a Roman villa.

The evidence and documents relative to the coroner's inquiry into the recent Morecambe Pier disaster having been forwarded to the Public Prosecutor, a communication has been received from the assistant-solicitor to the Treasury, stating that, after careful consideration of the whole of the evidence, he is of opinion that it is not such as to justify criminal proceedings being taken against any person or persons in respect of the deaths which occurred through the collapse of the eastern landing-stage of the pier.

A memorial bust of the late Duke of Devonshire was unveiled on Wednesday at Buxton. The bust, of white Sicilian marble, is the work of Mr. Keyworth, of London. It is fixed in the new pump-room, the last gift of the late Duke.

Mr. Hanbury, M.P., accompanied by Mr. A. T. Pentland, Board of Works engineer, visited Queenstown on Wednesday to inspect the site of the proposed new Custom-house, and also the existing building used for that purpose.

The Methodist Free Church, Hyson Green, Nottingham, are building a new church and schools on the Gregory Boulevard, from the plans of Mr. F. W. Dixon, at a cost of £3,500. Memorial stones were laid on Monday.

The Science and Art Department have issued to science and art schools a circular inclosing a minute of the Education Department, sanctioned by the Treasury as an experiment, making the grants for instruction in science and art depend partly on attendance and partly on payment by results as tested by examinations.

Legal.

DRAIN-REPAIRING.

HOUSE-DRAINS are a constant source of trouble and litigation between owners and occupiers, and in one way or another they are a very fruitful cause of annoyance. The law is not in a satisfactory state as to the ultimate liability of the beneficiary owner for their making or their repair; and, indeed, the whole question is so complex and confused that it would seem as if it could only be settled by means of a new Act of Parliament dealing with the whole subject. But however that may be, and whenever it may come to pass, it is well to use the law as it stands to the best advantage, and therefore it is satisfactory to note a case which we reported last week from the Woolwich Police-court, and which certainly should be a useful caution to all whom it may concern. The facts were simple and usual enough. The sanitary inspector of the Plumstead Vestry had complained to the agent of some property in his district about a defective drain. The agent promised to attend to it, and employed a local workman for that purpose. After the job was finished, the inspector went again, and found that a loose pipe had been put over a broken joint, so that both sewage and sewer-gas could escape, and that earth had got into the drain.

Thereupon both the agent and the workman were summoned to the police-court for repairing the drain in such a way as to be a nuisance. Evidence was given of the above facts, and the agent proved having employed the workman, who, by the way, had since done the repairs properly. The magistrate discharged the agent, who had taken no part in the repairs, having handed the job over to a competent workman, and so was not legally liable. But as to this workman, the magistrate fined him £5 and the costs, saying it was one of the worst cases he had ever heard of, and that if he had not been a poor man the fine would have been £10. This result is very satisfactory, in so far as it shows that even under the present law the actual person responsible for bad work, which may cause indefinite suffering in the way of disease and death to wholly innocent people, can be so readily reached and so promptly punished; and it is to be hoped that, if necessary, the lesson will be frequently repeated.

Fred. Wetherfield, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

W. J. M.—Houses.—Drains.—Sewer.—I do not think you can compel the corporation to bring a sewer up to your drain. You must rather go to their sewer, and arrange with owners of ground unless, indeed, the local authorities were to take over the new road.

D. G.—Road.—Building Line.—Plans.—The local authority are justified in their proposed building line, and after service of their notice you would not be safe in building beyond that line.

W. K.—Building.—Plans.—Time.—There is no such special limit; but circumstances may alter the state of things, or the land or local regulations may be changed meanwhile.

Injured.—Tender.—Estimates.—I do not think there is any right of action in such a case, as there is not any obligation to accept the lowest tender.

The seventh great International Art Exhibition will be held at Munich in 1897, mainly on the lines of the rules of the Exhibition of 1892.

The city council of Manchester have decided to extend the Municipal Art School in Cavendish-street in that city at a cost of £6,000, and have also voted £400 a year towards the maintenance of the museum at Owens College.

The promoters of the Newcastle, Manchester, and Glasgow railway scheme will again seek Parliamentary powers for the construction of the line this session. A feature of the proposal is a new bridge across the Tyne from High-street, Gateshead, to Pilgrim-street, Newcastle, which will, like the present well-known High-Level Bridge, be a combined railway and road bridge.

The Wesleyan day schools at Penzance were reopened, after enlargement and remodelling, on Monday last. The schools were built in 1867 from designs by Mr. W. H. Trounson, M.S.A., of Clarence-street, Penzance, who has been the architect for the present work, which has increased the accommodation to 400 school places. Mr. W. H. Trounson was the contractor for the whole work, and the masons' work was sublet to Messrs. A. and W. Trythall. The cost has been about £900.

LEGAL INTELLIGENCE.

Arbitration in Leeds.—At the Great Northern Station Hotel, Leeds, on Monday, Mr. Milnes, of Bradford, sat as arbitrator in reference to a claim of the trustees of the late Mr. William Dawson for the value of certain property, which, under a notice to treat, given by the Leeds Junction Railway Company, came up for valuation. The property in question is situate at Rothwell, and comprises about 4½ acres. The witnesses called for the owners were Mr. Farrer, Mr. Horsfall, Mr. Hepper, and Mr. Hollis; while Mr. Bairstow called Mr. Fenwick and Mr. Joseph Smith (Bradford). The proceedings lasted the whole day.

Architects' Fees.—At the Preston County-court, on Tuesday, Mr. J. Fish, architect, of Preston and Manchester, sued Mr. T. Parkinson, biscuit manufacturer, of Preston, to recover £22 for services rendered. In 1894 the defendant instructed Mr. Fish to prepare plans for a house to be erected at Moor Park, Preston. When the plans were submitted to the defendant, he suggested the addition of a coach-house with stables, and the plaintiff said that would alter the agreement, as the cost of the plans (£15) had been agreed upon. The defendant said he was "not particular to a few pounds," and the plans were therefore modified, and afterwards passed by the corporation committee. The defendant said the stables were mentioned from the first, and it was an oversight on his part that they were not mentioned in the agreement. His Honour found that the plaintiff had carried out the work mentioned in the agreement, and gave a verdict for £22 and costs.

The M S. and L. Extension to London.—The Eyre Estate Arbitration.—The hearing of this important case between the trustees of the Eyre estate and the Manchester, Sheffield, and Lincolnshire Railway Company, to determine the sum to be paid by the railway company for the acquisition of 46 acres of land—a portion of the Eyre estate—for their terminal station in St. John's Wood and Marylebone, has been continued during the past week. The amount in dispute exceeds half a million sterling, and the sum offered by the respondents as compensation falls short of the claim by some £150,000. Mr. E. H. Bousfield, a member of the firm of Messrs. Edwin Fox and Bousfield, called on behalf of the trustees, said that the Eyre estate combined in a unique degree the attractions both of a Metropolitan and suburban neighbourhood. In ascertaining the present value of the unexpired ground-rents they ought to be capitalised at 2½ per cent. In determining the reversionary value of the property, one part had been treated as house property and the other as land, for, at the expiration of the present leases a part of the ground would be cleared. The reversionary value of the house property should be estimated at 20 years' purchase of the rental value. The value of the land property would be 3d. a foot, which, capitalised at 20 years' purchase, would give £10,800 per acre. The land would be worth that whether it was used for the erection of houses, flats, or shops. He estimated the price which the company should pay as follows:—For the existing ground-rents, £55,574; for the reversion of house property, £121,929; of land, £228,243. On the question of consequential damage, he was of opinion that the adjoining property would be depreciated to the extent of one-fifth of the annual value, which sum when capitalised amounted to £38,720. Cross-examined: The witness thought the effect of the railway would be felt by the trustees after 33 years. It was a fact that, on the principle of calculation adopted by him, the trustees would get £6,334 for premises of which the ground-rent was £14, with 21 years to run, and £63,779 for premises held at a ground-rent of £324, with 42 years unexpired. At the end of 42 years the freeholders would, in the latter case, come into a rental of £7,000 a year. The witness had had applications from intending purchasers of ground-rents at 2 per cent. Re-examined: When rents had once been reduced they could not be put up at the expiration of the lease. Mr. F. T. Galsworthy, of Messrs. Chinnock, Galsworthy, and Chinnock, gave similar evidence as to the proper method of arriving at the sum to be paid. He thought there would be great depreciation in the value of the property. Mr. James Chisholm, actuary of the Imperial Life Assurance Company, said that in estimating the present value of a certain sum due at a future date it was not right to take a higher rate of interest than 2½ per cent. Some discussion took place between counsel as to the annual rental value of the property, comprising 158 houses, taken by the company, and it was agreed that £14,500 was the amount. This closed the case for the trustees. Mr. Alexander Rose Stenning, architect and surveyor, Cannon-street, said that he had been engaged since 1888 by the company to survey the property required, and to estimate its probable cost. He did not think the railway would cause any permanent depreciation to the neighbourhood. Except for one part, 125 yards in length, the railway in this district would be entirely inclosed at an average depth of 33ft. The construction of the Metropolitan Railway had not caused any fall in rents in the neighbourhood. Such fall as there had been was due to the fact of people preferring more modern dwellings. The houses on this estate were lacking in modern sanitary appliances; out of 150 only 12 had fixed baths. The houses were also far from substantial, and would not last much longer than the leases. A 10 per cent. deduction must be made from the annual value for repairs by the landlord, and other outgoings, before the net rental could be ascertained. Sir E. Clarke here interposed, and said that on the previous day the net rental had been agreed at £14,500. Sir J. Whittaker Ellis, recalled, said that he put the net annual value at £15,037, from which no deduction should be made. The 10 per cent. deduction mentioned by Mr. Stenning did not apply to houses on lease. Mr. Stenning continued that these freeholds would fetch from 16 to 18 years' purchase in the market, certainly not 20 years'. The sum should be capitalised on the 4 per cent. table. The reversions being perishable bricks and mortar, should be capitalised on the 5 per cent. table. As to the suggested value of a portion of the estate for rebuilding, the witness thought the plans prepared could not be carried out, as the class of house which had been suggested would not be of a character suitable to the neighbourhood. The witness assessed the total amount payable by the company at £200,503. Cross-examined, the witness said that he remembered the company first offering for ten acres of land £417,000. They afterwards wanted sixty-six acres for one and a quarter millions sterling. The witness was questioned at some length with regard to the evidence given by him on behalf of the company before Parliamentary committees in 1891 and 1892, with the view of showing that his estimate of the cost of the property was then considerably in excess of his present estimate. The difference in the estimates of the parties was mainly due to the uncertainty as to the future value of the estate. Mr. Robert Vigers, of 4, Frederick's-place, Old Jewry, vice-president of the Surveyors' Institution, said that with reference to calculations for the sale and purchase of land and houses for a railway company, it was the general custom to take the ground-rents upon the 25 years' purchase table for the length of term then unexpired. With regard to the reversion, it was usual to take as nearly as possible the present rent being paid by the tenants occupying the houses, to deduct from 10 to 20 per cent. for outgoings, and then to capitalise the net rent upon a 5 per cent., or 20 years' purchase, table. That would be a very liberal price, because there was only a limited market for ground-rent reversions. He thought that if the trustees were paid £199,669 they would be amply compensated. Cross-examined: The trustees would be able to get 4 per cent. amply secured on mortgages. In arriving at the present value of the reversion the 5 per cent. table should be used, because the security was not absolute. If it was desired to make an absolute certainty of the future sum, it would be right to estimate on the 2½ per cent. table; but this would give the trustees a better security than they previously had. Mr. Daniel Watney, the president of the Surveyors' Institution, confirmed the methods of calculation and figures of Mr. Vigers; £14,369 was a sufficient sum to take as the rental value. Plenty of this class of property in any part of London could be bought in the public market at 16 years' purchase. He considered the sum of £200,932 as fair compensation, including compulsory sale, for the whole of the property acquired by the company.—On Wednesday, Mr. Samuel Higgins, a surveyor and valuer carrying on business in Finchley-road, gave evidence as to the value of property in the district. Mr. Daniel Watney, cross-examined, said that for the last 40 years it had been the rule in compensation cases to take 20 years' purchase of freeholds. He recognised that there had been a change in the rate of interest; but as he took property, and not money, as the basis of his calculations, that change did not affect the question. Sir Douglas Fox said that he was the engineer engaged on the Metropolitan division of the new line. He produced plans showing the depth of the railway at various points, and explained the manner in which the line would be constructed. He did not think that vibration from the railway would be felt in adjoining houses to any appreciable extent. This concluded the evidence on behalf of the railway company, and Mr. Littler then addressed the arbitrator on behalf of the company. He said the statement that had been made that the company had offered £300,000 was entirely without foundation. No offer had been made. The questions to be decided depended solely on the evidence which had been given, and the company left those questions with confidence to the arbitrator. When the case was opened, no mention was made of the fact that the estate was cut through by the Metropolitan and North-Western Railways, and had in immediate proximity the Midland and North London Railways. St. John's Wood was not a pastoral district. It was a mere ordinary London suburb, laid out some time ago, and land being cheaper then than now, the houses had more land attached to them than was usual; but there was the countervailing disadvantage that the houses were old-fashioned and without modern conveniences.

In re Morgan, Isted, and Morgan.—At the Southampton County-court, on Tuesday week, an application was made to Judge Leonard for the discharge of Messrs. Morgan, Isted, and Morgan, builders, formerly of Southampton. It was an adjourned application, opposed on behalf of one of the creditors, Messrs. Bradbury and Co. The bankrupts' solicitor said the adjournment took place because of difficulties in connection with the trustee, who had since the adjournment been removed by the Board of Trade. His clients alleged that the mismanagement of the estate led to such a small dividend being paid. The debtors were adjudicated bankrupt in September, 1893. The gross liabilities were £5,063, and the assets £1,316. A first dividend of 1s. 6d. in the pound was paid, and it was proposed to pay a further dividend of 9d. in the pound. In his file the Official Receiver commented on the youth and inexperience and hazardous speculation of the bankrupts, and complained that proper books had not been kept. The cause of debtors' failure was the acceptance of a contract at Swindon. With regard to the allegation of fraudulent preference between Isted and his father, the solicitor said that it was an ordinary transaction. The father advanced his son £260 in all, and actually lost £120 in hard cash. His Honour said it was plain there had been hazardous speculation, and he should suspend the discharge for three years.

In re J. Fretwell.—John Fretwell, builder and general contractor, against whom a receiving order was made on the 27th ult., has submitted accounts showing his liabilities to be £1,648, of which £637 are unsecured, with assets £213. He commenced business in 1881, without capital, at Wood-green, removing subsequently to 2, New-road, Crouch End, and eventually to 61, The Broadway, Crouch End, where he has traded for about the last ten years down to the date of the receiving order. In November last he made a private arrangement with his creditors, under which he agreed to pay a composition of 10s. in the £ by four equal quarterly instalments. The debtor attributes his present failure to the payment of the instalments and expenses of the composition. He makes no proposal, and has been adjudged bankrupt.

The ratepayers of Shrewsbury lately rejected an extensive scheme for a new water-supply from the upper reaches of the Severn, proposed by the Town Council. At their last meeting the latter body adopted a smaller proposal submitted by the borough surveyor, Mr. W. Chapple Eddowes, for augmenting the supply from the Weir Coppice source, and providing large conduits at an estimated cost of £1,800 only.

The board of consulting engineers on the Lake Erie and Ohio ship-canal project has begun its survey of the ground. The board is composed of Gen. H. L. Abbott, Prof. L. M. Haupt, and Major N. H. Hutton. Assembling at Pittsburg, the Davis Island dam and the work in progress at Herr's Island, in the Alleghany River, have been examined and a general view of the manufacturing industries along the river fronts obtained. The board is being escorted over the line of the proposed canal by the chief engineer, Mr. George M. Lehman.

The scheme for rebuilding Holy Trinity Church, Hoghton-street and Manchester-road, Southport, which has been afoot seven years, took a definite shape on Monday, when it was unanimously decided to adopt plans by the late Mr. John Sutton, to cost £22,000 in the carrying out. A nucleus fund of £1,200 was increased by the meeting to £1,600, and the scheme, which contemplates accommodation for 1,500 persons, will be at once undertaken in sections, so as not to interfere with the services, the old site being utilised. In the proposed church the chancel will face the south, and hence the lighting must be from large side windows. The old church of brick and stucco dates from 1837, and is quite unworthy of the site.

At the Estate Sale Rooms, Birmingham, the Brockenhurst Hall Estate, Chaddesley Corbett, was offered for sale on Monday. The hall was erected sixteen years ago from the designs of Mr. J. Bland. It is built of red brick, with terracotta reliefs and half-timbered gables, and a tower rising to a height of 80ft. The property comprises pleasure grounds and a finely-timbered park, with a total area of 45 acres 3 roods 33 perches. It cost the former owner upwards of £28,000, but the bidding only reached £5,800, at which price the property was withdrawn.

In St. Anselm's Chapel of Canterbury Cathedral, the Dean of Canterbury, Dr. Farrar, unveiled on Monday a new reredos just placed there in memory of the late Canon and Mrs. Cadman. The reredos is in mosaics, in a frame of Purbeck marble *opus sectile*, by Messrs. Powell, of Whitefriars. The subject is our Lord in glory, with SS. Peter and Paul on either side.

WATER SUPPLY AND SANITARY MATTERS.

Coventry.—The new waterworks for Coventry, constructed for the corporation, were formally opened the other day. The engineer is Mr. Charles Hawkesley, the son of the late Mr. Thomas Hawkesley, from whose design the works in Spon-lane were constructed in 1847 at a cost of £23,000, and who, from that time until his death two years ago, was consulting engineer to the corporation. An Act of Parliament was obtained in 1889 empowering the corporation to sink wells and erect pumping-stations at Whitley and Radford, to construct two reservoirs at Barker's Butts, and to lay mains connecting the Whitley works with the Barker's Butts reservoirs, and the proposed Radford works with the tank at Spon End. Trial bore-holes at Radford did not yield a satisfactory supply, and that part of the scheme was not undertaken. The construction of the new reservoirs was proceeded with immediately, the contract being intrusted to Messrs. G. F. Smith and Sons, of Milverton; and in 1890 Mr. Hawksley prepared plans and specifications for a well, engines, and works at Whitley, with mains to Barker's Butts reservoirs. In 1891-2 the laying of mains from Whitley to the new reservoirs at Barker's Butts was carried out, the contractor being Mr. J. T. Wingrove, of Northampton. Contracts were also entered into with Messrs. Thomas Tilley and Son, of London, for sinking the well; with Mr. C. G. Hill, of Coventry, for building the pumping-station; and with Messrs. Richard Moreland and Son, of London, for the construction of the pumping machinery. The well at Whitley, over which the pumping station is constructed, is elliptical in form, 14ft. by 9ft. to a depth of 150ft. Below this a 24in. bore is carried to a further depth of 250ft. The yield of water is about one million gallons per day. The pumping-station comprises engine and boiler houses, coal shed, smith's shop, and stores. The total cost of the works, including the new reservoirs, has been about £65,000.

Denbigh.—The town council have received the special report from Mr. Isaac Shone, the engineer appointed to report upon the present defective state of the drainage, and to suggest a remedy. He points out that from the catchpit on Ruthin-road to the sewage farm at Eglwswen the sewer has been improperly laid, so much so that the malconstruction has reduced the discharging capacity of the drain from 1,633 gallons per minute to 299 gallons per minute. With such a badly-constructed drain, and with the suicidal policy of emptying the sewage and rainfall water into the same sewer, it is not surprising to find the overflows complained of. He does not consider the Shone system of pumping required, as there are good gradients to be obtained throughout; and the least expensive system of remedy, to avoid doing away with the present sewer, to which all the connections with the house drains are made, is to construct from the Ruthin-road catchpit to the outfall a new 24in. outfall sewer in a straight line to the farm, so that when rain falls and the present catchpit overflow begins, the new sewer would receive the overflow sewage and water, and convey it to the farm outlet.

Kettering.—A special meeting of the Kettering urban council was held last week to consider the whole question of the pollution of the river Ise. Mr. Thomas Reader Smith, the surveyor, explained that in his plans for the dual system he suggested that twelve districts be formed for new sewers, as well as surface-water drains. The total estimated cost for the dual system of drainage was £10,000, or, with two underground urinals, the estimated cost was £12,100. The consideration of the scheme was adjourned.

Rhyl Water Supply.—A special meeting of the Rhyl Urban District Council was held on Friday to consider the special report of Mr. Storr, C.E., with reference to the water supply. Mr. Storr recommended the laying of a new 8in. main from Bodelwyddan Hill to Pen-y-Cefndy, and a 12in. or a 14in. main from Pen-y-Cefndy to the centre of Rhyl; also the construction of an elevated tank at Pen-y-Cefndy at such a height as to give a uniform pressure of 80ft. at Rhyl at all times. The cost of the new 8in. main was estimated at £3,811 18s. 9d., of the 14in. main £1,942 1s. 8d., and of the elevated tank £2,500 (approximate); total £8,254. Mr. Stow was present, and the various matters in his report were dealt with seriatim. It was agreed to give instructions for the preparation of plans and estimates, with the view of making application to the Local Government Board for a loan.

In the catacombs of Santa Priscilla, two miles beyond the Porta Salaria of Rome, Professor Wilpert has discovered in the Greek Chapel a painting of the 2nd century representing the Eucharist. It represents the faithful assembled round the altar, while the officiating priest breaks the consecrated bread and distributes it for the Holy Communion. Standing out clearly in the details of the painting are the cup and the fish.

STATUES, MEMORIALS, &c.

Fochabers, N.B.—The memorial erected to commemorate Major Alan Wilson's gallantry near the Shangani River in South Africa in 1893 was inaugurated on Friday by the Earl of March. The memorial stands at the side of the public highway opposite the main entrance to Gordon Castle, Fochabers, and has been built partly of Peterhead and partly of Aberdeen granite. It stands about 17ft. high. A couple of steps all round lead up to the main column, the moulded base being of axed granite. Above this stand six pillars of polished Peterhead granite, with bases and caps of Aberdeen granite, inclosing a drinking fountain, and surmounted by a canopy of Aberdeen granite. The design was prepared by Mr. Cutler, and has been carried out by Messrs. Whitehead, of Aberdeen.

CHIPS.

It has been decided to erect a borough lunatic asylum for Cardiff.

A special meeting of the urban council of Trowbridge was held on Monday to consider the question of sewage disposal. In reply to inquiries made by a committee, Mr. Baldwin Latham, of London, wrote that he would visit the district and report on the matter for a fee of fifty guineas, and Mr. W. H. Radford, of Nottingham, wrote in similar terms, stating that his fee would be £50. It was decided to engage Mr. Radford.

A new police station is about to be built at Stoke-on-Trent, and the plans of Messrs. Wood and Hutchings, of Burslem and Tunstall, have been selected in a limited competition by the Staffordshire Standing Joint Committee. The work will be proceeded with at once.

Proof was led on Monday in the Clarendon Hotel, Edinburgh, in a reference between the London and Berlin Mantle Manufacturing Company, No. 63, North Bridge, Edinburgh, and the North British Railway Company. The oversman was Sheriff Jameson, and the arbiter for claimants was Mr. T. M. Mackay, S.S.C., the arbiter for respondents being Mr. W. Hamilton Beattie, architect, of Edinburgh.

The Thomas Chirgwin memorial stained-glass window to be placed in Truro Cathedral will be one of the comprehensive historical series. It will depict the Venerable Bede dying dictating the translation of St. John's Gospel.

The property known as the County School, Dorchester, was submitted to the hammer last week, when Mr. T. C. Saunders, of Charminster, and late of Watercombe, became the purchaser at £4,800.

Bothwell School Board accepted on Monday tenders for the erection of a new school at Bellshill. The school is to accommodate 1,049 scholars, and the cost comes to £10,685 19s. 2d. This, with items not yet estimated for, will make a total outlay of £12,385 19s. 2d.

The various estates belonging to the Balfour group are being developed on a plan which Mr. Balfour alleges he himself suggested soon after the failure of the company. In connection with one of these estates, the arrangements could not be carried out without a meeting of the directors, which, by permission of the authorities, was held in Holloway Gaol on Tuesday.

The new isolation hospital, Watford, is nearing completion, and has been erected from the designs and under the superintendence of Mr. C. P. Ayres, architect, of Watford, the builders being Messrs. Andrews and Sons, of Watford. The wards are warmed and ventilated by means of Shorland's patent Manchester stoves, with descending smoke flues, Shorland's patent exhaust roof ventilators and inlet ventilating panels, the same being supplied by Messrs. E. H. Shorland and Brother, of Manchester.

St Matthew's Church, Summerhill-place, Newcastle-on-Tyne, has been completed by the building of the tower under the superintendence of Messrs. Hicks and Charlewood, of Newcastle, and the placing therein of a peal of eight bells, cast by Messrs. Taylor and Co., of Loughborough. The tenor bell weighs 31¼cwt. The dedication ceremony was performed by the Bishop of Newcastle on Tuesday.

On Thursday week the Sleaford Gas Company inaugurated their new gasworks. Gas managers from all parts of England were present on the invitation of Mr. Wimhurst, the Sleaford manager. The works have been carried out by Messrs. R. and J. Dempster, of Manchester, at a cost of £7,000.

The old Market Cross of Peebles, which dates from before 1320, and which has been many times shifted during the present century, has now been restored to its original site at the junction of High-street, Northgate, and Eastgate at the expense of Major Thornburn. The shaft of the cross stood for many years in the quadrangle of Chambers' Institution.

Our Office Table.

The London County Council resumed on Tuesday the debate on the recommendation of the Parliamentary Committee that the Council invite the Government either to deal with the question of the London water supply themselves or to appoint a Royal Commission to do so. Last week an amendment moved by Mr. Stuart, M.P., in favour of proceeding with the Council's Water Bills was defeated by a majority of one. Dr. Collins now moved an amendment referring it to the Parliamentary Committee to report without delay the lines on which they suggest that the Government should be asked to legislate. After a long debate, the amendment was carried on a division by 65 to 56 votes. It was agreed to expend £6,770 on the erection of a Weights and Measures Office in Harrow-road, and £5,890 in building a central laundry in the Boundary-street area, Bethnal Green, the works to be carried on in each case without the intervention of a contractor.

The first of the annual course of free lectures on "Building and Sanitary Construction," given at 8 p.m., under the auspices of the Carpenters' Company, at their hall, will be delivered on Wednesday evening next by Professor T. Roger Smith, F.R.I.B.A., who will take as his subject "Timber, Site and Foundations." The well-known names of the lecturers and the subjects chosen make it safe to predict that the candidates for the Company's examination for their sanitary certificate, and others interested in sanitation, attending these lectures, will be well repaid for their trouble in going to Carpenters' Hall, London Wall, on the next five Wednesday evenings.

In connection with the discussion as to the future supply of London with water, a suggestion has been made that it may be found advisable to consider whether the Lake District might not be put under contribution to supplement the supplies from the Thames valley area. The city of Manchester has already appropriated Thirlemere, and it is suggested that the Metropolis should in like manner utilise Hawes Water as a reservoir. Hawes Water is the highest of the lakes in the district, lying 694ft. above sea-level. Its area is about half a square mile; and its greatest depth, according to Dr. Hugh Robert Mills's recent bathymetrical survey, was 103ft., near the middle of the southern section. The district has one of the heaviest rainfalls in England, and it may be reckoned at something over 90in., so that an abundant supply might be counted on. The total contents of the lake are estimated at six hundred millions of cubic feet, or something over three thousand six hundred millions of gallons, and the configuration of the lake would render it a task of no great engineering difficulty to raise its level to as much as 800ft. above sea level. To effect this a dam but little more than half a mile across would be sufficient.

The directors of the London Tramways Company decided on Tuesday to take the bold step of undertaking the passenger traffic on the Thames, subject to the sanction of the shareholders, who will be asked on Tuesday, November 12, to agree to the change of the title to "the London Tramways and Steamboats Company, Limited." The directors of the company propose to develop the Thames river traffic upon most enterprising lines. The steamboats will be 32 in number, and designed to carry 500 passengers each. The boats will be built somewhat upon the plan of the present Nile steamers, with decks of two stories covered in for their entire length by permanent awnings. In the event of the shareholders assenting to the scheme, the whole fleet are promised to be ready by June next.

At the last meeting of the City Council of Sheffield the action of the Improvement Committee in the contracts for furnishing the new town hall, now in course of completion from Mr. E. W. Mountford's designs, was severely criticised. It was admitted that the Improvement Committee had received a second tender from a local firm, Messrs. Johnson and Appleyards, whose first essay fourteen days before had been rejected because the amount exceeded the lowest tender, that of Mr. T. D. Woof, by about a thousand pounds. At the second trial the newly-received tender was a few shillings the lowest in one department and ten pounds less in another. The committee, without asking the other contractors to send in supplementary tenders, gave the work for these departments to the new tenderer. Mr. Duncan Gilmour now put the pertinent question: "Do you approve of the action of the committee in accepting a tender which was made up and sent in fourteen days after all the other tenders had been opened and the figures known?" An acrimonious discussion ensued, during which the defenders of the committee contended that the contract could not be rescinded as the work was now in progress, enforcing a moral obligation on the committee to proceed. In the end, Mr. Gilmour withdrew his amendment, and the storm subsided.

Mr. E. P. Burd, an inspector of the Local Government Board, held an inquiry at the Town-hall, Liverpool, on the 17th inst., as to an application by the corporation for sanction of the disposal of a portion of land within Newsham Park by way of building leases for 999 years, subject to conditions, for the erection of a class of houses of a lower rental than that obtained for houses built on other land forming part of the same estate. Mr. Shelmerdine, the city surveyor, said he had prepared plans for laying out the estate, these including a boulevard and a narrower street for carriage traffic. Certainly he would not recommend to the corporation anything that would tend to the depreciation of the property of the present leaseholders in the park. Alderman Bowring, the chairman of the committee, explained that now the area of the city had been extended, the council were desirous to construct the proposed boulevard, and make the land available for dwellings. It had been repeatedly offered on the terms of 75 years' leases, and no buyers had been found. The committee believed that on the terms of the longer leases it would sell. There was no desire to injure existing leaseholders, and the Corporation would not allow the erection of buildings which were objectionable to the leaseholders and others. The scheme was warmly opposed by residents in the locality, whose representatives urged that the scheme would involve a large speculative expenditure. The reason the corporation had not hitherto got bidders for the land was that they had neglected the park. The land proposed to be built upon should be laid out as ornamental grounds for the use of the people. Mr. James Wainright, architect and surveyor, stated that the execution of the Corporation scheme would lead to the deterioration of the value of property in the neighbourhood. As to the class of houses proposed to be built, a large number in the district were already empty.

The County Council of Inverness-shire had under consideration on Friday the subject of the erection of aluminium works at Foyers, and the consequent destruction of the Falls. The clerk submitted a summary of some hundreds of petitions and letters which had been received protesting against the destruction of the Falls, but it was held that the matter had passed that stage, and as the road board had done all that was possible to protect the county's interests, nothing further could be done. Mr. Burns protested for himself against the destruction of the natural beauties of the picturesque region of Foyers. We are glad to hear that there is no likelihood that the same aluminium company will be successful in other negotiations to acquire the sole rights to the scarcely less beautiful and far more accessible Falls on the Clyde.

Mr. Bell, the county surveyor of Cumberland, has made a fresh survey of the western portion of the proposed coach road from Borrowdale to Wasdale, over the Styhead Pass, and has altered the line of route from that which was originally sketched. The new line of route, on leaving Wasdale Head Hotel, follows the right bank of Mosedale Beck to the head of Mosedale; it then turns and come down the valley on the left bank of the stream, and passes also along the face of the Great Gable to the summit of Styhead. The gradient for the first 750 yards of the ascent is 1 in 12, and for the remainder 1 in 20. The length of the road is four miles and 1,402 yards, as compared with two miles and 133 yards, the length of the present steep footpath from Wasdale Head Hotel to the top of Styhead. The distance is longer than the road first sketched, but the difficulties of construction will be less, and the county surveyor is still confident that the scheme could be carried out for £10,000. The interest in the proposal is growing, the number of tourists to the particular district being greatly on the increase, but it promises to be strenuously opposed in parts of the contributory area.

There was a large attendance at the opening meeting of the session of the Society of Literature, History, and the Fine Arts, held at the University College, Liverpool, on Friday evening, when an inaugural address was delivered by Professor F. M. Simpson, its subject being "Reticence in Art." Proclaiming himself an advocate of simplicity and modesty in all departments of art, in painting, architecture, and mural decoration, Professor Simpson condemned the modern tendency towards over-elaboration, and pointed out that picturesqueness was most often found in simplicity. Many of his comments were more from a practical than a theoretical point of view, and those devoted to the inner and outward embellishment of residential property were deserving of remembrance. Street architecture of the present day was the subject of adverse criticism at his hands.

We have received the annual reports of the Vestry of St. Luke for the year ending Lady Day, 1895. The abstracts of the accounts of the vestry rates, the contracts of the vestry, schedule of properties, and the reports of the vestry clerk and surveyor take up several pages. The surveyor, Mr. M. C. Meaby, Assoc.Inst.C.E., reports on paving, lighting, sewers, &c. Work has been carried out without the intervention of a contractor. Several improvements are noticed, such as the widening of Bell-alley, improving the levels of Mount Mill by lowering it, the City-road frontage line. The vestry, through their surveyor, rightly made a stand against any advance of the line of building. The report of Dr. Yarrow, medical officer, on the sanitary condition of the parish, shows that the year past had the smallest number of deaths for nine years, or a death-rate of 22·14 per 1,000. The accommodation of the various industrial dwellings in the parish is given; the rents vary from 2s. per week for single rooms to 9s. or 11s. for six rooms. The total number of families occupying artisans' dwellings, estimating 4½ persons to each family, gives a total of 7,884 persons. The largest block is the Peabody Buildings in Whitecross-street, of 33 blocks, which contains 843 lettings in single rooms, two, three, and four-roomed lettings.

On Thursday in last week the architectural pottery at Hamworthy, near Poole, which has during the past few years been lying idle, was put up to the hammer, and was knocked down to the enterprising firm of Carter and Co., who have for over 20 years carried on an important trade in encaustic tiles and pottery ware at their extensive works on the East Quay, and at West Quay-road, Poole. The Architectural Pottery was erected in the year 1854, by the late Mr. Sanders, for the manufacture of encaustic tiles, an industry which had only a few years previously been revived in this country, and this business is therefore one of the oldest in the trade. After Mr. Sanders's death the business was continued for some years by his two sons, and subsequently was disposed of to a company, whose existence was but of short duration, and the works have been practically closed for the past four or five years. Messrs. Carter's workmen were busy on the day following the auction repairing buildings and machinery in order that a start may be made as soon as possible, the Dorset Ironfoundry Co. having been also engaged in pulling down machinery and carrying out all the necessary engineering matters. Messrs. Carter are also rapidly developing their art pottery department, a branch which was added towards the end of last year, and which it is intended to remove from West Quay-road to Hamworthy.

At Mostyn House School, Parkgate, Cheshire, the foundation stone was laid last week of a new school chapel, which is being erected by the owner and head master. The builder is Mr. W. Fleming, of Neston.

Major-General H. D. Crozier, C.E., an inspector from the Local Government Board, held an inquiry at the Grenoside Workhouse, Sheffield, on Oct. 16th, respecting the borrowing of £3,000 for the purpose of carrying out the proposed sewage scheme for Grenoside and district. Mr. Dransfield, clerk, stated this sum was needed for the purpose of sewering Grenoside and surrounding area, including the workhouse, Middleton Green, The Wheel, Whitley, Grenoside village, and Nether Houses. The council proposed to unite these drains with the Ecclesfield outfall works, which had been completed about 18 months. Mr. G. E. Beaumont, the surveyor to the council, produced and explained the plans.

MEETINGS FOR THE ENSUING WEEK.

Tuesday. — Society of Architects. Annual General Meeting, St. James's Hall, Piccadilly. 8 p.m.

Wednesday.—Carpenters' Hall Technical Lectures. "Timber, Site and Foundation," by Professor T. Roger Smith. 8 p.m.

The Society of Architects.

Founded 1884. Incorporated 1893.

The ANNIVERSARY MEETING of the Society of Architects for the Session 1894-95 will be held at the Rooms of the Society, at St. James' Hall, Piccadilly, W., on TUESDAY, October 29th, at Eight o'clock p.m., when the OFFICERS and COUNCIL for the Year 1895-96 will be duly ELECTED.

ELLIS MARSLAND, Hon. Sec.

CHIPS.

On Sunday, a section extending to about 150ft. by 21ft. of the north pier, Fraserburgh, fell into Balaclava Channel, carrying the body of the pier with it. It was only on Saturday that the coffer-dam was completed, and everything got ready for commencing the deepening improvements; and the accident will therefore greatly hinder that work. Pressure of water on the outside caused the accident.

Mr. W. B. Richmond, A.R.A., has been appointed professor of painting at the Royal Academy, vice the late John E. Hodgson, R.A.

The bronze statue of Edward Colston, which is to be erected in St. Augustine's open space, Bristol, has been successfully cast at the Coalbrookdale Works, and it is expected to be delivered in Bristol by Friday in next week, the 1st of November. Provided the pedestal can be got ready in time, the unveiling will take place on Colston Day.

As a memorial of the bicentenary of Henry Purcell it is proposed to provide a suitable case for the organ in Westminster Abbey, where Purcell was organist for 15 years, and within the walls of which he lies buried. Mr. John L. Pearson, R.A., has prepared a design, the cost of which is estimated at not less than £2,000, for the two divisions of the organ. Towards this amount the Dean and Chapter have promised £500.

The work of telephonically connecting the coast-guard station on the cliffs at Ramsgate with Ramsgate Harbour was completed by the Government authorities on Saturday. The object is to enable information of disasters on the Goodwins to be more speedily communicated to Ramsgate tug and lifeboat.

Great interest has been aroused at Moscow by the ceremony of regilding the huge crosses surmounting the cupolas of the Church of the Ascension, where the Czars are crowned, in the Kremlin. The crosses are of copper thickly overlaid with gold, and the largest one, on the central dome, contains inside the copper cross an ancient wooden one. The entire fabric is being renovated and restored, in view of the ceremonial to take place there next spring. In all a surface of over six hundred square yards, there being five cupolas, has been covered with gold leaf, the total weight of which is about 16lb.

A committee meeting of the Urban District Council of Weston-super-Mare was held on Friday to receive and consider a report by Mr. J. Wolfe Barry, C.B., and Mr. Cuthbert A. Brereton upon the proposed construction of a low-water pier, two marine lakes, and a pavilion at Knightstone. The scheme was unanimously approved, the engineers were instructed to prepare the necessary Parliamentary plans, sections, and estimates, and it was also decided to take measures to procure Parliamentary powers next session.

The assembly-room at the Shirehall at Hereford is about to be enlarged, at an estimated cost of £2,500, from plans prepared by Mr. Arkwright, of that city.

A new co-operative clothing factory in Dryden-street, Kettering, was formally opened on Tuesday week. Mr. H. A. Cooper, of Kettering, was the architect.

During the past week one of the windows on the north side of the chancel of Kensworth parish church has been filled with stained glass. The window comes from the studio of the Stained and Painted Glassworks, Soho-square, London, and contains a full-length portrait of Dr. Claughton, first Bishop of St. Alban's, in full episcopal robes, wearing a mitre, and holding in his hand a pastoral staff.

The school board for Newport, Isle of Wight, adopted at their last meeting plans by Mr. E. A. Swayne for new girls' school at Barton, estimated to cost £1,800.

The rector of Dore Abbey, near Pontrilas, is issuing an appeal for £2,000 for the restoration of that well-known parish church.

The design submitted by Messrs. Boston, Menzies, and Morton, architects, Greenock, has been selected for a new Established Church to be built at Yoker to accommodate 800 sitters.

The town council of Bridgwater, at the last meeting, considered a report presented by a deputation that had visited the ports of Boston, Preston, and Stockton relative to the Parret Improvement Scheme. It was resolved to adopt their report and recommendation to the effect that Mr. W. H. Wheeler, engineer to the Harbour Commissioners at Boston, should be approached to ascertain on what terms he would be prepared to make a careful inspection of the River Parret, and prepare a report and estimate of the cost of what improvements were considered necessary.

The ceremony of unveiling the bust to the memory of Dr. Robert Brown, the famous botanist (1773-1858), was performed at Montrose on Friday. The bust is in bronze, the work of Mr. D. W. Stevenson, R.S.A. It is placed in a niche in the front of the house in the High-street, Montrose, where the great botanist was born. The edifice will probably be removed ere long, to make way for a new town hall, and in that event a permanent niche will be provided for the bust in the façade of that edifice.

A new board school for infants was formally opened at Eling, near Southampton, last week. It accommodates 213 children, and has cost for erection £2,070, besides £380 for site, or £12 10s. per head. The walls are of red brick, with Portland stone dressings, the gables being tile hung. The work has been carried out by Mr. T. J. Jukes, builder, of Freemantle, and the architects were Messrs. W. H. Mitchell, Son, and Gutteridge, Southampton. The school furniture was supplied by Messrs. Illingworth, Ingham, and Co., of Leeds.

The unveiling of the Empress Augusta's monument on the Opera House Square at Berlin took place on Monday in the presence of the whole of the German Imperial family. On the pedestal of the monument, upon the side fronting the street, is a tablet with an inscription. This is surmounted by a red cross, and above the tablet a crown and a laurel wreath. The long sides of the pedestal are adorned with reliefs of Carrara marble, symbolising the work of the Good Samaritan on the Throne. The statue is also of Carrara marble, and represents the Empress sitting in a throne chair. Herr Schafer was the sculptor.

The London and South-Western Railway will further extend their system into Cornwall on Friday in next week, November 1, as on that date they open their new station at Bodmin, seven miles distant from the present terminus, Wadebridge.

The accounts of the Metropolitan Industrial Dwellings Company show for the year a gross revenue of £17,349 and a net profit amounting to £3,696. The interim dividend paid in April absorbed £1,655, and out of the balance the directors recommend the payment of a further dividend for the half-year at the rate of £5 per cent. per annum, carrying forward £1,480 to next year.

In connection with the new line from Swansea to London, viâ Barry, Cardiff, Newport, and Oxford, which has been definitely decided upon, Parliamentary notices are being prepared. The usual notice was served on Saturday on all owners of property through which the line will pass.

The honorary president of the Glasgow Architectural Association has offered a prize of five guineas for the best essay on "The Distinctive Qualities of Scottish Architecture," open to all members of the Association. Essays must be sent in to 187, Pitt-street, Glasgow, on or before March 31, 1896.

The Roman Catholic church of St. Kevin, at Dublin, a Gothic stone edifice, built from the designs of Mr. G. C. Ashlin, of that city, has just been reopened after internal decoration, the addition of carved oak screen inclosing the sanctuary and choir, and of three side altars and a shrine, and the filling of three windows with stained glass.

After undergoing improvements and renovation, Brynford Church was reopened on Sunday, the preacher being the Bishop of St. Asaph.

The Roman Catholic Cathedral at Waterford was reopened last week, after the completion of improvements carried out at a cost of £5,000. These include a new western façade of limestone, with Portland stone dressings. The front, which is Classic in character, is surmounted by a pediment. Above the doors are carved the Papal arms, the bishop's arms, and the Passion scene. The subject of the carving on the tympanum is the Most Holy Trinity, and the statues on the pediment represent respectively St. Carthage and St. Paul.

The supply of properties on sale at the Auction Mart last week was limited in quantity, but successful results have been quite up to a good average. The aggregate amount realised was £40,242, which, in the absence of large items, is fairly satisfactory.

Many ratepayers of Southport have inspected the plans of the proposed pavilion on the sea side of the Marine Lake, now on view at the Atkinson Art Gallery in that town. The accommodation suggested (for 1,430 persons) was generally voted far too small, the opinion being in favour of 3,000, the extent of the latest pavilion at Blackpool, that on the Victoria Pier. Such a pavilion would cost about £15,000.

The Duchess of Sutherland opened on Friday the new harbour which has just been completed at Golspie, N.B., from plans by Mr. James Barron, M.Inst.C.E., Aberdeen. The pier has been constructed under the Western Highlands and Islands (Scotland) Act, at a cost of about £2,300. The contract was secured by Mr. William Morrison, Stornoway. The new pier has been erected on the foreshore of Golspie Bay, and in proximity to the fishermen's dwellings. It extends seawards in a southerly direction for a distance of 240ft., thence in a westerly direction for 80ft. The pier is built of timber piles with stone hearting, and gives 640 lineal feet of quay berth for boats and vessels.

The chapel attached to All Hallows' Roman Catholic College at Dublin is about to be rebuilt from plans by Mr. G. C. Ashlin, of that city.

The Heath Town Urban District Council have agreed to purchase for £625, from Sir A. Hickman, M.P., 12a. 1r. 18p. of land at Nechell-lane, Wednesfield, on which it is proposed to deal with the sewage of Moseley village, which will flow by natural gravitation on to the land, and no pumping machinery will be required. Mr. R. E. W. Berrington is the engineer engaged to carry out the work.

The parish church of St. Cuthbert at Clungunford, Shropshire, was reopened last week, after complete restoration and redecoration. The fabric had fallen into decay, but has been repaired at the expense of Mr. J. C. L. Rocke, J.P., of Clungunford House, who has also given the organ, built by Mr. J. J. Binns, of Bramley, Leeds, at the cost of £1,000.

A Baptist chapel seating about 500 people is about to be built on the Grove Estate at Lowestoft.

The new Roman Catholic schools of St. Mary and St. Edward at Silvertown have been opened by Cardinal Vaughan. The schools will accommodate 165 boys and 165 girls, and are situate next to the old schools, facing Drew-road. There are two rooms 58½ft. by 21½ft., and two classrooms 21ft. by 20ft., with hat and cloak rooms and lavatory. Over the entrance doors are niches containing figures of the patron saints, Mary and Edward, and each gable is surmounted by a stone cross. The cost has been £6 10s. per head.

On Saturday afternoon the members of the Helensburgh Antiquarian Society visited the recently discovered hill fort of Dumbowie, near Bowline. The fort was discovered by Mr. Donnelly, and is being excavated under the auspices of the Helensburgh Society. Dr. Christison considers the find a most important one, and, on his advice, all the earth in the interior of the fort is being carefully sifted, and already several objects of interest have been found. The fort is circular in form, and the interior measures 32ft. in diameter. The walls show an average thickness of 13ft. The fort occupies a commanding position on the top of Dumbowie Hill.

Miss Alice Jane Penrose, the youngest daughter of Mr. F. C. Penrose, F.R.S., P.R.I.B.A., of Colebryfield, Wimbledon, was married on Saturday last at St. Mary's Church, Wimbledon, to Mr. Arthur George Milton, son of Mr. T. J. Milton, the British Vice-Consul at Athens.

The first of a series of Glasgow Corporation art lectures was given on Saturday evening in the Art Galleries, Sauchiehall-street. There was an unusually large attendance. Bailie Shearer was the lecturer, his subject being "Old Glasgow."

In his quinquennial appeal on behalf of the Lichfield Church Extension Society, the Bishop of that diocese states that during the 60 years of its existence the society has raised £230,889 for church work, and he cannot now appeal for less a sum than £20,000 to carry on operations for the next five years. The urgent needs of the diocese are 14 new churches, 10 churches to be enlarged, 110 mission churches, and 45 parsonage houses.

Under the direction of Mr. F. Brady, the company's engineer, the South-Eastern line is being widened from a point close to St. Saviour's Church, Southwark. Crossing the Borough High-street, where some houses have been demolished, as also several shops in the station yard, in order to carry the line on arches, it cuts through the walls of the original London Bridge terminus into the new London Bridge station, the object being to construct a second down line between Cannon-street and London Bridge stations. At present there is only one set of metals between these points for the down traffic. When the work is completed, one of the present set of up metals will become a second down line, and that now in course of construction will be the second up line.

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXIX.—No. 2130.

FRIDAY, NOVEMBER 1, 1895.

THE MULTITUDE OF COUNSELLORS.

"EVERY young man," it was once said, "wants to be an 'Admirable Crichton.'" He sets out with the ambition to know everything and to excel in everything. The result is that he is perpetually being disappointed. One rival surpasses him here and another there, and he finds in time that instead of being pre-eminent all round, he has nowhere risen even as high as mediocrity. So it has been; so it will be; so, perhaps, it is best that it should be, for few people are clever enough to profit by anybody's experience but their own. "I cannot let you go to the ball; I have seen the vanity of such things," said the old lady to her daughter. "Well, I want to see the vanity of them too," was the very reasonable reply. And, perhaps, in the long run, it is as well for the architectural student to begin by taking all knowledge for his province, all art for his field of action. If it is, he is fortunate in the times on which he has fallen. He has unprecedented opportunities just now for "seeing the vanity of it."

Listen to the voices that are calling to him as he enters on the studies of another session. They come from all quarters, and they all have something plausible to urge. "Whatever else you omit," says the Institute, "you ought to prepare for our examinations. You ought to do it both for your own sake and for the sake of your profession. It has been an open profession too long. With its vast public importance it should not be liable to be disgraced by anyone who may be pleased to take an office, put up a brass plate, and describe himself as an architect. Of course, there are true architects, of high culture and great abilities, who have come in so. But for one of these there are twenty specimens of ignorance and incompetence, who would have been kept out if examinations had been compulsory, and these are the persons who discredit us with the public. We mean, henceforth, to exclude them from the Institute, and many of us hope hereafter to exclude their successors from practice. When that is done, to be an architect will put a man, as it should do, on the same level as to be a barrister or physician. Now, if our examinations were set up for this end alone—namely, to insure that every architect shall be a competent man and a man of education, you ought to pass them, even if they did you, personally, no good. But the probability is that they will do you much good. Their opponents talk as if they involved, as many examinations do, little more than mere cramming. But you will find that this is not so. The final examination, in particular, deals largely not only with the power to remember, but with the power to plan and design, and no amount of 'cram' will help you there. The subjects which have to be learned are all, or nearly all, those of which you ought in any case to know something. In preparing for examination, you will take them up methodically, and in order, instead of partially, and half accidentally, as you probably would if you waited till you found the need of them in your work. They will now all be brought to your notice in good time. If something out of what you read up for the examinations should subsequently fade from your mind, you will at least always know where to find it when you want it; and in your future career you may want it at any moment. We examine you, moreover, not in mere book-knowledge, but in drawing and in the details of styles, in construction, the strength of materials, and the calculations of strains, in the preparation of contracts and specifications, and the mode of controlling actual work. There are very few of these things which you will not need, if you are to be an architect at all; and seeing you will find it imperative to learn them, it will add little to your labour to be examined in them also."

All this sounds reasonable enough. But then comes a voice from another quarter—the quarter, one may term it, of the Arts and Crafts. "All this," it says, "will not make you an architect, except on paper. You may learn by means of it what real architects have done, and you may make feeble repetitions and rearrangements of their details; but you will never equal them, or be worthy of being named with them. The evil of it is, that it keeps you at arm's length, or, rather, at miles' length, from the materials you are dealing with. It encourages you to sit in your office and design ironwork, say, though you never shaped a piece of iron, nor welded one, and though you do not know, therefore, why the workmen of artistic times adopted certain shapes in iron and avoided others. It teaches you to proceed in the same far-off way with your woodwork and your stonework, your brickwork and your plastering, your glass and your plumbing. So that you either go on copying for ever what more practical men invented, or you invent things which are costly to make, and unnatural when made. It keeps you, in short, at a desk when you ought to be in a workshop. It puts the ruling-pen into your hands when it should put the hammer and the chisel and the tongs there, and it will keep you all your life in the miserable position of trying to get your thoughts made into visible form by workmen who neither understand them nor sympathise with them. Come to us, and get in touch with the things you are trying to do. Learn what it feels like to work wood with the grain and against it; what it is to turn and twist and fashion red-hot iron bars. Let us see you make a solder-joint, and float and set a ceiling, for when you have got as far as these things it is just possible that you may direct to some purpose the workmen who have passed their lives in doing them."

The student naturally feels that this gives him pause. But as he stands, revolving many things in his mind, he is startled by a third utterance, louder and more positive than the others: "Now we shall see," it cries, "whether you are a fool, or a young man of sense. What are Arts and Crafts to you, or Examinations either? The only question is, What pays best? The public will pay for what they want, so the first thing you have to do is to study the public. Depend upon it, they don't want architecture at all. What they want is what brings them in £ s. d. You will soon find out for yourself what that is. When their neighbours encroach on their ancient lights, for instance, there is £ s. d. in it, and if you are an authority on ancient lights, they will come to you, and ask for your help in extracting those three letters for them out of the encroachment. If a street or a railway is going to take down their premises, they are in the same case, and they will come to you, if you are an authority on the value of premises, or even if you can swear, without blushing, that you understand it. Then they are often at loggerheads with local authorities; new building acts, and sometimes old ones, too, are hard upon them, and stop them from doing lucrative things which they wanted to do. Then is the time for you to come to their resue. Show them how to fight the Acts, or how to dodge the Acts, and you will not find them unwilling to pay your charges. Again, a great many building matters are now left to the discretion of councils and boards all over the kingdom. Somebody, for instance, wants to bring his premises forward, or to put up a public building with smaller means of exit, or worse staircases, or more risk of destruction by fire than the local rules and regulations permit. Well, the local authority were wide awake when they made the regulations. They reserved to themselves plenty of dispensing powers. You can see, therefore, with half an eye, that what you have to do is to get on terms, and keep on terms, with the local authority. In some towns it pays, in other towns it does not pay, to be an actual member of the Council or the Board; but it always pays to have influence with them in one way or another. Then the public will come to you and arrange terms with you, and you, by such means as you may find advisable, will make terms with the Board, and all will go well. The Board, your clients, and yourself will all be happy, and very likely even the public will not suffer; for even if you are dealing with a theatre, the chances are that there will never be a fire, after all."

Perhaps you will say that this is not being an architect, and that you want to be one. On the contrary, this is the very best way of being one. The public will see that you are a solid, sensible man, fit to be intrusted with affairs of importance, and they will intrust them to you accordingly. You won't know much about buildings, probably; but you can soon hire somebody who does. Keep him in the back office, get him to coach you up before you see clients or meet committees, and take care that all the glory shall be yours. You will go from victory to victory. While the brethren of the Arts and Crafts are drudging in their workshops, and spending all day, perhaps, on five shillings' worth of work, commissions for scores of thousands will come to you. You may, if you like, be a J.P., and perhaps an M.P. Possibly you may rise to be a potential Lord Mayor, or even an actual one, though "There's many a slip between the cup and the lip." In any case, you will be a successful man; and when you think of your clerk in the back office, who passed his examinations, and worked at his Arts and Crafts, you will say, with compassion for his misdirected abilities, "Alas! poor ghost!"

There is the hum of many voices in the background. "Sanitation," says one, "is the thing you should give your life to, for it is what the lives of your countrymen depend on. Nothing else is for a moment to be compared to it. Devote yourself to drains; put your soul into sewers; let your imagination revel in traps and bends, pans and siphons. So it will be well with you now, and hereafter you may be joined with those who will spread the refuse of towns over all the green fields of the country. Then as the fertilising fluid runs, black and slimy, wherever the eye can reach, and as its perfume overpowers those of useless things like may, and cowslips, and sweet-briar, you can lay your hand upon your heart, and say, "I, too, have helped in this glorious work. I, too, am a sanitarian."" "Never mind about sanitation," says another speaker; "style is the all-important question. Let your style be thoroughly English—which, you know, is the same thing as thoroughly Italian. Don't go to Spain for ideas; Spain is a foreign country. Copy what was done in the reign of that great Englishman, George I., and you will never be far wrong." "Don't waste your time on styles, but be practical," shouts another adviser. "See that contractors never impose on you. When you specify the best timber, mind that you get it. Study the brands, and be up to all the dodges of the shippers and importers. Watch every brick that is laid, and if you say there are to be no snapped headers, take care that there are none. Have the lime and sand and hair for the plastering measured and mixed before your eyes, and carry the same principle into every trade you deal with." But enough of the voices. The wise student by this time is running away with his hands over his ears like Christian in the "Pilgrim's Progress."

Still, he must take some course. Which is he to follow—examinations and Arts and Crafts, sanitation, style-fancies, or practical superintendence? There is something in them all; but life is short. One thing comes out plainly and distinctly from all this Babel of voices—namely, that the modern architect attempts and professes a great deal more than one man can know or do. The sooner he comes down from this untenable position, the better for himself and his clients. Even after striking out the so-called surveyor or building negotiant, who is no architect at all, there remain from five to ten varieties of architect, almost distinct enough to be made into species. To sort them out, and to set each of them to do the thing he is qualified for, and no others, seems one of the most urgent matters of business which are now beginning to demand attention.

INSTITUTE OF PAINTERS IN OIL COLOURS.

AMONGST a great deal of a commonplace kind, weak in sentiment and drawing, we may refer to a few of the more meritorious pictures which have been hung on the walls of the Piccadilly Gallery, and we are glad to notice that the Council of the Institute have wisely reduced the number of canvases by limiting the lines of pictures to two or three, thereby giving to those which are hung more wall space, and affording the picture viewer a better opportunity of examining the work. Frank Walton, the vice-president, has a broadly-painted view of "Gravel Pits" (4), and a landscape in which the yet leafless trees of springtime (20) have been delicately handled. The composition and the drawing of the foreground and branches are very effective, and the light and shade subtly rendered; but his chief work is in the Central Gallery (198)—"The Long Day Closes," a moorland track along which a solitary horseman wends his way between darkening hills. Robert W. Allan has a large landscape (11), this time not a grey Scotch scene, but a silver-hued wood, through which a river bends—almost Corot-like in its grey tones and delicate feeling. The large centre-hung picture, "The Golden Light," by Ernest Parton, is a soft and subtly delicate landscape. It is a river scene under a sunset sky. The trees and cottages are pleasantly painted, and the mannerism of Mr. Parton's work is not so evident. Another picture, "Tranquility," is also from the same hands. Fred. G. Cotman's "The End of Harvest" is somewhat hard in the foliage; the warm light of the setting sun which illumines the haystacks and meadow is strongly contrasted with the shadows. R. Thorne Waite, who has only one picture this time, sends a very admirable example of his powers as a landscapist, "The Water-Cart" (79), in which there is a sense of grouping and composition, and "values" of light and shade. There is a breezy freshness, too, about the landscape—the pond, the dark trees, and the rough common beyond—which charms. We must not omit to mention also a landscape sent by E. M. Wimperis, "A Dorsetshire Valley" (88), one of the best works in the gallery, excellent alike in its grouping and handling of trees and distance.

Claude Haye's "Early Morning in the Meadows" is a study of sunlight and mistiness, rather spoilt by its over-greenness, and we notice also J. L. Pickering's study (97), J. E. Grace's "Early Spring," a delightful blending of browns and greens (142), and Hubert Marshall's strongly-painted "The Embankment in Winter," showing the New Scotland Yard building. Returning to subjects of another class, we notice Carlton A. Smith's "Breakfast over, Grace is said." The figures of the girls, the younger watching a kitten lapping milk from a saucer, the elder clearing away the cloth, and a dog watching his little feline companion with covetous eyes, are pleasing, also the management of light and colour. Some nice tone is seen in Alfred Withers's "Evening," and in "The Millpond" (9 and 18). "The Love-sick Poet," by John R. Reid, depicts a forlorn man in a Shakespearian costume seated on the bank in a wood; his meditative but miserable face rather suggests the caricature; the painting is hard. Chas. Kerr's picture of a lady reclining on a sofa with a cigarette in her hand is somewhat commonplace in conception, but the rich tones of gold and green are pleasant. A vigorous sketch of "Meadows" (21), by James S. Hill; the figure-studies of Harry Fidler (25), and H. Vincent Harley (26); the clever impressionist conception of Miss Amy Sawyer; Fred Morgan's "Good Yarn," a fisherman with pipe; Edwin Hayes's seascape (62), a fine study of reflected light and rolling waves; Lance Calkin's "A Sad Story" (73); Madame H. Ronner's kitten study (119); the excellent riverscape by James Orrock; Mrs. Edith Taylor's interior of the choir of Santa Maria Novella, Florence (102), are amongst the other pictures of note. The Hon. John Collier's "Hallow E'en" (82) is a clever melodramatic subject, apparently a suggestion from Burns. A young girl in her nightdress stands before a mirror, holding a candle in her hand; over the mirrored reflection of her terrified face she imagines she sees the shadowy countenance of a wooer. The reflection is not exactly accurate, but the conception is charmful, and the painter has cleverly portrayed the girl's expression. As a piece of illusion and reflection, the subject is delicately handled and painted. A subject by H. Fantin-Latour, "L'Aurore et la Nuit" (126), has very ably conceived "Morning," in garments of deep blue, chasing away "Night," draped in purple robes. The subject is poetically and unaffectedly treated.

The President, Sir James Linton, has, in the chief position of the Central Gallery, given us a large, nearly full-length study of "Portia," robed in a rich brocaded crimson silk. As a painting of the technical, the texture of the brocade, which hangs in massive and well-lighted folds lined with white fur, and other minor accessories of dress, the work has much to commend it; the hand resting on the portfolio case under her arm is modelled with much beauty, the pose is dignified, yet the face of the heroine is not quite the type of what we might have expected. His other work (180), "Newhouse Park, St. Alban's," is somewhat hard and uninteresting. Amongst the few principal works which attract attention in this gallery we may mention E. Blair Leighton's admirably executed "Portrait Study" of a lady with a book; the hands are delicately drawn, and the detail admirable. Arthur Barrington is one of the few who can impart to the stern, hard realism of life true poetry. His picture of "Baby," a very beautiful study of an infant in cradle, watched over by a fond mother, in a humble interior, lighted through a window which casts deep shadows, is masterful in drawing and chiaroscuro. Another study of contrasted light and shadow is No. 229, "Her Only Legacy," where in a dimly-lighted room a widowed mother tenderly nurses a child; and a third (277), "In Poverty, Hunger, and Dirt," shows an almost darkened, squalid room with the glimmer of a candle; on the table the heartbroken woman flings herself in abject despair. It illustrates Hood's "Song of the Shirt."

T. B. Kennington has lately taken to a quite different class of subjects; from scenes of pathetic poverty he gives us studies of fashionable society. His "Forbidden Fruit" (162) is a trio of lovely girls in evening attire enjoying a little gossip. One is reading a paper, her dark eyes turned towards someone. The modelling of the faces and shoulders is excellent. His study of a lady's head and shoulders (24) is also effective. John R. Reid has lately added to his brilliant studies of coast and fisher life that of strolling players. His principal picture, "The Bread-winner," shows a young girl in ballet dress dancing before her father and mother, who are seated under a tree—admirable, as usual, in its grouping, technical qualities, and brilliancy of colour. His other subject, in the next gallery, "Spring's Delights" (333), is full of sparkle of light and colour. "The Skipper's Daughter" (242), by Edgar Bundy, is remarkable as a study of facial expression and drawing, and his group of figures in this little picture puts us in mind of the Dutch master, in the fine execution and detail. Frank Brangwyn, in "Funchal," retains the manner of the Glasgow school; it almost resembles a piece of tapestry in its mosaic-like flatness. John Fulleylove has two charming studies of colour and architectural grouping (156 and 169), a bit of St. Mark's and its columns. W. Logsdail's "Church of the Misericordia, Venice" (179) is a beautiful study of architectural detail and colour, the blue sky and canal contrasting with the sunlit brick church. T. Graham's "A Sailor's Wife" is very pathetic and well told—a young wife holds up a lamp from a jetty amidst a dark tempestuous sea, as a beacon; a streak of crimson light marks the horizon, showing the close of day. Montagu Smith (188), Jas. S. Hill (189), and George Wetherbee (190) have good work. A decorative panel of "Roses," by Miss Emma Cheyney (199); a delicate study of sea and beach by F. J. Widgcry (200); and the clever small subject by Frank Dadd, "Do You Quarrel, Sir?" (211), in which the drawing of figures and their expressive gestures and motion are painted with exquisite precision and detail befitting the subject and size—are interesting. E. M. Wimperis is again at his best in "The Way Across the Fields" (213), a charmingly-painted landscape (and we may here call attention to the same painter's collection of sketches at Dowdeswell's Gallery). Hugh Carter (223) has a clever piece of grouping and colour. Many good qualities are seen in J. L. Pickering's "At Evensong," a delightful little sketch; and we may mention works by A. H. Peppercorn (280), Mrs. Harry Goodwin, T. Hope McLachlan, and Geo. C. Haité.

The East Gallery may be dismissed with a brief notice of two or three painters. Leslie Thomson's large sunset seascape, "Sirens," with a group of those legendary lurers on the shore, is delicate in colour, in the gradations of red and grey, and in the general composition. Near it hangs Anderson Hague's "In the Barley Field," a landscape, full of rich colour and tone, and firm, solid handling. T. B. Kemington's large picture in the centre, "The Lure," scarcely comes up to the conception of the painter's idea. The well-modelled maiden or siren, who is luring into destruction a man on the shore, before whom wreckage is seen, is finely painted. Behind her one sees in shadowy form a skeleton. All this is cleverly depicted, but the composition lacks power and motive. We notice also a fine piece of colour and atmosphere in E. Hayes' "Old Calais Pier," and some powerful rock painting by J. Farquharson (396). Arthur Hacker's beautiful figure subject "Meditation" (415), a nun passing through a meadow illumined by gleams of light, is one of the best works—the benignant and kindly face is tenderly painted. J. L. Pickering has here also a vigorous piece of brushwork in his "August" (419), and we note a nice study of "Lemons," by Mrs. R. H. Wright (421), in which the modelling and rotundity of the lemons equal the quality of tone. C. E. Johnson's large and bold "Rock Scenery, Isle of Skye" (447), John White's "The Brook," are among the few able works in this gallery.

THE ROYAL SOCIETY OF BRITISH ARTISTS.

ALTHOUGH many mediocre works find a place on the walls of the Suffolk-street Galleries, there is a goodly display of pictures of more than ordinary merit and interest. Sir Frederic Leighton's sketches, made during his recent visit to Algeria, on the screen, have much interest. They form a group of landscape studies, many of architectural interest, as "Street in Rhodes," "Mosque, Damascus," "Moorish Gateway, Ronda." The landscape sketches are broad, and include a large number of coast views, rocky scenery, and are "notes" for more finished pictures.

On the end wall of the central gallery, E A. Fellowes Prynne has a circular canvas, entitled "Ecce Ancilla Domini," a decoratively-conceived subject. The face of the kneeling virgin before the angel, who holds a lily in her hand, is beautiful in its expression, and the artist has endowed his work with spirituality and tenderness of feeling. The subject must be viewed as rather an ecclesiastical panel than a picture. Edward H. Read's sombre landscape above has much powerful painting; there is a true sentiment in the dark landscape, with its masses of trees and roadway, and the glimmering streak of red light on the horizon. "Where the Bee Sucks" (21), by F. A. W. Armstrong, is a pleasing study of a corner of meadow and flowering weeds. No. 17 in the corner is a large picture of three ladies engaged in criticising a picture in an art studio. The drawing and colour, in a rather subdued key, have good qualities; but why so large a canvas for a picture of this kind? Over the fireplace are several small studies of more or less merit; we notice a study of a head, "Neræda" (40), wearing a chaplet of flowers, set off by a white marble frieze; also a clever study of "Old Highland Hut," by Arthur Ryle; a sketch by Sir Frederic Leighton, P.R.A., "'Twixt Hope and Fear," and another for his large picture of "Flaming June." A very delicate study of colour-blending, a harmony of white and yellow, may be seen in R. Machell's "Chrysanthemums" (48) and E. Gouldsmith has a vigorous piece of sea-painting and surf. The incoming breakers reflect the rosy and golden hues of the setting sun. Mr. Cayley Robinson has one of his quaint and romantic fantasies, "The Beautiful Castle" (56), a piece of pre-Raphaelism. In an apartment of a castle tower sits a disconsolate-looking maiden with red hair and of rather weak face, gazing into a well-like basin on the floor, her face mirrored in the still water, while through an open gateway, with the word "Romance" over it, can be seen an armour-clad knight on horse. The conception and scheme of colour, with the golden beams of sunlight coming through the barred windows, have a strange charm. J. E. Grace contributes several of his delightful sylvan landscapes. "Spring," a sketch of golden gorse, and "A Surrey Homestead," are admirable in tone and sentiment; in the latter the cottage and reflection of trees in the water, are two out of many subjects which he sends. Geo. C. Haité's "Cornfield by the Sea" has also breadth and agreeable colour. One of the best figure-subjects is Leonard Watt's "Prayer" (87), a saintly maiden with a subtle serenity of countenance saying her rosary at a prayer desk. Her head is surrounded by a halo, and her white sleeves and low-cut dark-blue bodice, with the mosaic panel background, give a decorative value to Mr. Watt's work. The pure scheme of colour, modeling of figure, and balance of composition, are singularly attractive, and mark it out for the central position assigned to it. Above it F. A. W. Armstrong has another powerful landscape, "A Gloucestershire Pastoral." The president, Wyke Bayliss, is represented by several architectural subjects and sketches, all characterised by his usual felicity and pictorial qualities. His pair of small interiors of Westminster Abbey and St. Paul's Cathedral (St. Peter and St. Paul) are very charming in their detail and colour harmonies, and happily chosen as subjects. "At the Cathedral Door" (118) is a larger and more imposing work of the fortified church of Aix-la-Chapelle, a beautiful example of a vaulted entrance vestibule, with massive ribs rising from the floor, and its bays pierced with rich traceried windows filled with painted glass. The drawing, gradation of light and shadow, and the subtle harmony of colouring are equal to this master's best work. The large landscape which hangs opposite the fireplace, "The Last Faint Pulse of Quivering Light" (112), by F. Spenlove-Spenlove, is one of the most noteworthy. The coast and bay, reflecting a fine sunset sky, over which small sunset clouds are seen, are painted with masterly breadth; the atmospheric effects are especially truthful. In the corner of gallery hangs a large blue canvas of a not very obvious meaning, taken from Rossetti's verse, by William Hunt. The shadowy female figures, one standing erect the other lying in a meadow of poppies and briars, are not pleasing, and we cannot call it a happy or an attractive conception. The same painter's shadowless green pastoral in the South-East Gallery, and Charles H. Eastlake's fine piece of impressionism, the latter a refined study of sunlight and atmosphere, are the most noticeable works in this room. Sydney Muschamp has a clever historic costume study (137), and Albert Kinsley a nice landscape.

We cannot quite discover the meaning of R. Machell's shadowy symbolic composition (183), "'Twixt Priest and Profligate," inspired from Swinburne's poem, except from the lines in the catalogue. The composition has merit, but is less satisfactory than the painter's "Death Wooing" (284), in another room, which has a symbolic significance and decorative scheme of colour. Adam E. Proctor's "The Apprentice" (173) has many good points. The drawing of the lad with the model of a boat and the scheme of colour are happy, qualities seen in his "Shepherd Boy" (186). Sir Frederic Leighton's "Study for Fresco on the Royal Exchange" is worth notice, and John Olsson's large "Sapphire Sea" (196) with rocks. In the North-West Gallery we see several water-colour drawings and sketches. Ernest George has a very fine sketch, full of colour and transparency of tone, of "A Northern Port" (207); but his chief drawings are "The Rood Loft, Ste. Madeleine, Troyes" (217)—a charming piece of drawing and colour of the beautiful canopied rood-loft; "Old Houses, Hamburg," and "Afterglow, Algiers" (246) are other admirable sketches. J. Finnemore's "A Point of Honour" (261) is by far the strongest figure composition in the gallery. The moment chosen between the duellists is critical, and the painter has shown a keen sense of action in the restrained combatant. There is wonderfully strong colour, too, in the work. R. Machell's "Magic Wand," near it, is also a nice note of colour; and we may mention a few studies over the fireplace—a head, "Maud," by W. T. Warrener; a charming piece of sunlight in Leopold Rivers' "Sunlight and Shade" (221); and studies by F. Spenlove-Spenlove (238), Albert Knowles (244), and F. Corbyn Price (225). Breadth and aërial tone colouring are qualities also in John Fullwood's "Wrekin Vale, Shropshire" (274). We cannot speak of other studies, amongst which we must not forget work by W. Harding Smith, Ayerst Ingram, and Sherwood Hunter; and also a very clever colour idea, "La Perle," by Hal Hurst, in which the iridescent hues of a pearl are skilfully idealised.

THE SOCIETY OF ARCHITECTS.

THE 11th annual meeting of the Society of Architects was held at St. James's Hall, Piccadilly, on Tuesday evening, the President, Mr. Edwin J. Hamilton, of Brighton, in the chair. Sixteen nominations for membership having been read, the following nine architects were elected as members:—Charles Henry Elford, 34, Cannon-street, Aberdare; Edward Hide, 17, Gracechurch-street, E.C.; Horace C. R. Hide, 17, Gracechurch-street, E.C.; Frederick William Hipkiss, Cliffside, Aberdovey; Henry Joseph Hollingsworth, 20, Old Cavendish-street, W.; Charles Orlando Law, 47, Loudoun-road, N.W.; William Ford Slater, Burslem, Staffordshire; Richard Harold Smith, Ravenswood-road, Redland, Bristol; and Ernest James Wellman, P.O. Box 1510, Johannesburg, S.A.R. Several valuable additions to the library were announced, and were acknowledged by a vote of thanks to the donors.

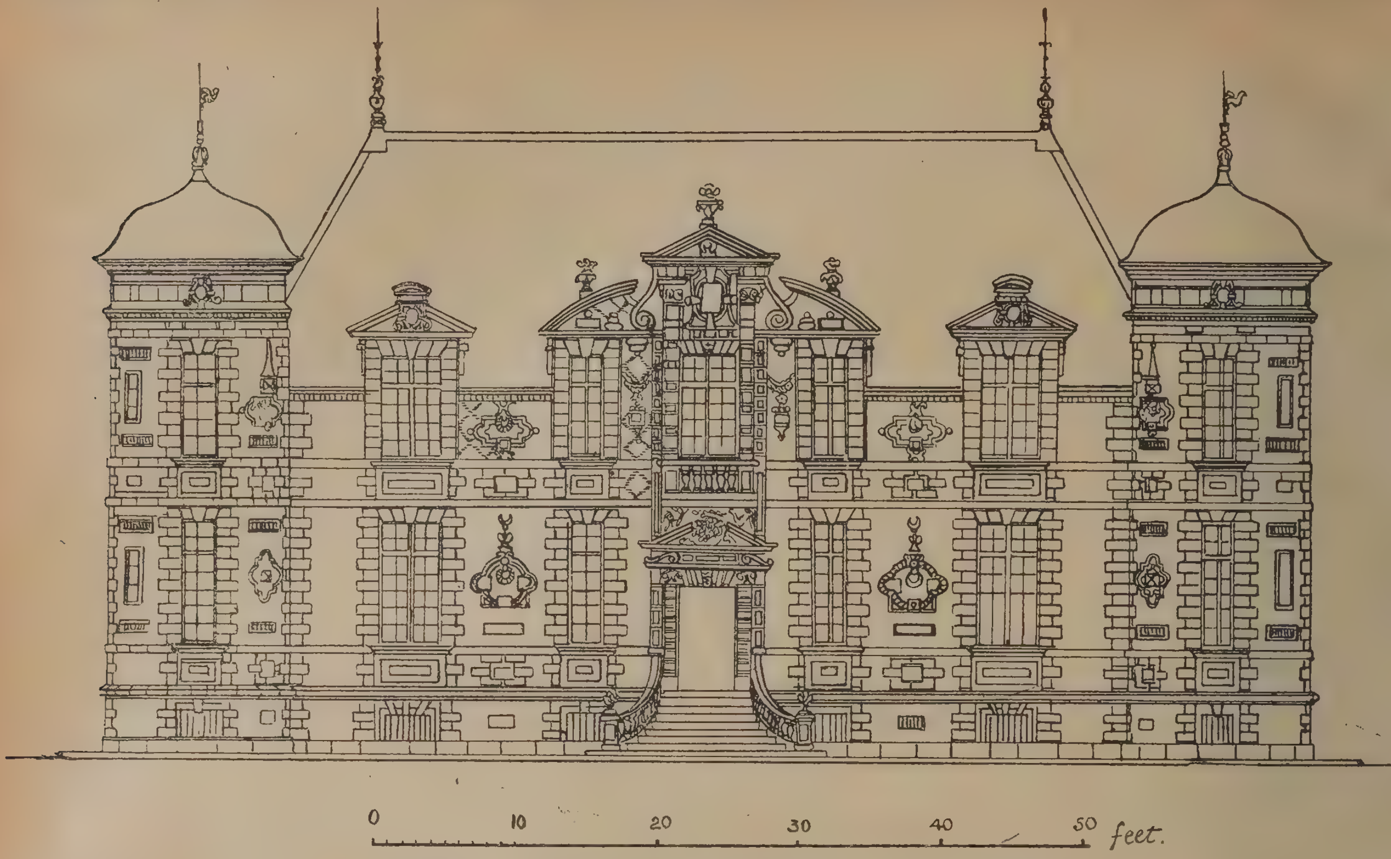
The scrutineers announced that the following had been unanimously elected as the officers and members of council for the year 1895 6:—President—Edwin J. Hamilton, Brighton. Vice-Presidents (two)—T. Walter L. Emden, London; Silvanus Trevail, F.R.I.B.A., Truro. Honorary secretary—Ellis Marsland, London. Honorary corresponding secretary—Major F. Seymour Leslie, R.E., War Office, Whitehall. Treasurer—H. G. Quartermain, Merton. Honorary auditor—W. R. Mallett, London. Council (twelve)—C. A. Bassett-Smith, London; Frank J. Brewer, F.R.I.B.A., Richmond; Ernest Day, F.R.I.B.A., Worcester; Edgar Farman, London; Arthur R. Finch, London; J. W. Frazer, A.R.I.B.A., Newcastle-on-Tyne; Robert Keith, president, Dundee Institute of Architecture; Henry Lovegrove, A.R.I.B.A., London; Alfred M Ridge, London; Francis J. Smith, F.R.I.B.A., London; George Thomas, local hon. secretary, Cardiff; and J. W. Walmisley, F.R.I.B.A., Southsea. Mr. Henry Lovegrove proposed, in hearty terms, a vote of thanks to Mr. Hamilton for his dignified, businesslike conduct in the presidential chair during the past year. He remarked that, at considerable personal sacrifice, Mr. Hamilton had come up to town to attend the general and council meetings, and had set an example of punctuality, courtesy, and promptitude which had contributed to the success of the society. Major Seymour Leslie seconded the motion, which was carried by acclamation. The President, in acknowledging the motion, thanked the members for his re-election, and proposed a similar vote of thanks to the retiring vice-presidents, Mr. Ernest Day, of Worcester, and Mr. George Highton, of Bedford. This was seconded by Mr. E. Tidman, and agreed to. A vote of thanks to the retiring members of council, Messrs. W. Allport, Herbert J. Jones, W. R. Mallett, and G. A. T. Middleton, having been carried by acclamation on the motion of Messrs. Manning and Tupper, the President moved and Mr. Lovegrove seconded a vote of thanks to Mr. Ellis Marsland for his indefatigable services as honorary secretary.

Mr. Marsland, in replying, said he wished to see the Society not merely prosper, but progress. He looked forward to the coming year with some apprehension, as they were about to lose the services of their secretary, Mr. Arthur Montefiore, who was resigning on account of the pressure of other engagements. An equally good successor to so excellent an officer would take a good deal of finding.

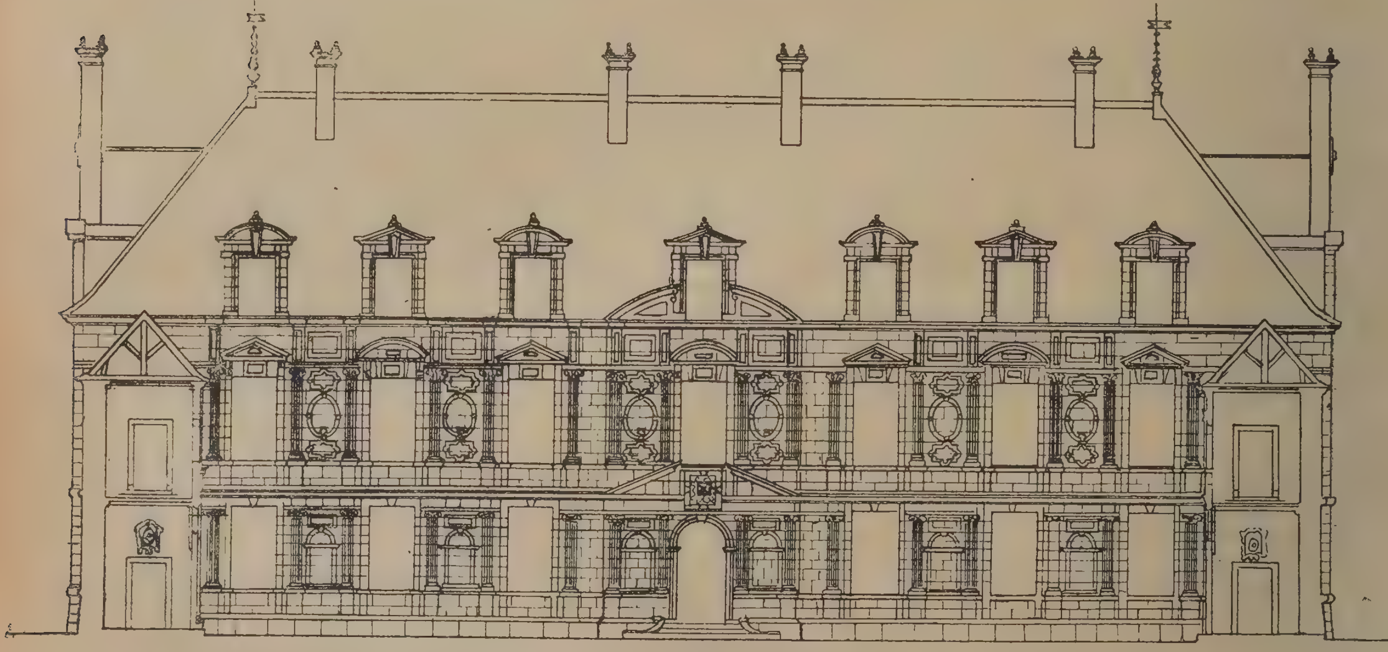
The President added his testimony as to the value of Mr. Montefiore's services to the Society, and urged members, especially those residing in London, to do their utmost to support the Society by regularly attending its meetings.

A short discussion followed on this point, in which Messrs. E. Hide, Tidman, Tupper, Leslie, Lovegrove, and others took part, and its consideration was referred to the council.

There has just been constructed at Totnes Weir a fish pass, which will enable salmon and trout to go from the tidal portion of the river Dart to the upper water for the purpose of spawning. The length of the pass is about 90ft., and it is divided into eight pools, each having a concrete floor 18in. in depth. The engineer was Mr. J. M. Martin, of Exeter, and the contractor Mr. Gibson; the cost was £450.



CHATEAU DES IFS: 17TH CENTURY.—(*From* SAUVAGEOT.)



COURTYARD FRONT OF THE CHATEAU BUSSY-RABUTIN.—(*From* SAUVAGEOT.)

CLASSIC DETAILS AND THEIR APPLICATION.*

By G. A. T. MIDDLETON.

XVI.—FRENCH RENAISSANCE: GENERAL CHARACTER OF THE BUILDINGS.

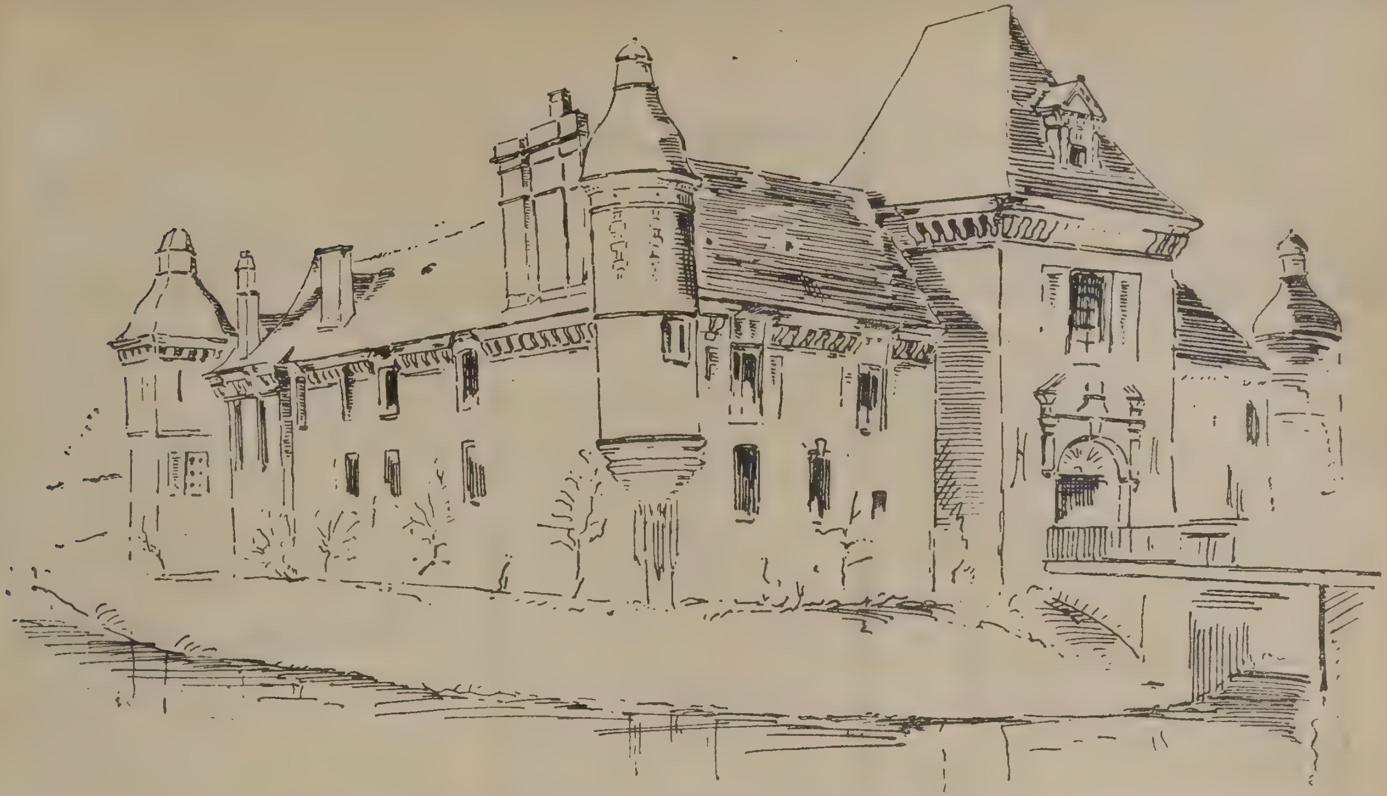
IF, upon its first introduction into France, the Renaissance only affected minor details, this was not to last for long. Gradually, but surely, the buildings felt the new influence and succumbed. Had the works then being erected been military or ecclesiastical, the process would doubtless have been more gradual still; but at that time France was being covered with the great palaces, the châteaux of the rich nobility—no longer of necessity fortress dwellings, but houses for living in, and for the display of wealth and grandeur. For these, a new form of buildings, a new style of architecture, seemed well suited, and was made peculiarly so by the genius of the French architects.

To judge properly of what took place, it is necessary to compare the needs of the buildings with those of Italy at the same period. There the necessity for strength in the early palaces, fronting narrow streets, had led to simplicity of form, breadth, and dignity; while here, built for peace, and not for war, and situated amidst beautiful surroundings, the châteaux were naturally, if not necessarily, more broken and lighter in their design, more particularly as the Gothic system of promiscuous planning was still in vogue. Place the Maison Fontaine Henri, for example, beside any of the Italian palaces in Florence, Rome, or Venice, and the contrast is most striking. Here is a broken sky-line, with high-pitched roofs, tall dormers, and lofty chimneys, all in picturesque confusion, the only sign of the Renaissance, so far as a general view can show, being the introduction of a few small horizontal strings and an occasional pilaster. The general scheme is Gothic.

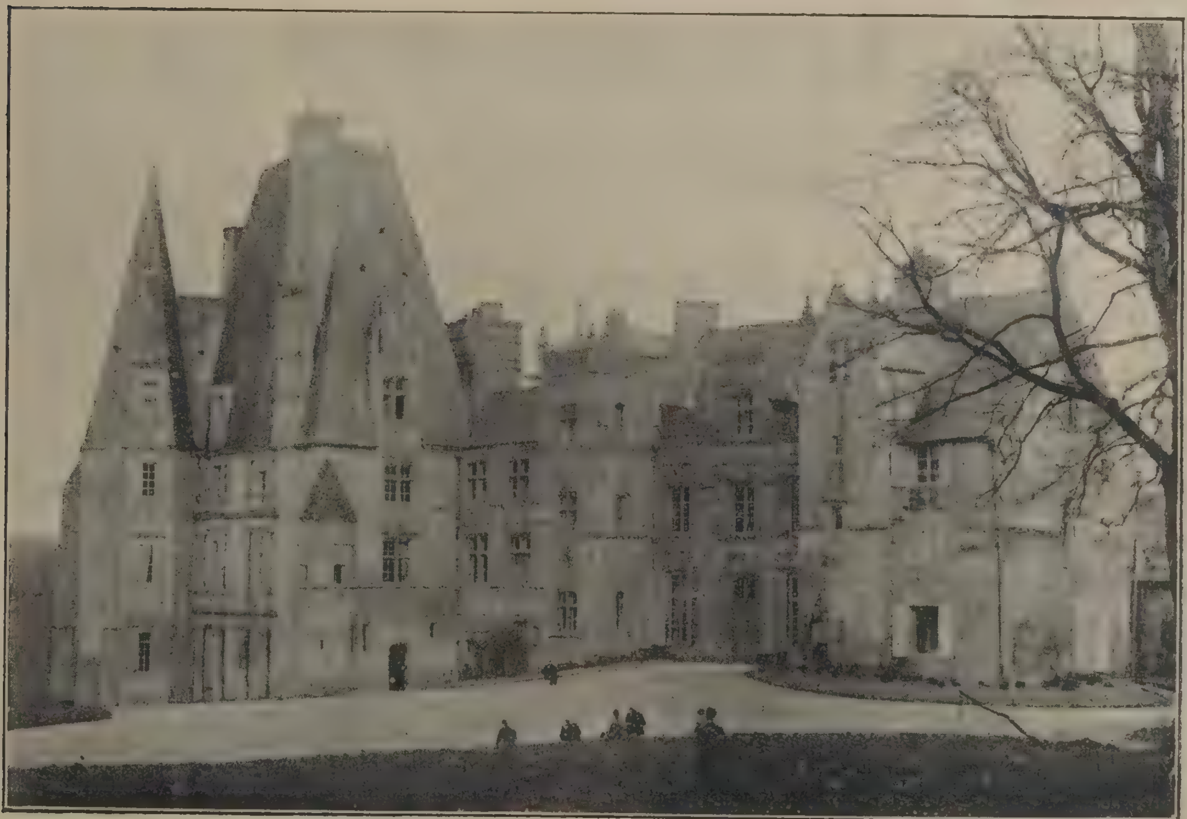
Slowly, quite slowly, the planning became more symmetrical, an axial line being used, and the parts balanced and eventually paired, on either side of it, the Orders at the same time being introduced, not obtrusively, but in slightly-projecting pilasters and cornices, the pilasters being panelled, even when used externally, and the panels often enriched with carved scroll-work ornament of delicate design. Still, however, the high roofs, dormers, and chimneys were in use, and remained so, giving a distinct character to the Renaissance buildings of France; but the high-pitched turret became presently the "pavilion" roof, and the chimneys and dormers were modified to agree with the general changes which were taking place. Presently these in-

---

* All rights reserved.



CHATEAU MESNIL GUILLAUME, NEAR LISIEUX.



MAISON FONTAINE HENRI.—(*From a Photograph by* Mr. E. B. Drake.)

cluded the introduction of formal applied Orders, superimposed, and following very closely the Venetian school in the richness of the decoration. A rusticated basement or lower story became common, this being reserved for stables and offices, and the main entrance being at the first-floor level, reached by an external staircase; and there would rise an Order inclosing two or three stories, or else superimposed Orders, carrying a well-designed modillioned cornice, above which rose the high roof, the dormers appearing in a range, generally just above the eaves; for a parapet was rare.

Then deterioration commenced, as it had done in Italy, with the over-employment of large ornament, with the broken pediment, with orders used where even in appearance they had no function to perform, and with the introduction of sculpture in most unexpected places. At the Château d'Anet there is a stag with the hounds following it climbing upon the top of the pediment over the entrance; and female figures in light costumes seated upon the sloping pediment of a dormer (whence, in reality, they would inevitably slide to the ground), are by no means uncommon. Still, the French genius saved the work from the extreme vulgarity of the Late Roman Renaissance, a subtilty of proportion prevailing, even in the most debased days, which gave charm to the whole.

In the smaller châteaux, where the cost had to be kept down, it is not unusual to find, even in the later times, that no orders are used, save, perhaps, to the entrance door, there being a heavy cornice carried round a low rectangular building, with angle turrets, which inclosed a courtyard—following very much the general idea of the Early Florentine palaces, or of the Gothic "keep," and being surrounded by a moat, as if partially for defence, like many of our English manor-houses.

The Château Mesnil Guillaume, near Lisieux, may be taken as a very typical example of this method of applying Classic detail to a general design of other origin.

CONCERT HALLS AND ASSEMBLY ROOMS.—II.

By Ernest A. E. Woodrow, A.R I.B.A.

It would, perhaps, be both instructive and interesting at an early period of these papers to consider how a small parochial room may have to be fitted up in various ways for a different entertainment each night of the week. In thus explaining a simple example, such as the one I have now chosen, I may help my readers to understand the more complex arrangements of larger buildings.

I am presuming that my diagrams represent a country parish room, in which on the first evening a Sunday-school tea or public dinner is given. The diagram (Fig. 1) shows the whole of the floor-space taken up with various tables and chairs arranged round them.

The next night we may suppose that "theatricals" are to take place in our village assembly-room, and that the parochial hall becomes a miniature theatre, with stage, proscenium, footlights, orchestra, &c., as Fig. 2. The changes from the tea-room to the theatre are many, and the fittings to take up and put down, unless specially made, entail a large amount of work.

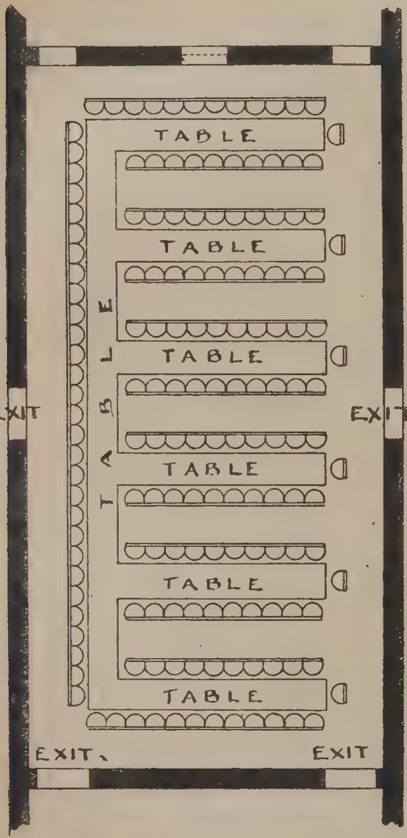


Fig. 1.—Room arranged for Teas or Dinners.

On the following day the room may be required for a bazaar. All the theatrical "fit-up" has then to be packed rapidly away; stalls such as we are all familiar with at bazaars and fancy fairs erected; and the hall arranged somewhat on the lines of Fig. 3. On the termination of the bazaar, the evening for the local choral society concert may perhaps follow, and the hall has again to be rapidly changed and refitted for orchestra, chorus, and audience. Fig. 4 shows how this has to be done.

Fig. 5 is an arrangement most likely to be adopted for flower-shows and small industrial exhibitions which we may suppose comes after the concert, while on the last day of the week the Saturday-evening Cinderella is nearly sure to take place; then the hall is cleared, the floor polished, and the arrangements made as Fig. 6. But after the ball, the caretaker has to provide for Sunday's meeting, and bring in the chairs and place them as in Fig. 7. This last plan is one that can also be used for lectures and political meetings.

Now naturally one would ask why do all these diagrams of internal fitting up of a small parish room concern the architect? They concern the architect to a great degree, because if he does not prepare his building and its surroundings so that the hall may be rapidly changed from day to day for one purpose or another, he does not meet the requirements of his clients in erecting a good parish room. Everybody knows that a local hall is sure to be used for all these purposes.

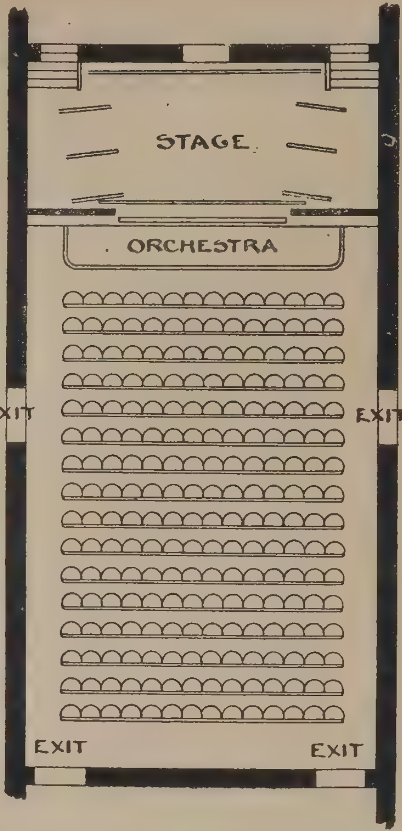


Fig. 2.—Room arranged for Dramatic Performances.

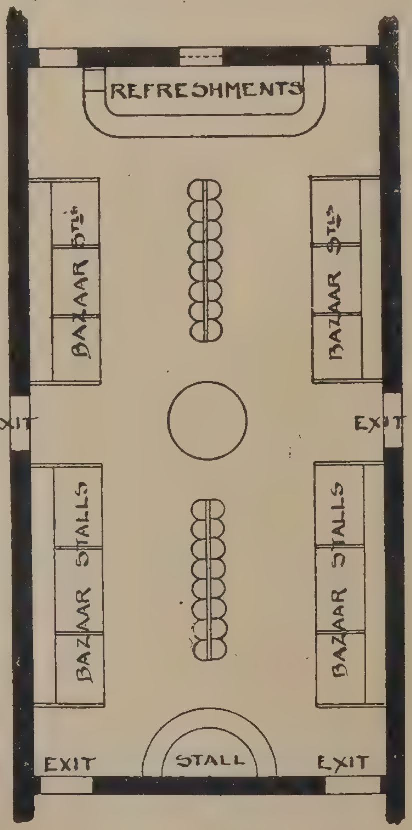


Fig. 3.—Room arranged for Bazaars.

The diagrams show that there are many special fittings which must be taken in and out of the room rapidly, and stored away in safe places—not in the passages and exits, as so frequently found, where no proper storeroom is provided for them; but in a room close to the hall—a room with plenty of daylight, which will not become a rubbish-heap, and a danger from fire.

It is a rule with the London County Council that the chair-store, or place for packing away the chairs. tables, platform, and stage, must be a fireproof chamber. Frequently the space under the platform is used for this purpose; it is bricked round, has a concrete ceiling under the floor of the platform, and is entered by iron doors in the front wall. At other times a trapdoor leads to a cellar under the hall. This is a very convenient way of rapidly removing chairs battened together in lengths, as insisted upon by the London County Council. The trap must have iron doors below as well as the wooden ones on the floor-level. This trap, however, is frequently a blemish in the dancing floor.

Special attention should be devoted to designing the "fit-up" stage for dramatic performances. So often are these temporary arrangements sources of the greatest danger, that too much care cannot be given to every detail in this respect. The proscenium must, of course, be of light construction, on account of the short time allowed for its erection and removal. The proscenium is generally erected with total disregard to the surroundings, and is too often an ugly piece of painting on canvas, representing ill-drawn and badly-painted, impossible bright yellow columns supporting a pediment of surprising detail, backed by what is intended to represent drapery in bright magenta colour. Why cannot a temporary proscenium be designed to harmonise with the architectural treatment of the room? The scenery must, together with the proscenium, be made uninflammable by applying some fireproof paint or solution, or by the use of asbestos canvas, or asbestos boards, as required under similar circumstances in Berlin.

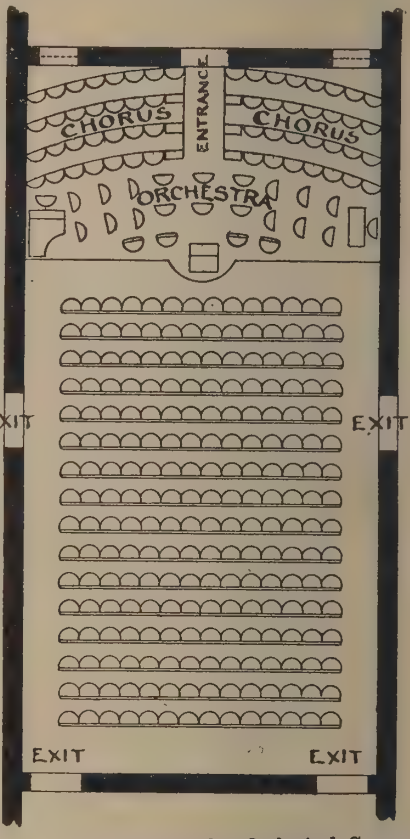


Fig. 4.—Room arranged for Orchestral Concerts.

In all cases of temporary stage-play licenses, granted by the London County Council, fireproofing the scenery is insisted upon. That authority strongly objects to the temporary canvas proscenium, and always recommends the adoption of a proscenium consisting of woollen curtains. The gas-fittings in a temporary stage are the greatest danger. Put up for one night, the same care is not taken as if they were put up to last for years; but as far as public safety is concerned, it is as necessary to take every precaution for a performance of one night as it is for twenty or more years. The risk to the public begins from the opening of the doors at the very first performance. The fittings must, therefore, be all protected by wire guards, and the connections must not be by rubber tubing, as is so frequently done. The favourite way of lighting such a stage is to push a piece of soft rubber tubing over the nearest gas-bracket, to let it run along the floor, with a great risk of it being trodden on, the light being extinguished, and an escape of gas being created. The gas is obtained for lighting the upper part of the scenes by connecting this tubing to some makeshift gas batten, without any wire guard, which batten is placed within a few inches of a ragged, old back-cloth, little better than tinder.

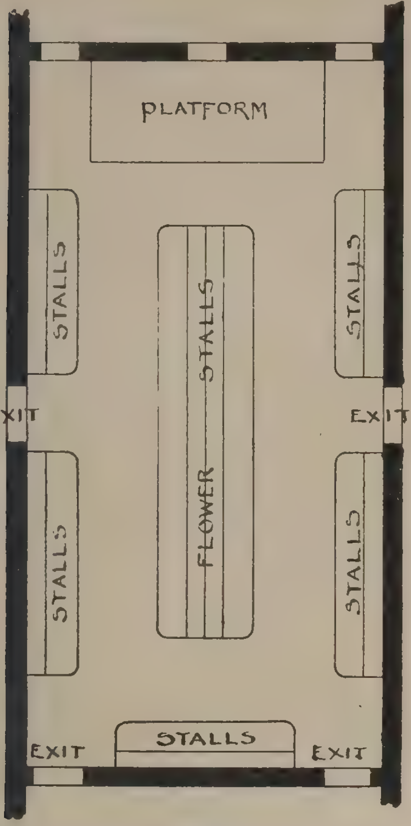


Fig. 5.—Room arranged for Flower Show or Exhibitions.

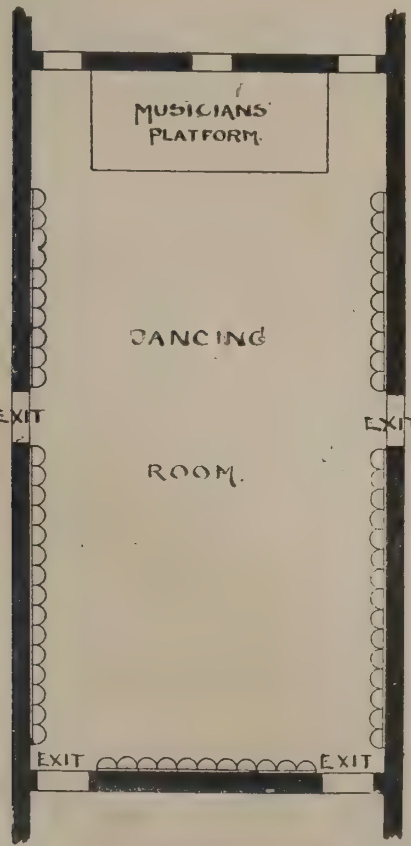


Fig. 6.—Room arranged as a "Dancing-Room."

It is really remarkable how fire is almost invited by the ignorance of people who provide amateur entertainments. I remember on one occasion visiting a ladies' school, where a dramatic performance was to be given by the pupils. The room was ready to be opened to the public, and the girls were very busy lighting their "footlights" when I arrived. These consisted of a row of the very commonest-made paraffin-oil lamps, placed on the very edge of their stage among a mass of flimsy "Liberty" drapery, and over the chimneys of which the tableaux curtain, as it was raised and lowered, came in alarming proximity. Much to the disappointment of the young performers, there were no footlights used that night. The effect of the performance may have suffered, but how would the audience have fared, I need scarcely ask, had one of these lamps been overturned by the curtain, or the curtain caught fire, as seemed almost a certainty?

The "fit-up" for the orchestra, when concerts are given, Fig. 4, should be specially designed, and arranged for by the architect: It has to be quickly put together, and it must be substantial, as it has to bear considerable weight. The breakdown of such a platform would cause great danger of life and limb, and probably create a panic amongst the audience.

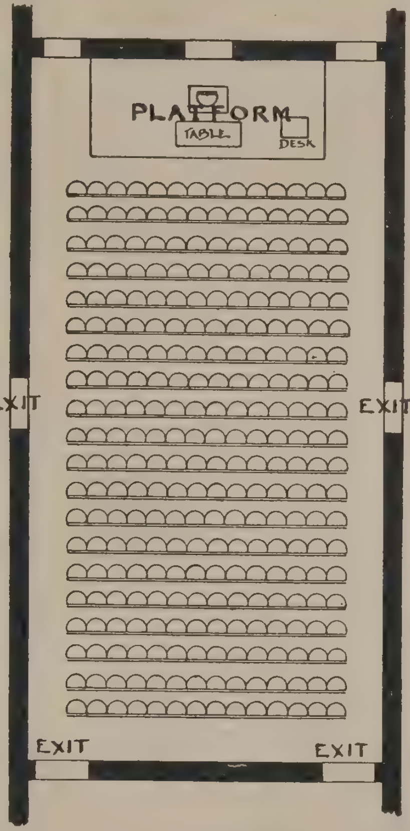


Fig. 7.—Room arranged for Lectures or Sunday Services.

In laying the floor of such a room as this, it must not be forgotten that it will be used for dancing, and therefore must be of a wood that will easily polish, laid with very narrow boards, most closely, with no open or gaping joints. What I maintain is that an architect should be alive to all these requirements, and should make provisions for them, to assist the hall-keeper in his task, to keep the exits ever free and unobstructed, to minimise the chances of fire, and, above all, to make free, straight, and easily-found exits.

All the provisions for the safe and rapid egress of a crowd are as necessary in this class of building as in a theatre or music-hall; indeed, they are more necessary, as a hall used for general purposes is never under the same experienced management as the theatre or music-hall; it never has attendants who know how to manage crowds; it holds more excitable audiences, and it seldom has the same provisions for safety.

It must also be remembered that parish rooms are more frequently used by children than grown-up people, that in consequence many more are packed into a given space than in a theatre or concert-room, and that the danger increases in consequence. Children in great numbers, without elder people to look after them, form the most difficult audience to seat safely, as some of the most dreadful examples of panic have shown even within recent years, notably the panic which occurred in Sunderland, and that at Belfast, where it will be remembered that some children tampered with the gas-meter, put the hall in darkness, and caused a serious panic.

◆

THE DESIGN OF SOLDIERS' BARRACKS.

[WITH ILLUSTRATIONS.]

Among the professional papers of the Corps of the Royal Engineers, Major Scott-Moncrieff, R.E., A.M.I.C.E., has printed an admirable and suggestive pamphlet, which he has been good enough to send us, on this practical subject. We think the following extracts will be useful, and those who need further information will do well to obtain a copy from the agents of the Royal Engineers Institute, Messrs. W. and J. Mackay and Co., of Chatham. Sanitary science has of recent years made many notable changes in the design of houses for all classes of the community. In towns the tendency is, wherever possible, to build in rows; in crowded streets recent legislation has decided what shall be the limits of interference with light which the mass or bulk of one building shall present to the windows of another. The tendency is in the direction of more room, more sunlight, more attention to proper provisions of fresh air, good water supply, adequate sewerage. Increased knowledge has had its effect in the design of recent barracks, and the improvement of those barracks which were built in days when ignorance prevailed alike in military and civil life. In military life we are, fortunately, free from the incubus of passive obstruction which greed or love of gain presents to the sanitary reformer in many cases in civil life. We have, on the contrary, the assistance which public opinion in the service or in Parliament always gives to any scheme or sensible suggestion for improving the condition of the soldier, and we engineers invariably have with us the strongest support alike from the medical authorities and from generals in command. Financial considerations sometimes limit advancement in this direction. It must be here premised that sanitary engineering does not merely mean sewerage. It means a great deal more. It includes also water supply and lighting, ventilation and warming of the dwellings within, free access of air and sunlight without; it includes proper provision for the cooking of food and ablution of the body. All these matters must be taken into account and combined before we can adequately consider the question of design. In addition to all these the architect has to consider the question of art and beauty in the work which he plans. In the suggestions made in this paper no question involving architectural adornment will be considered. The military engineer, who has not been trained to art, has to consider questions of economy in construction—that is to say, that, having a large number of similar buildings to construct, he must consider how he can produce his design with the least expenditure of material. Further, the engineer has to bear in mind military questions—e.g., how discipline shall most easily be administered, how parades shall be carried out, and how tactical units shall be conserved. A plan of a barrack adopted as a type should be capable of such alterations as will, without change of general design, admit of its being adapted to changes of site or climate. It would, obviously, be contrary to common sense to build the same barrack, exact in every respect, at Cork and at Aberdeen, or in a warm, sunny valley, and on the top of a ridge, such as that at Inverness, where the N.E. wind whistles across the Moray Frith. But the same type may be followed if certain modifications be introduced suitable for the local circumstances of the case. A type plan should also be capable of extension, so as to suit the larger amount of cubic space required for warm climates. Finally, and, perhaps, most important of all, the type has to be adapted to the British soldier. One does not wish, on the one hand, to give the men unnecessary luxuries such as they are accustomed to in civil life; on the other hand, the wish of all

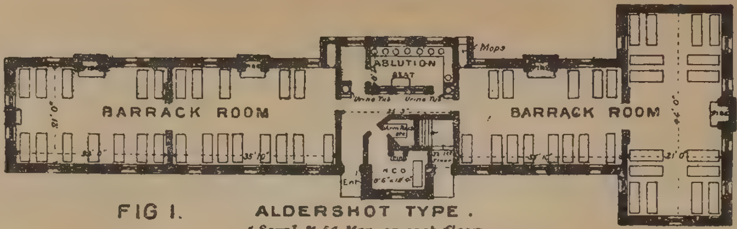


FIG 1. ALDERSHOT TYPE.
1 Sergt & 54 Men on each floor.

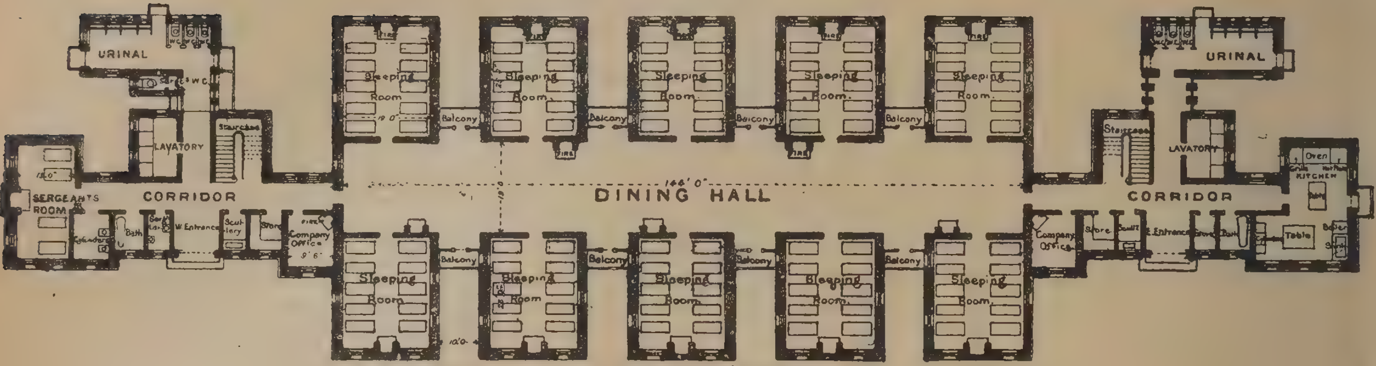


FIG. 2. Mr MARRABLE'S TYPE.
4 Sergts & 100 Men on each floor.

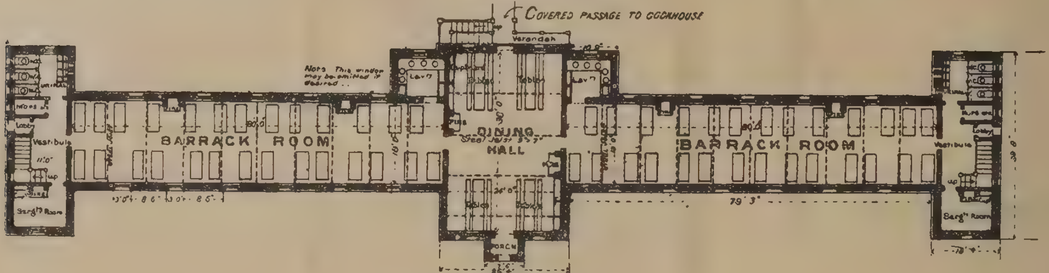


FIG. 3. S. M. E. TYPE.
2 Sergts & 54 Men on each floor.

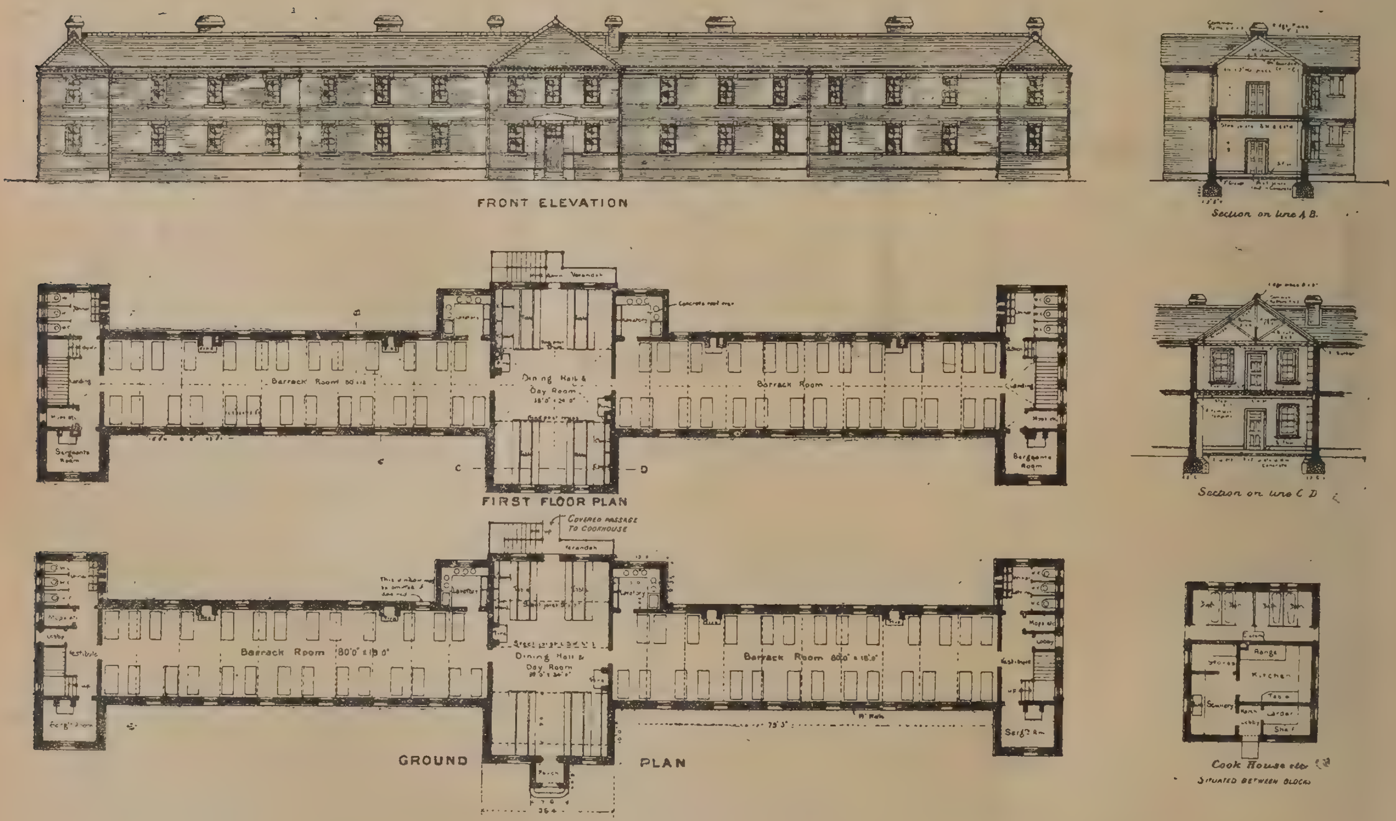
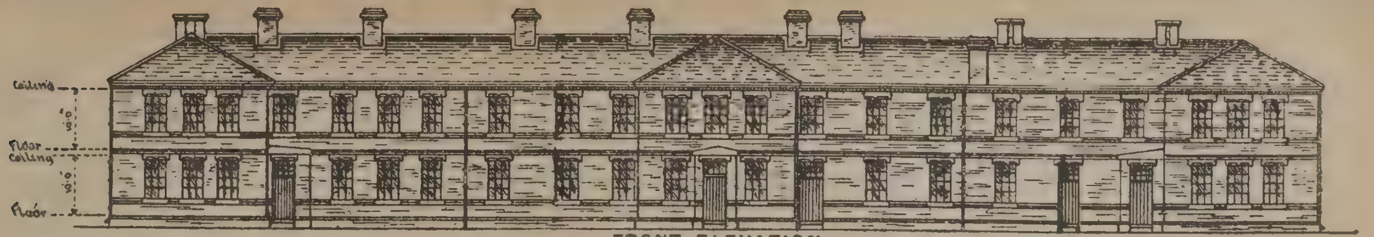
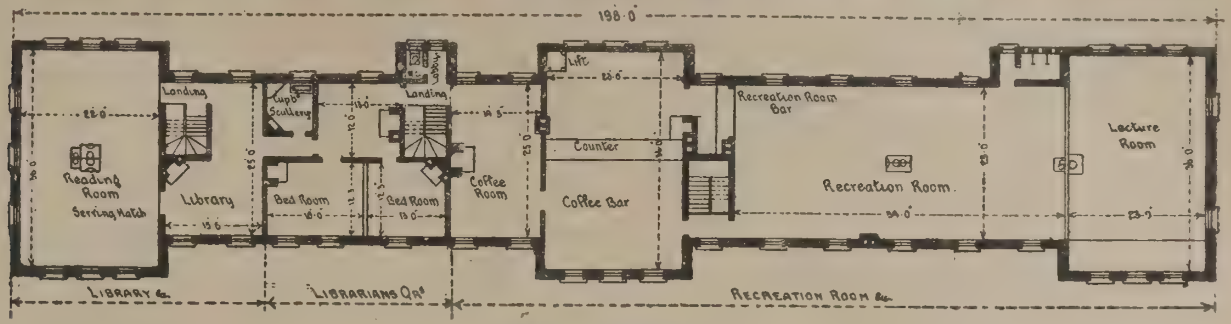


Fig. 4.

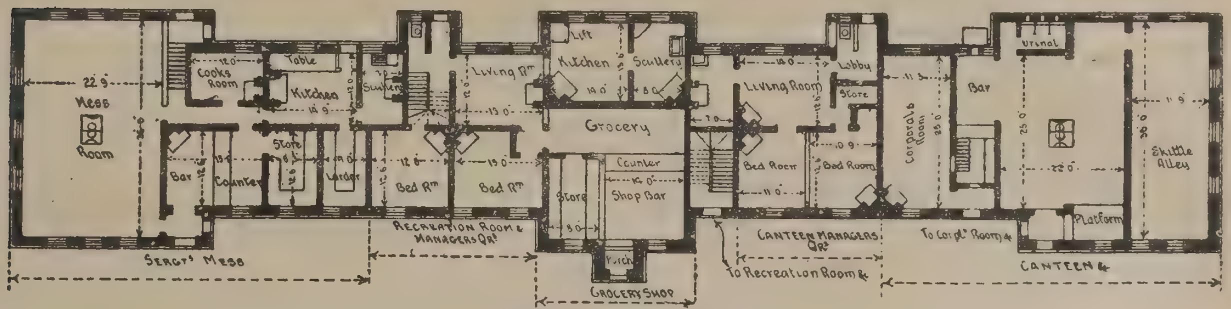
officers is to train the men in habits of cleanliness, self-respect, and sobriety. The barrack must be designed to this end, so that it may be easy for a man to be cleanly, in person as well as in outward appearance, and that he may have a reasonable amount of comfort in his habitation. Much attention has of late been paid to soldiers' diet, and, perhaps, a little study may, therefore, be devoted to his dwelling. The object of this paper is to examine existing types and proposals, criticise them—in no unfriendly spirit, but with a desire for public advantage—and to make some suggestions which may possibly, if not considered suitable themselves, lead to others of greater practical utility. To recapitulate the necessary conditions :—(*a*) The barrack must be sanitary as regards sewerage, surface drainage, water supply, light, air, ventilation, warming, access to cook-houses, and these must apply not only to each single block, but to all in combination. (*b*) It must be economically designed. (*c*) It must be adapted to military requirements. (*d*) It must be as simple in design as possible. (*e*) It must admit of small modifications to suit local requirements. (*f*) It must be adapted to the wants of the soldier. The Aldershot type is that adopted in the Stanhope Lines at Aldershot, recently built



FRONT ELEVATION.

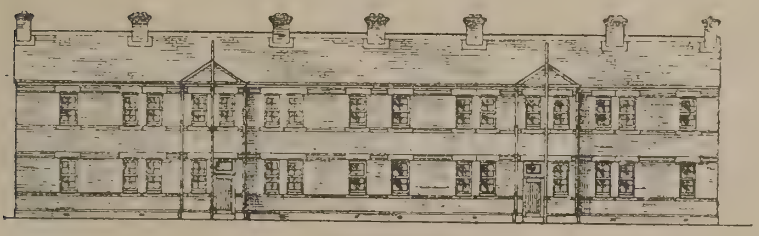


FIRST FLOOR PLAN

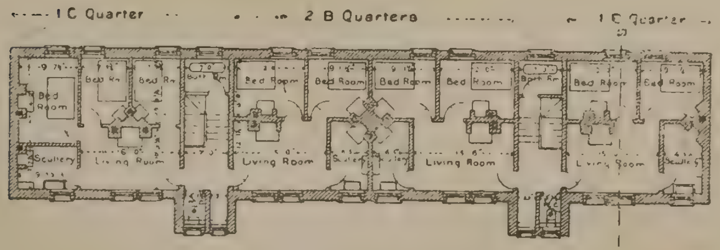


GROUND FLOOR PLAN.

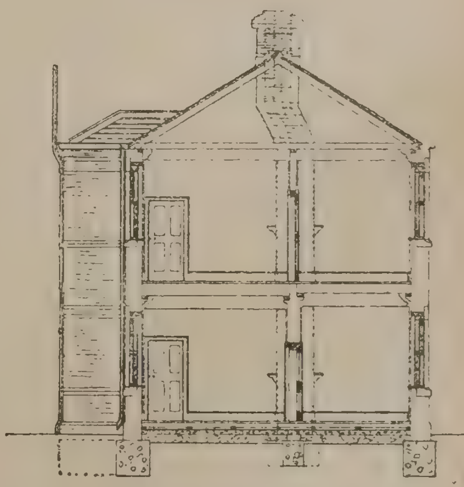
FIG. 5.



ELEVATION

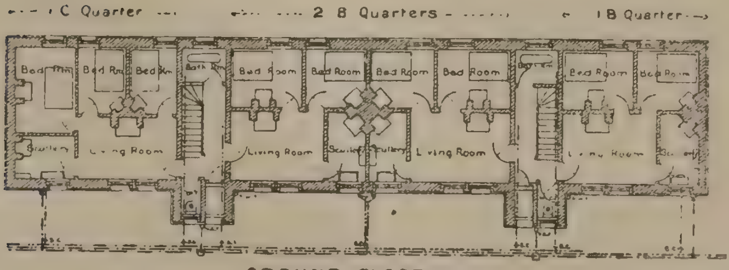


FIRST FLOOR PLAN



SECTION ON A - B.

Scale ⅒" = 3 feet



GROUND FLOOR PLAN.

Scale ⅛ - 3 feet

SUGGESTED TYPE DESIGN BLOCK
OF
MARRIED SOLDIERS QUARTERS

FIG. 6.

(see Fig. 1). These barracks are two-storied. The blocks run east and west, so that one side of the block rarely gets any sunlight at all. The accommodation is so arranged that in the event of an unusual number of men being absent, as may happen during the furlough season, the end portion, or "hammer-head," may be closed entirely. During the period when the barrack is full, those men who live in the "hammer-head" must necessarily pass through the other room to reach their own. Hence the other room becomes a thoroughfare, and the men who occupy it have more than their own share of dirt to clean. On the other hand, they are better off as regards their food than the occupants of the end, because they are a little nearer the cook-house; although, in many blocks, the dinners must, in either case, inevitably be cold, for the cook-house is some distance away, and is not reached by a covered passage. In this type of barrack the soldier sleeps and eats in the same room. He has cupboards in which to keep eatables, but the fact of keeping food in a sleeping room is condemned by medical experts as bad for the food, and unwholesome for the sleeper. There is but one entrance and one staircase to the block—an obvious disadvantage. Latrine accommodation is provided in separate buildings from barracks. This type, although an immense advance on the old huts which it replaced, is not such as will convince us that the best design has been obtained in it.—The next type to be considered is that shown by Fig. 2, proposed by Mr. Marrable, district surveyor, R.E. civil staff, in a paper entitled "What a Barrack Should Be to Meet the Requirements of the Age," published in the occasional Papers of the Association of Surveyors. He proposes to build three-storied barracks, and accommodate 100 privates on each floor in little rooms of 10 men each, leading off a large central corridor, which serves as dining-hall. The cook-house, ablution-room, latrines, and urinals are brought under the same roof and the same floor, and he provides a sleeping-room for four N.C. officers in another room, also on the same floor. There are also other conveniences allowed, such as company stores, pay-offices, &c. It offends the canon that the design should be simple. It would, if built, result in a large building, occupying much area, with many deep recesses or dead angles, where air would stagnate and sunshine never reach, and where the rooms would be dark by reason of bulk looming opposite to the windows.—In the type now submitted, shown on Fig. 3, and here termed the S.M.E. type (where, for the purposes of comparison, the drawings are all represented to the same scale), the general arrangement is one which will be familiar to all officers who have served in India, although there the type is usually confined to single-storied buildings. An endeavour has been made in this design to retain the best features of both the Aldershot and Mr. Marrable's suggestions, as well as the Indian type, and thus, by a process of evolution, obtain a type which will be an advance in the direction of general utility. The two-storied company block, as in the Aldershot type, is retained, and four dormitories each for a "section," or one-fourth of a company. These section dormitories are separated on each floor by a transept, to be used as a day-room and dining-room. It will, therefore, be possible to reduce the breadth of the dormitory to 18ft., and give the men more space than now obtains between their beds, because, as they will not have their meals in the barrack, all the width required will be for two rows of beds (say 13ft.) plus occasionally a barrack-table (3ft.) and 1ft. on either side. Each man still has his 60sq.ft. of floor space or 600c.ft. of air. The windows are arranged so as *not* to be opposite one another. The amount of light given is 1sq.ft. to about 100c.ft. of interior accommodation. Fig. 4 shows the elevation, and a more detailed plan of both floors of the same proposal with sections. Gas is the usual illuminant used in barracks, and in its present application to the soldier's room it can hardly be said to be either wholesome, cheap, or efficient. Among the many new inventions recently brought out it is difficult to say which is most suitable for the barrack-room, but possibly the Stott-Thorpe light, which combines brilliancy, economy, and ventilation (by carrying off the products of combustion through the ceiling), will be most efficient. It is proposed to use it in this case. Ventilation in this design would be partly insured by the use of foul-air shafts connected with chimneys. The Tobin's tube is probably the best form of inlet. Warming is proposed to be effected by fireplaces with ventilating grates. The cook-house is arranged on the principle advocated by Brigade-Surgeon-Lieut.-Col. Evatt, in his lecture on "The Sanitary Care of the Soldier by his Officer,"* where a preparation room outside of the kitchen and a scullery and a store are provided. In this cook-house there are baths for the men. The whole is connected by a covered passage with blocks on either side, and staircases lead to the dining-rooms on the upper floors. The details of latrine and urinals here demand some attention. Recent inventions in pedestal closets are of a description which makes misuse of them almost impossible. They may be nowadays formed of enamelled iron, with or without wooden seats, so as to be practically indestructible, and there seems no reason why a soldier should not have these provided for him, with water-waste preventive cisterns, controlled by the user of the closet. So much for condition (*a*), viz., sanitary design. As regards (*b*)—economy—we have to consider not merely first cost, but repair. This consideration points to the desirability in many cases of using some other material than slates for the roof. Tiles are now manufactured as light, as durable, as non-absorbent, cheaper, and far prettier than slates. Only those who have had to keep in repair acres of slate roofs in a stormy winter know how grievously extravagant they are. The floor may be either single or double, on steel joists, the latter for preference. The floor of the annexe should be of asphalte or tar concrete, as being pleasant to walk on and not absorbent. Each section room has a separate entrance and a separate staircase, its own ablution rooms, its own range of w.c.'s, and its own urinal. The author hopes and intends the type to be adapted to the ordinary wants of the soldier. Lord Wolseley says: "We pay our men so wretchedly that we can only hope to entice men to enlist by making them happy whilst they are with us, and the first step towards happines is to make men's dwellings bright and cheerful." But the question will probably be asked, "What about the expense of the whole as compared with the Aldershot type?" No doubt, at first sight, it appears as though the S.M.E. type must be the more expensive, on account of the extra accommodation provided, each half-company having its dining-room, and one-fourth of the cook-house instead of one-eighth. If we estimate the cost of the Aldershot block and the S.M.E. type, the latter will certainly be greater; but other matters also must be taken into consideration. To adopt this type to regimental requirements we have to consider the accessories—the canteen, sergeants' mess, quartermaster's stores, &c. Fig. 5 shows a suggested type plan for a Regimental Institute. The cost, however, can be ascertained approximately by cubing out the blocks and giving the same price per foot to each class. The cost for a soldiers' barrack per foot cube may be reckoned at 5d., whereas officers' quarters and mess amount to about 1s. On this basis the brigade of four battalions on the S.M.E. type would cost £236,000, and the Aldershot type £225,800, a difference of about £10,000, or about 4·5 per cent. This takes no account of any advantages gained in the S.M.E. type by simplicity of drainage, or any of the other points which may be put to the credit of this type. *Married Quarters.*—The improvement in the condition of the married quarters has, of recent years, been most marked. Instead of one room, where a man, his wife, and a maximum of three children were obliged to live, eat, and sleep in very questionable comfort, each quarter has now a kitchen and scullery, some have an additional bedroom, and some even have three living-rooms as well as kitchen and scullery. There are, however, here also certain disadvantages. Medical officers tell one that however great an improvement these quarters are on what used to be the type, yet they are wanting in sanitary efficiency. It is cruel to force a delicate woman to use outside latrines, and many of them dislike it from motives of decency. Again, if baths are considered desirable for unmarried soldiers, why should the married soldier and his wife or child not have one also? In the type proposed (Fig. 6), both these defects are altered; the quarters are divided by passages, which, to a certain extent, isolate portions of the building. The chimneys are brought to the centre of the building, where they ought to be, and not scattered all over the roof. Lastly, the water supply is continuous, laid on to each group of quarters from the outside main, and there are no huge cisterns overhead to cause misery in frosty weather, and involving girders and beams for their support. What the discomfort caused by these frozen cisterns was to the married soldier in the great frost of 1895 no words can depict. All this is important. If we are to induce sober, respectable men to stay in our army, to be the backbone of our regiments—*i e.*, the N.C. officers—we must make the married quarters decent, healthy, and attractive.

---

* *R.A. Institution Proceedings*, May, 1894. Anybody who wishes to read straight, sensible talk about the soldier should get this. The dining-room question is there discussed, and no doubt expressed as to its advantage.

OBITUARY.

Mr. W. H. Jobbins, the head of the Government School of Art at Calcutta, died on a homeward-bound steamer off Colombo on September 18, while on a visit to England. Mr. Jobbins, who was a native of Birmingham, was a student for a time of the Municipal School of Art in that city, whence he went to South Kensington, where he qualified as an art teacher, and was appointed second master of the Nottingham School of Art, under the late Mr. J. S. Rawle. While at Nottingham he developed such marked capacity as a painter that he gave up his appointment, and devoted his whole time to the practice of his profession. He studied in some of the best studios in Paris, Munich, and other places, and ultimately settled at Venice, where he worked for five or six years, in association with Mr. Woods, Mr. Fildes, and other eminent English painters. Some of his best pictures were produced in Venice and its neighbonrhood—two of them, "The Market Place, Venice," and the "Market Place, Sarravalte," both crowded with admirably-drawn figures, were sent home for the Royal Academy exhibition, and were well hung on the line. Mr. Jobbins also occasionally contributed to the exhibition of the Royal Birmingham Society of Artists, and still oftener to that of the Art Circle, of which he was a member. They showed great purity of tone, appreciation of colour, and the power to render atmospheric effects. They were also notable for skilful drawing of ships, figures, and architectural forms. About ten years ago Mr. Jobbins left England for India, having accepted the appointment as director of the Government School of Art at Calcutta, and that position he occupied until his death. His direction of the school proved most successful, the number of students having trebled during his tenure of office, and a new building having to be erected. Mr. Jobbins also took a large share in the direction of the Public Art Gallery at Calcutta, and in the promotion and management of art exhibits in that city and in other parts of India. He also continued the practice of his art, painting landscape works, and some portraits of British residents and of native princes. He was about 40 years of age, and leaves a widow and two young children.

CHIPS.

On Friday evening the Grimsby Master Builders' Association held their annual dinner at the Yarborough Hotel.

At the concluding meeting on Monday of the last city council for the old city of Liverpool, a report was read by Mr. H. Percy Boulnois, the city engineer, on the effect of the extension of the city boundaries. There will be added to the existing area of the city from to-day (Friday), 8,026 acres, making it 13,236 acres, exclusive of the river. There will be now 415 miles of road as against 138 miles previously, 663 miles of sewers, and 68 miles of tramways.

At the Estate Market, last week, the tone of business was firm, the aggregate for the week being £170,500.

The Ramsey Town Commissioners have applied to the insular legislature for power to borrow £5,000, to complete the sewerage scheme as laid down by Mr. Mansergh. When this is effected, Ramsey will have the benefit of a modern system of drainage, with an outlet far removed from the town itself. The work will be finished before next summer.

Arrangements have just been concluded between the North British Railway Company, the Fife coalmasters, and the Burntisland Harbour Board for an extension of Burntisland Docks, at a cost of about £250,000. The work will be carried out from plans by Mr. P. W. Meik, C.E., and Mr. R. Henderson, C.E., the harbour engineer.

Mr. Tewson held sales on Thursday and Friday last of part of the Ilford Park estate, which formed a portion of the assets of the Liberator Company. There were 182 houses, producing a gross rental of about £6,000 a year, subject to certain landlords' deductions, and these were offered in 128 lots, of which 127 lots were sold, realising a total of £74,453. The competition was keen.

Professor Blackie's grave, situated in the north division of the Dean Cemetery, Edinburgh, has now been marked by the erection of an appropriate memorial, consisting of a Celtic cross executed in red granite. The upper part of the design is enriched with Celtic ornamentation, while in a panel beneath is carved the following:—"John Stuart Blackie, Professor of Greek in the University of Edinburgh; born 28 July, 1809, died 2 March, 1895." The work has been carried out by Messrs. Stewart, M'Glashen, and Son, sculptors, Canonmills Bridge.

CONTENTS.

The Multitude of Counsellors ... 619
Institute of Painters in Oil Colours... 620
The Royal Society of British Artists ... 621
The Society of Architects ... 621
Classic Details and their Application ... 622
Concert Halls and Assembly Rooms.—II. ... 624
The Design of Soldiers' Barracks ... 625
Obituary ... 628
The Building News Directory... ... xi.
Our Illustrations ... 629
Competitions ... 629
Building Intelligence ... 648
Engineering Notes... ... 648
Architectural and Archæological Societies ... 648
The "Scientia" Water-Closet Apparatus ... 649
The Apprentice System ... 649
Notes from Paris ... 650
Correspondence... ... 651
Intercommunication ... 652
Legal ... 652
Legal Intelligence ... 653
Our Office Table ... 653
Meetings for the Ensuing Week ... 654
Tenders ... 655

ILLUSTRATIONS.

NEW HOTEL, FORT WILLIAM, N.B.—BARBARA VON VLAENDERBERGH, BY HANS MEMLINC.—TRUT HALL, NEAR HELSTON.—PROPOSED COUNTRY CHURCH, NEAR BRISTOL.—SKETCHES FROM KENT.—THE WEST SCREEN, MERCHANT TAYLORS' HALL.—STAIRCASE HALL, BOSTON, MASS.

Our Illustrations.

STATION HOTEL, FORT WILLIAM.

This hotel is in course of erection on a commanding and prominent site, overlooking the steamboat landing-pier and railway station at Fort William. It is within a distance of 200 yards of these important termini, and is approached by a good driving-road. The hotel obtains magnificent and extensive views of the surrounding country from Banavie and Ben Nevis in the east, to Coral Ferry and Ballachulish in the west. In fact, the scenery and district viewed from the hotel is unrivalled in the West Highlands. The grounds extend to over two acres, and are intended to be laid out with bowling-greens, tennis-courts, and pleasure-grounds. There is an excellent golf-course immediately behind the hotel. The building forms an oblong, measuring 105ft. by 90ft. in width. It contains a handsome coffee-room, with dining accommodation for 100 guests, drawing-room, smoking-room, double billiard-room, five parlours, 63 guest bedrooms, and extensive kitchen, servants' office, and manager's accommodation. A feature is made of the central hall, which measures about 35ft. by 30ft. The building is solidly built in dark grey granite, with Giffnock freestone dressings. The internal walls are in brick. It is intended to introduce an electric light installation for the whole building, and all necessary laundry and other requirements will be provided in a separate building. The estimates amount to £12,000. The following are the contractors:—Masons, Messrs. J. J. and P. MacLachlan, Larbert; carpenter, Mr. Wm. MacDonald, Inverness; slater, Mr. Don. Fraser, Fort William; plumbers, Messrs. Anderson and Nisbet, Oban; plasterers, Messrs. Fowler and Kennedy, Inverness; blacksmiths, Rose-street Foundry, Inverness; glazier and painter, Mr. Don. MacDonald, Inverness. The architect is Mr. Duncan Cameron, of Inverness, and Mr. John L. Anderson, of Inverness, is the clerk of works.

"OLD MASTERS" ON THE CONTINENT.—XXVI.

As our third example in this series from the collection of paintings in the Royal Gallery at Brussels, we give this week the celebrated portrait of Barbara von Vlaenderbergh, the wife of William Moreel, by Hans Memlinc, from a photograph by Franz Hanfstaengl, of Berlin. The portrait hangs, together with a companion one of her husband, in the Royal Museum Gallery at Brussels, and was executed in 1480. It is one of the few undisputed works by Hans Memlinc, or Hemlinc, of whom we gave a biographical notice in our issue of November 3rd, 1893, when we illustrated his "Virgin and Child," in our own National Gallery. In the work of Memlinc, as Kuyler says, "the Flemish School of the 15th century attains its highest delicacy of artistic delineation; while in feeling, in purity, and grace he was more gifted than any painter subsequent to Hubert van Eyck." The portrait before us, of whose subject little is recorded by contemporary historians, is represented bust size in three-quarter face, her finely-modelled hands, clasped in the attitude of prayer, being just shown. She wears a dark cape over a dress. Her hair is brushed back behind a lofty headdress of linen, with a gauzy veil of almost transparent texture crossing her face. The interwoven links of her gold necklace support a locket, with two large amethyst jewels hung below. The features are regular, the forehead lofty, and the lips well shapen. She stands before a window, with a glimpse of distant landscape seen between the bases of Ionic columns. The lighting is brilliant and clear, and the treatment of the half-tones of flesh in face and hands more successful than that of the draperies. Memlinc's dated pictures range from 1467 to 1491.

TRUT HALL, NEAR HELSTON.

We give a bird's-eye view and plan showing the restorations and additions recently made to this residence in South-West Cornwall, under the direction and from the plans of Mr. James Hicks, M.S.A., of Redruth.

PROPOSED COUNTRY CHURCH NEAR BRISTOL.

Mr. Edward Gabriel, of 42, Old Broad-street, E.C., the architect, has designed this church for a small parish not far from Bristol. It has a central tower, surmounted by a conical spire carried on a timber-framed belfry, which is reached by a stair turret between the south transept and the chancel apse. The materials are local stone and Bath dressings, the roofs being shown covered with tiles.

SKETCHES IN KENT.—(NATIONAL BRONZE MEDAL DRAWINGS.)

Among the earliest possessions of Christ Church Monastery at Canterbury may safely be classed the parish of Cliffe,* near Higham, and down to the days of the Dissolution it was retained by that foundation. The church, from whence we give some prize medal sketches to-day by Mr. Reginald J. Beale, is dedicated to St. Helen, and for the greater part is Perpendicular in style, with some Early English features. It still is enhanced by the miserere stalls found in most of the cathedral manors, and in the windows of the church may be seen some fragments of old glass. The Jacobean pulpit, with its quaint hour-glass, is, however, the most interesting object in the building. Upon the carving of the hour-glass bracket is inscribed the date of 1636. Mr. Beale has drawn out some of the sculptured panels to large scale. The remaining sketch gives a glimpse of the nave of Rochester Cathedral.

WOOD DETAILS OF SCREEN, MERCHANT TAYLORS' HALL.

In continuation of the series of illustrations of Merchant Taylors' Hall published by us last week, we give in our present issue a sheet of large-size details of the mouldings, &c., of the west screen. This forms part of the interior decoration of the great hall, which a year or two ago was executed from the designs of Mr. W. Hilton Nash, F.R.I.B.A., the architect to the Company.

STAIRCASE, BOSTON, MASS.

This illustration, printed on another page, shows a capital specimen of modern American decoration, of which the *motif* is a refined Renaissance of Italian character. It is just the sort of work with which our cousins across the water delight to enrich their great town residences, and the detail of the example here represented is of exceptional merit. It is shown to great advantage in the carefully and feelingly executed drawing by Mr. D. A. Gregg, who, we believe, is an Englishman now settled in the States, and we are indebted to the *American Architect* for the plate. Mr. William Y. Peters is the architect of the house, which is situated in Charlesgate East, Boston, Mass.

◆

A fire occurred in Providence Congregational chapel, Ovenden, on Friday, and damage to the extent of £1,500 resulted. The organ, which cost about £750, was completely destroyed. The chapel, which was opened in 1837, afforded accommodation for about 700 persons.

COMPETITIONS.

Durham.—The architects who submitted designs in open competition for the new council house and offices in Old Elvet, Durham, to be built by the Durham County Council, have banded themselves together to protest against the work being given to Sunderland architects instead of to the firm who gained the first prize in the competition. Messrs. Philip Tree and Ivor Price are acting as hon. secs. to the protesting competitors. They propose to visit Durham to-morrow (Saturday), and remain there till Thursday in next week.

Paris.—The first prize of 7,000f. in the competition for the rebuilding of the Cour des Comptes, which was burnt during the Commune in 1871, was awarded on Wednesday to M. Moyaux, a Government architect and curator of the ruins.

Philadelphia.—One hundred and eleven sets of designs for the new Art Building of Fairmount Park, Philadelphia, have been received by the Park Commissioners. The plan adopted for judging the designs is to refer them to a jury, consisting of the Provost of the University of Pennsylvania, one person to be selected by the directors of the Philadelphia Academy of Fine Arts, and three disinterested architects, with two experts who are not architects, to be chosen by the Memorial Hall committee. The jury will consider all the competing designs, and, on or before November 30 next, to report to the Commission, presenting eight of the designs, which they consider most worthy of the prizes offered.

West Ham Technical Institute.—At the last meeting of the town council of West Ham, the Libraries Committee recommended that Messrs. Gibson and Russell, the authors of the successful design for the technical institute (illustrated in our issues of October 4th and 11th), be appointed architects for the building, and that they be empowered to discuss with the architects some suggested internal rearrangements. Messrs. Gibson and Russell stated that the preparation of the drawings would take some six months, and the building nearly two years to erect and complete. The committee hoped the council would be in a position to open the institute in about two and a half years. The motion was unanimously adopted.

CHIPS.

The city council of Exeter have adopted the water committee's report recommending a scheme to improve the water supply at a cost of from £20,000 to £22,000.

Mr. Thomas Bottomley, surveyor, died at his residence, Rook-street, Bingley, on Tuesday week, after a long illness. The deceased leaves a widow and one son.

A special committee meeting of the District Council of Weston-super-Mare has been held for the purpose of further considering Messrs. Wolfe Barry and Brereton's report upon the proposed construction of a low-water pier, two marine lakes, and a pavilion. The committee having inspected the sites, it was proposed "That the pavilion be placed partly on Knightstone Island and partly on the sands in Glentworth Bay, extending from north-west to south-east." To this an amendment was moved that the pavilion be built adjoining the fountain; but the original proposition was carried by 12 votes to 5.

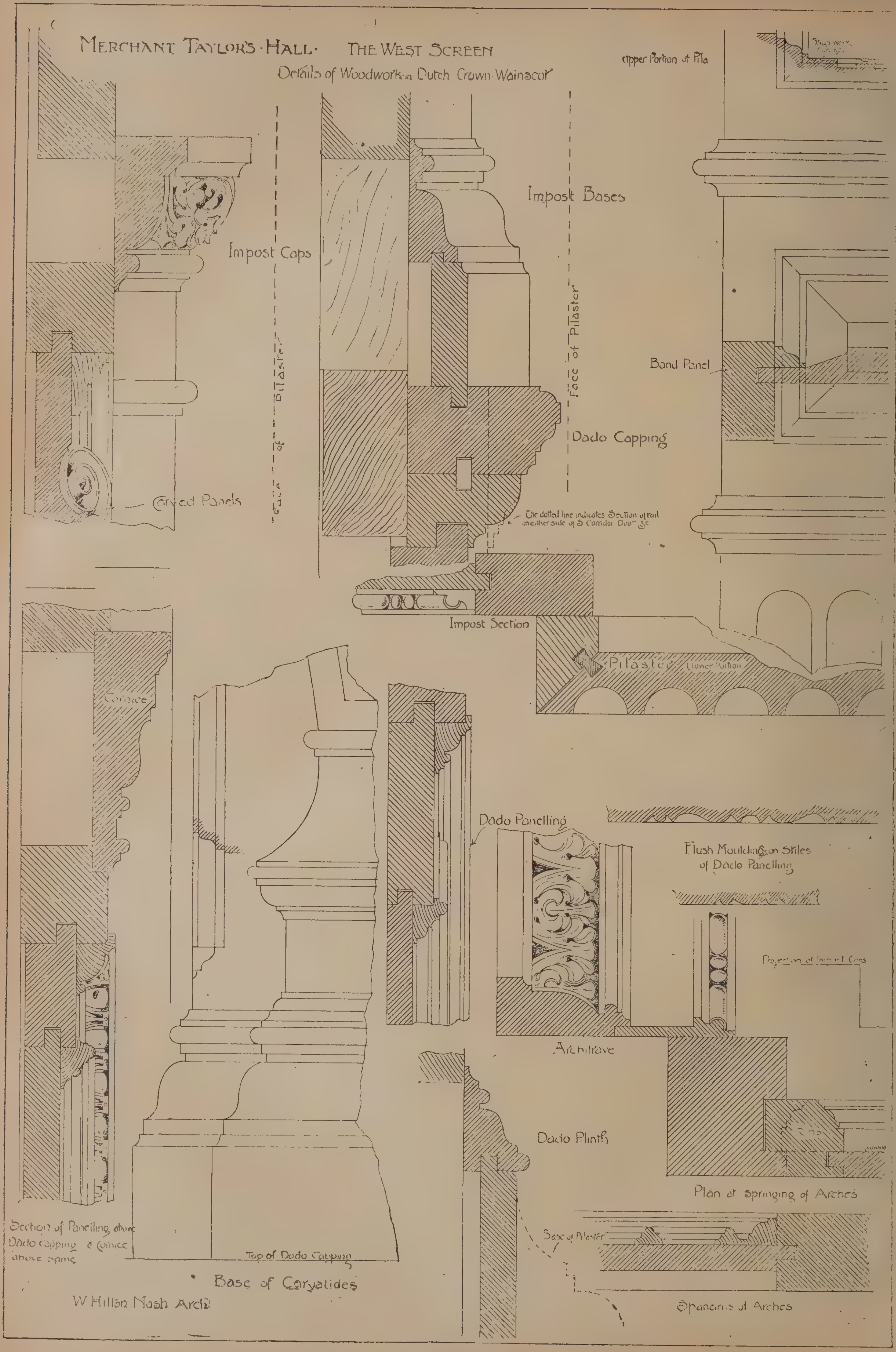
Mr. J. A. Langston, of 18, Took's-court, Cursitor-street, writes protesting against the assertion of a writer in the *Times* who asserts that that dwelling is the original "Bleak House" of Dickens, adding: "Snagsby's house is very old, and is likely soon to be demolished." Mr. Langston says the house and freehold belong to his wife, and goes on to say: "As one carrying on my profession of an architect at this address, I do not want those who know me to imagine I am living in a tumble-down old structure, whether it be Dickens's Snagsby's house or not."

The Archbishop of York on Saturday reopened the ancient church of St. Andrew, Normanby, near Kirbymoorside, restored under the supervision of Mr. Temple Moore, architect, of London. Included in the present restoration are the rebuilding of the north wall, restoring the north aisle, and opening out the fine 13th-century arcade. The chancel arch has been rebuilt, and a new three-light east window inserted, the work of Mr. Victor Milner, of London. Messrs. Barnes (of Malton) and Yearsley (of Pickering) were the contractors. The cost has been £1,300.

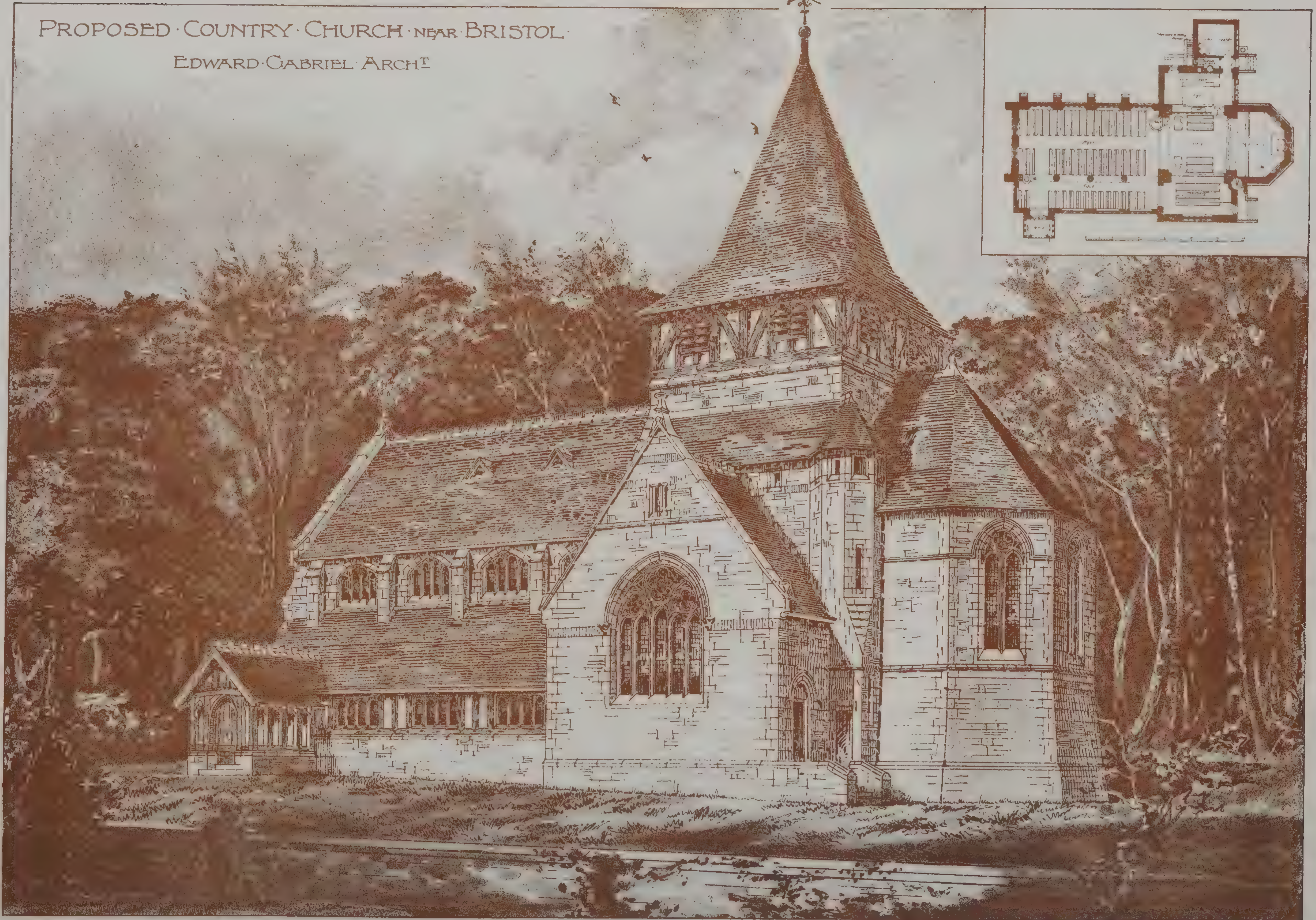
To the permanent collection of pictures at the Manchester City Art Gallery has been added a characteristic landscape by the late Vicat Cole, R.A., "The Heart of Surrey."

---

* A set of measured drawings of Cliffe Church, by Mr. Herbert Goodall, will be found in Vol. I., New Series, "Architectural Association Sketch Book for 1881."


Merchant Taylor's Hall·
The West Screen
Details of Woodwork in Dutch Crown Wainscot
Upper Portion of Pila
Strap work
Impost Bases
Impost Caps
Face of Pilaster
Face of Pilaster
Band Panel
Dado Capping
Carved Panels
The dotted line indicates Section of rail on either side of S Corridor Door &c
Impost Section
Pilaster (Lower Portion)
Cornice
Dado Panelling
Flush Mouldings on Stiles of Dado Panelling
Projection of Impost Caps
Architrave
Dado Plinth
Plan at Springing of Arches
Base of Pilaster
Spandrils of Arches
Section of Panelling above Dado Capping & Cornice above same
Top of Dado Capping
Base of Caryatides
W Hilton Nash Archt

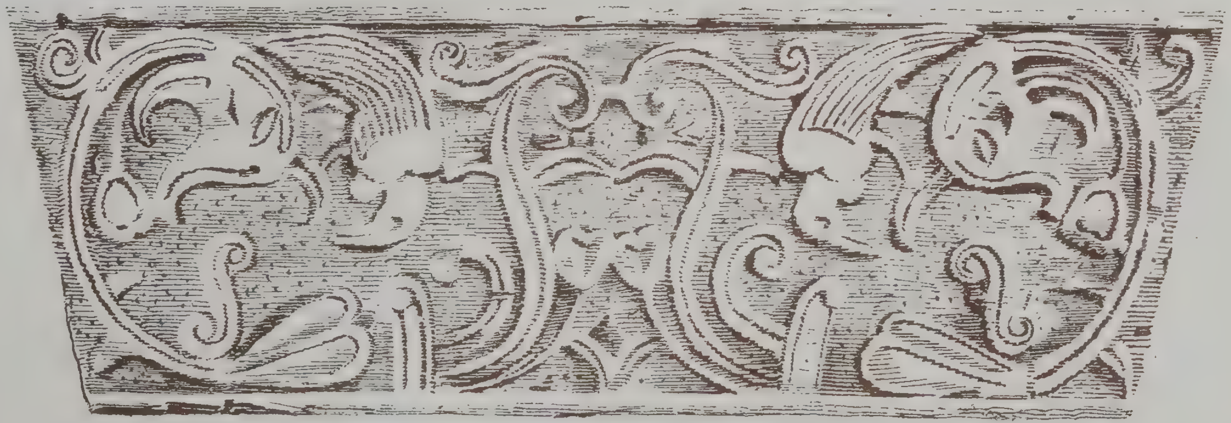
LIBRARY
OF THE
UNIVERSITY OF ILLINOIS



PROPOSED · COUNTRY · CHURCH · NEAR · BRISTOL ·

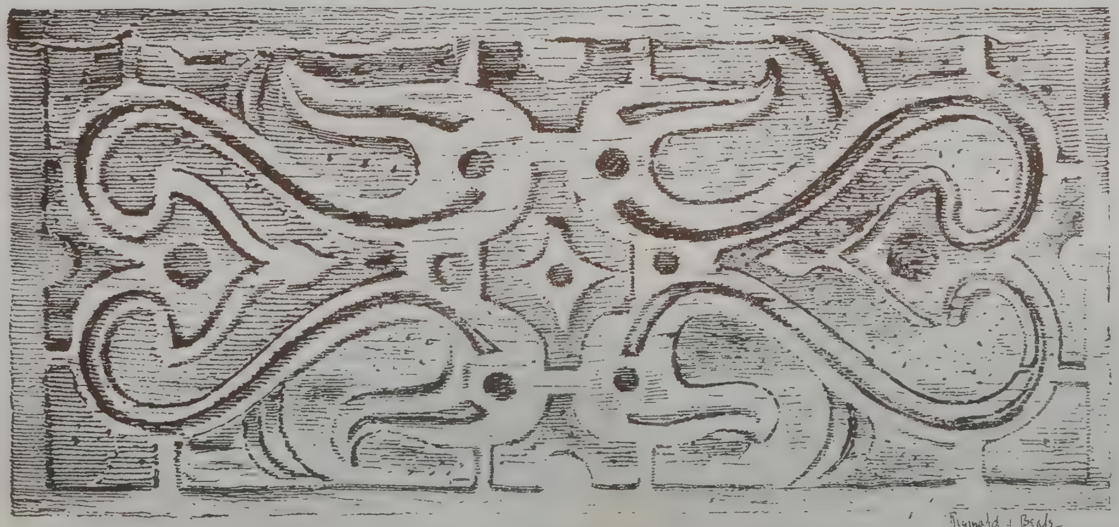
EDWARD · GABRIEL · ARCHT.

"PHOTO-TINT," by James Akerman, 6, Queen Square London, W.C.



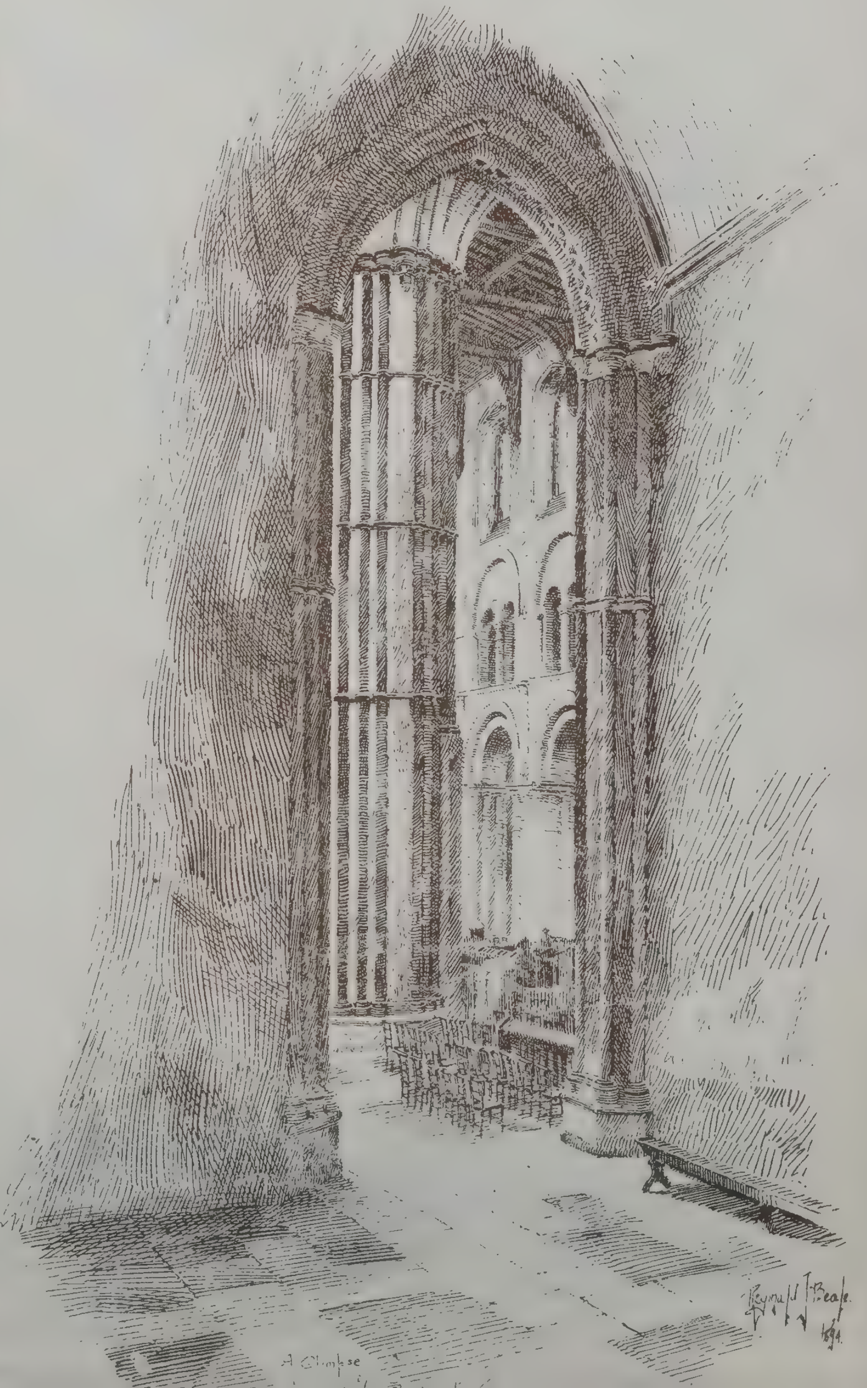
Upper Panel

NATIONAL BRONZE MEDAL



Reginald J Beale

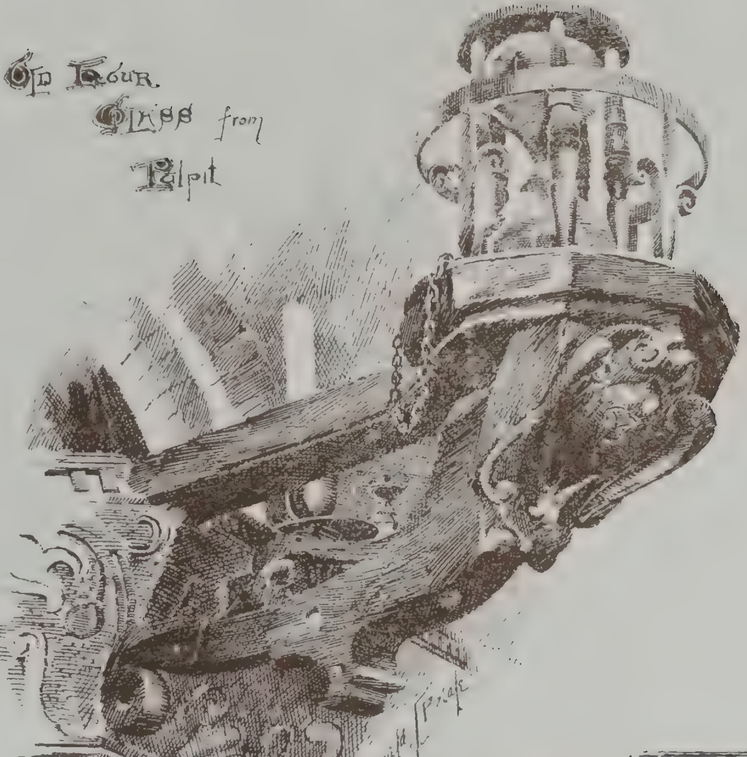
Lower Panel of Pulpit



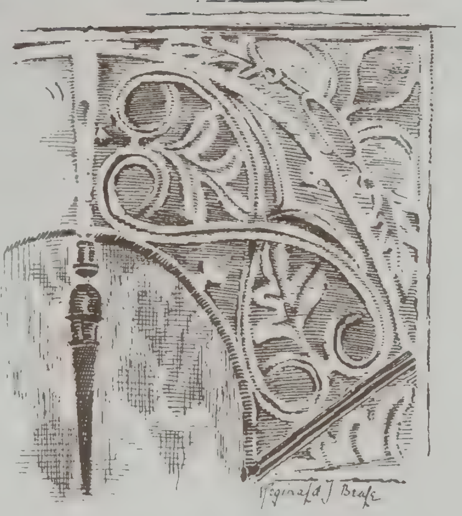
A Glimpse

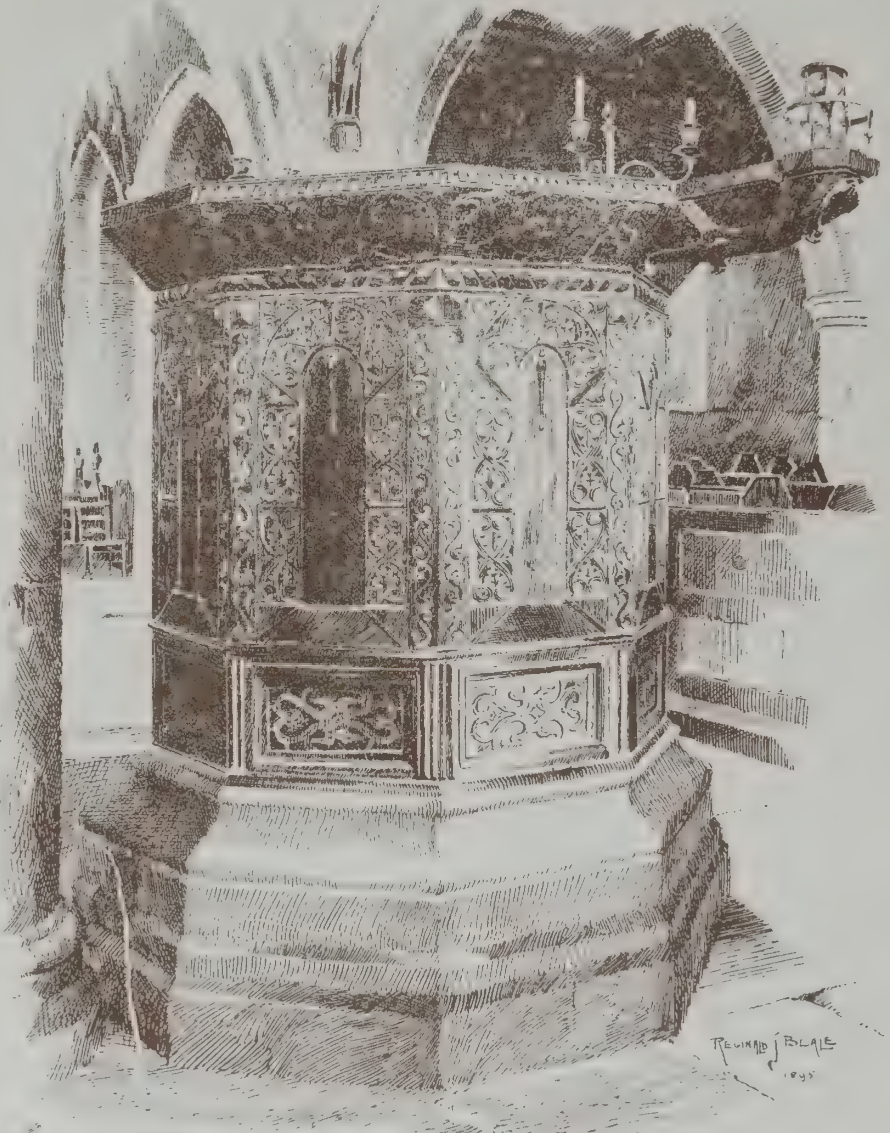
SKETCHES · FROM · KENT · NATIONAL · BRONZE · MEDAL · PRIZE · DRAWINGS · BY · REGINALD J · BEALE ·

Old Hour Glass from Pulpit



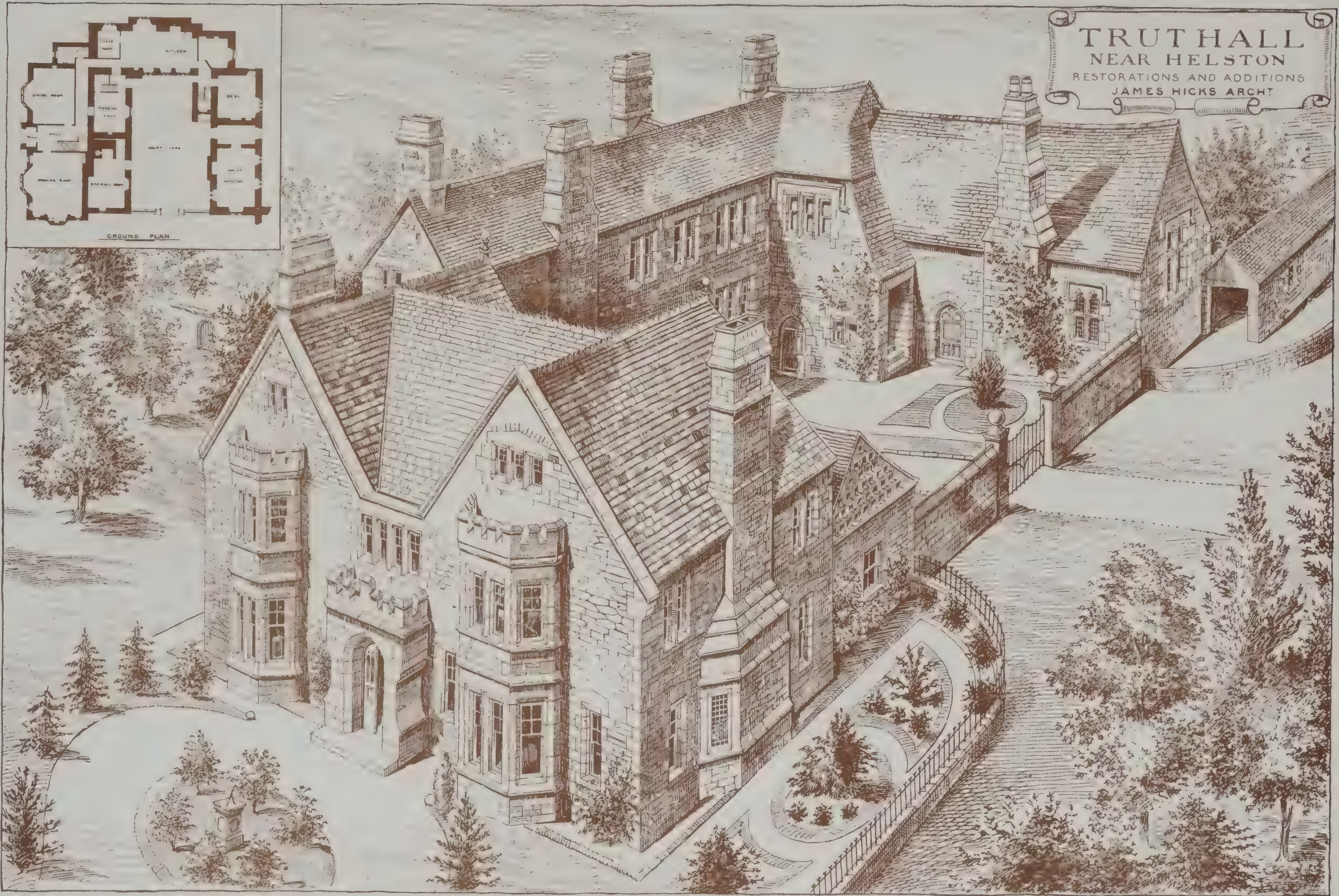
Detail of Middle Panel





Jacobean Pulpit from Cliffe Church

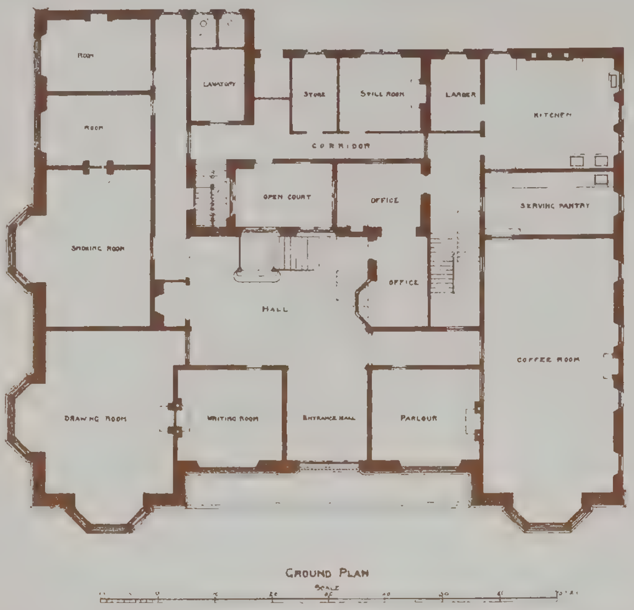
Photo Lithographed & Printed James Akerman, 6 Queen Square W



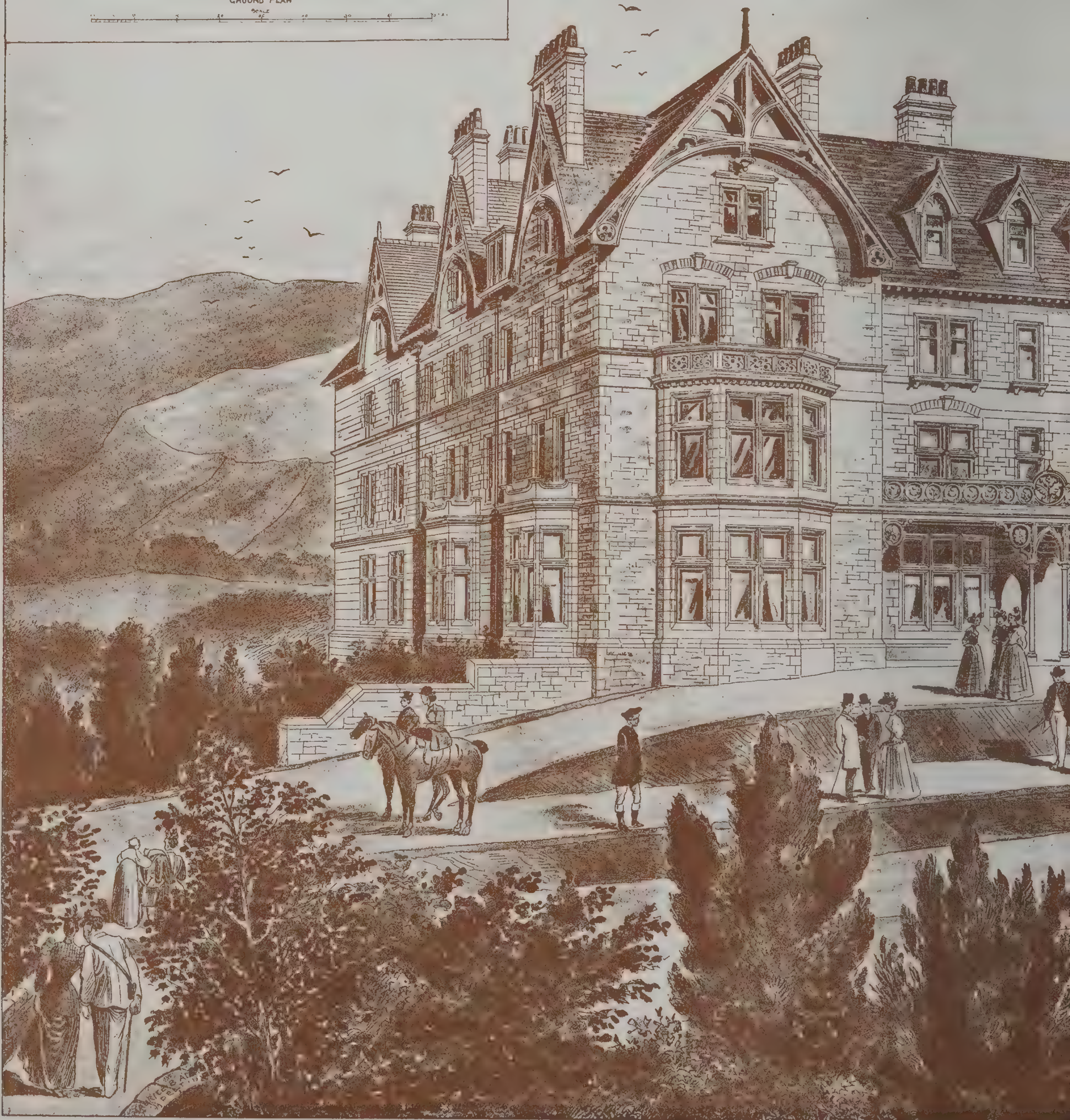
TRUTHALL
NEAR HELSTON
RESTORATIONS AND ADDITIONS
JAMES HICKS ARCHT

Photo-Lithographed & Printed by James Akerman, 6, Queen Square W C

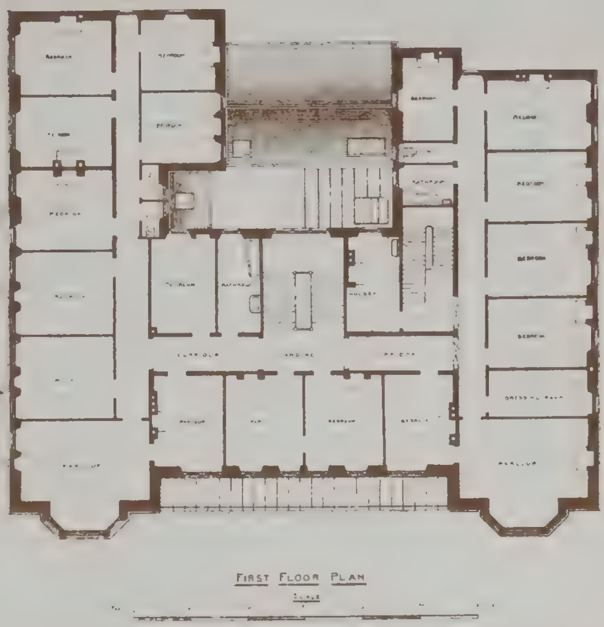
NEW·HOTEL· FORT·WILL

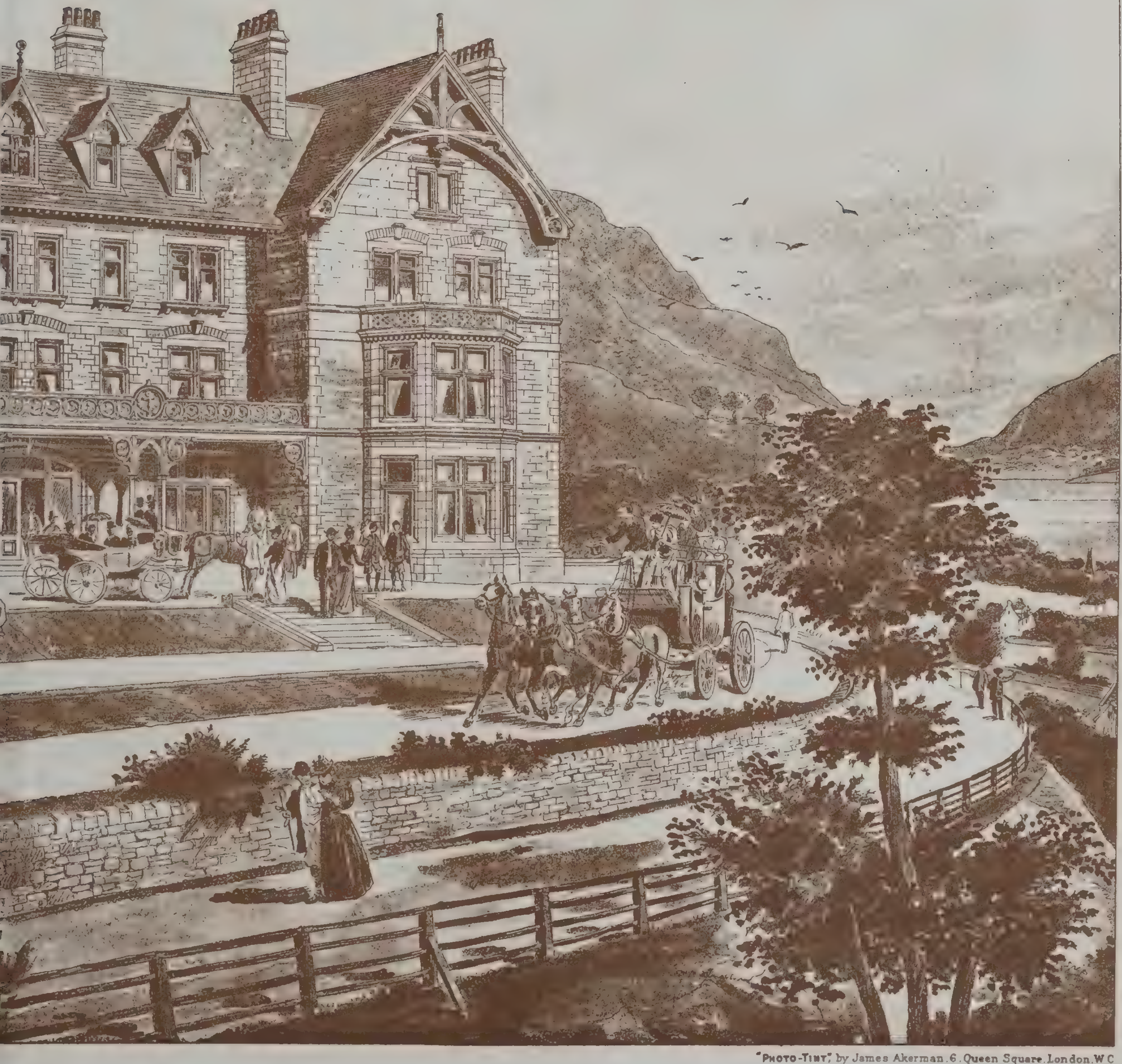


GROUND PLAN

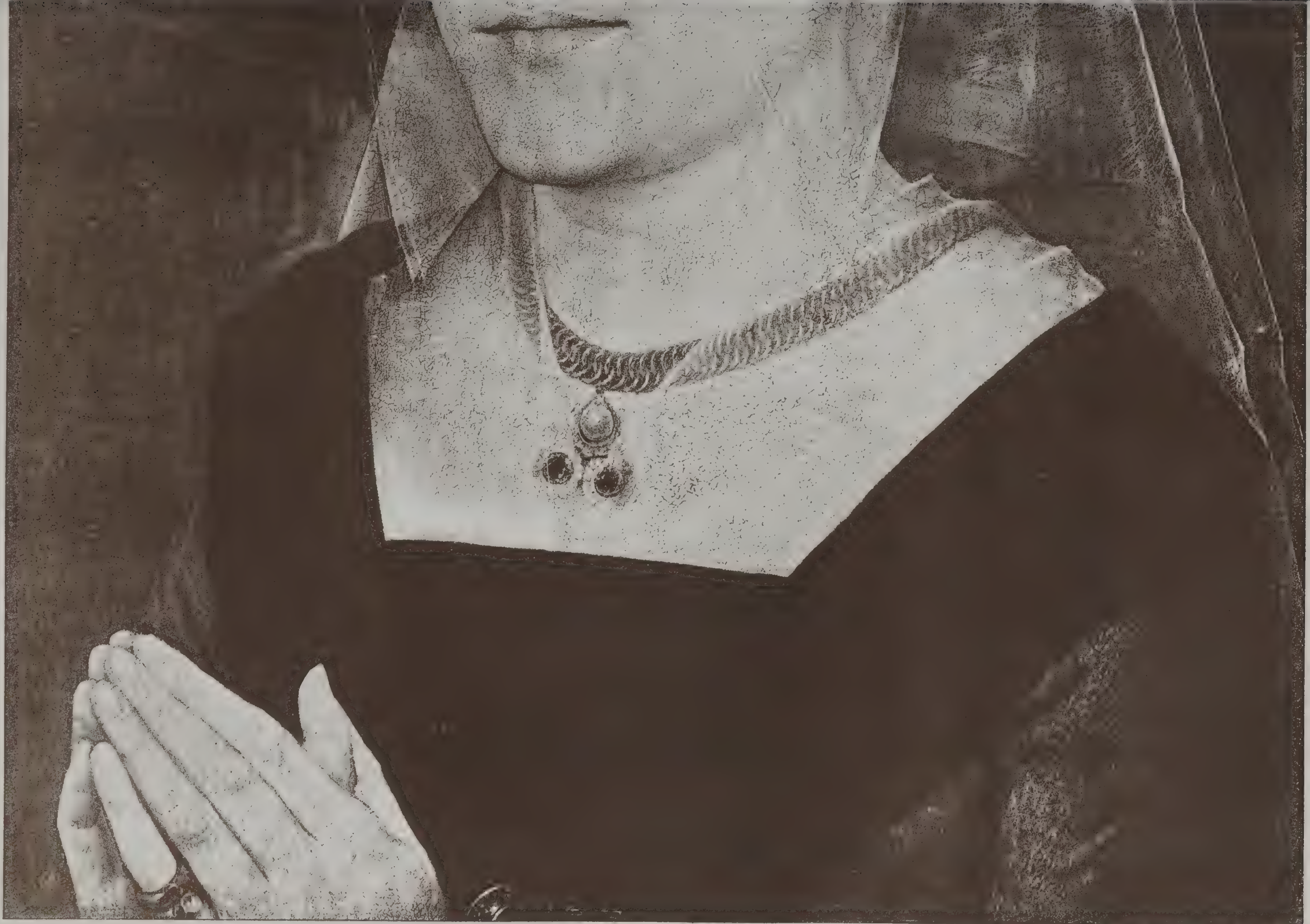


M · N · B   DUNCAN CAMERON · ARCHT.





"PHOTO-TINT," by James Akerman, 6, Queen Square, London, W.C



- PHOTO · BY · FRANZ · HANFSTAENGL.-

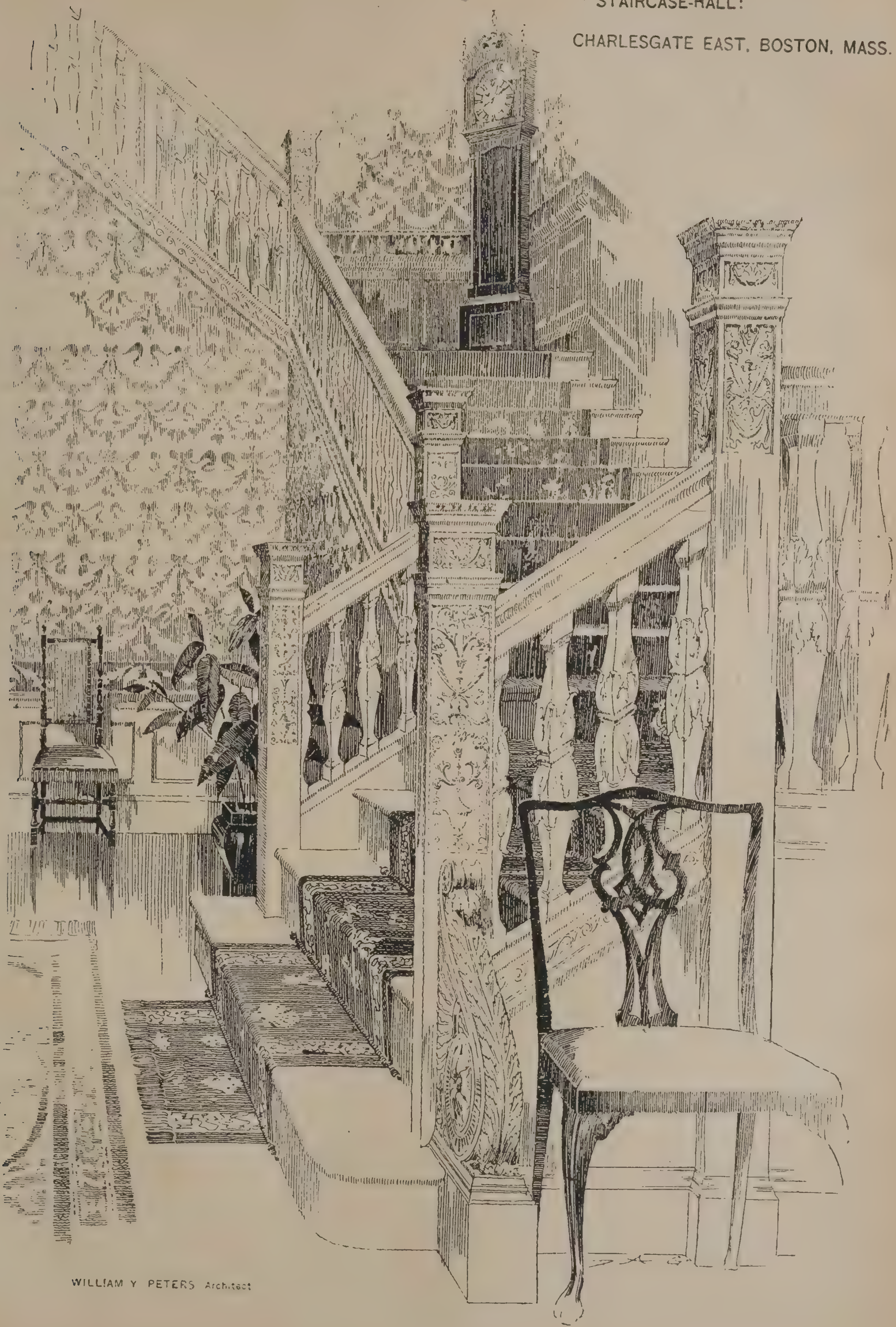
"PHOTO-TINT" by James Akerman 6 Queen Square London W.C.

OLD·MASTERS·ON·THE·CONTINENT·N°26·

BARBARA VAN VLAENDERBERGH (BRUSSELS) BY HANS MEMLING (B. ? D. 1495) FLEMISH SCHOOL.

STAIRCASE-HALL:

CHARLESGATE EAST, BOSTON, MASS.



WILLIAM Y PETERS Architect

Building Intelligence.

Grimsby.—The Wintringham Higher Grade School, at Grimsby, which has just been built and furnished at a cost of £11,808, was formally opened on Friday. The school is situated in Eleanor-street, and is Flemish Renaissance in style. Accommodation is provided for a thousand pupils, and in addition to classrooms and lecture-theatre, there are a swimming-bath and gymnasium, a manual instruction-room for iron and brass-work, fitted up with lathes worked by power, and a chemical laboratory. A dining-room is also provided for pupils coming from a distance. For the girls, there is a large laundry and ironing-room, with drying-closets and other accessories. The work has been carried out from the designs and under the superintendence of Mr. H. C. Scaping, the board's architect. Messrs. Hewins and Goodhand, of Grimsby, were the contractors for the building. The furnishing has been in the hands of Messrs. Illingworth, Ingham, and Co., of Leeds; while Messrs. Reynolds and Branson, of Leeds, supplied the science apparatus. The heating apparatus is by Messrs. King and Co., of Hull.

Salford.—On Saturday the memorial-stones were laid of two new board schools—one in Blackfriars-street and one in Marlborough-road. The school in Blackfriars-street is being built from designs by Mr. Henry Lord, and replaces an older building. It will accommodate 666 children, 290 being infants and 376 older children. The school is being built by Messrs. W. Southern and Sons. The tender for the building amounted to £7,268, and the furnishing will cost about £450. The school is arranged transversely to the length of the site, which stretches from East Stanley-street to Wheathill-street, with its main frontage to Blackfriars-street. For the Marlborough-road school Messrs. Woodhouse and Willoughby are the architects. It is an addition to one built in 1880, and enlarged in 1883. The new building will accommodate 926 children—namely, 450 girls and 476 infants. Each department will have a central hall 60ft. by 30ft., and classrooms will be arranged on three sides of the hall. The building is being erected by Messrs. R. Neill and Sons. The accepted tender amounted to £7,777; the heating and ventilation will cost £450, and the furniture is estimated to cost £625—a total of £8,852.

Selkirk, N.B.—The foundation-stone of a group of new public halls was laid on Saturday on a site in Viewfield-gardens, facing the High-street. The buildings are designed in a phase of Renaissance style, and the principal features of the front elevation in the High-street are the central projecting porch with disengaged Ionic shafts and pilasters; a central compartment slightly projecting, surmounted by a pediment; windows with two and three-light openings, and an open balustrade finishing the façade above the cornice. The side elevations are treated in corresponding style. The building will contain behind a large central hall, capable of seating 1,000 persons, and designed for entertainments. It is fitted with a recessed gallery. It will have a ceiling of elliptical outline 30ft. high. The front building has upon the second floor a smaller hall accommodating 200 persons, and on the third floor a caretaker's house. On the ground floor there is a suite of retiring-rooms and other accessories. The building will be of red sandstone from Moat Quarry, Cumberland, faced with red stone from Hailes Quarry. The cost will be under £6,000. The architect is Mr. Hippolyte J. Blanc, A.R.S.A., Edinburgh, whose design was selected in competition.

◆

The Barry District Council will promote a Bill in Parliament next session applying for powers to secure additional lands on Cadoxton Moors for increased facilities with respect to the public water supply, and also to obtain possession of Cadoxton Common for public purposes.

On Friday, Col. Ducat, an inspector from the Local Government Board, held an inquiry at the Town Hall, Wolverhampton, relative to an application of the corporation for power to borrow £5,000 for extending the electric lighting station. The town clerk explained that the town council had obtained tenders for laying down additional plant and cables for supplying other public thoroughfares with electricity, and the cost was estimated at £5,000. The corporation could not take any more customers nor provide further street lighting without additional plant. There was no opposition.

Engineering Notes.

Budleigh Salterton.—The ceremony of the cutting of the first sod of the proposed railway from Budleigh Salterton to Tipton St. John on the Sidmouth Branch of the London and South-Western Railway will take place on Wednesday next, the 6th inst. The capital to carry out the undertaking is £60,000, with borrowing powers to the extent of £20,000. The new railway, which will be 6½ miles long, begins at one end with a junction of the Sidmouth Branch Railway at Tipton St. John, in the parish of Ottery St. Mary. It passes along the valley of the river Otter, keeping well above flood level. The first station from Tipton will be at Newton Poppleford, and the next at Otterton for the district of East Budleigh. The railway then leaves the valley and turns to the west towards Budleigh Salterton, through a country which will entail some heavy excavations, to the station at the higher part of Salterton, the locale being known as Broad Park. In the construction of the line there are no great engineering difficulties to be surmounted. At Newton Poppleford the line is to be carried over the road by an embankment and bridge, and the road leading from Otterton to East Budleigh will be crossed in a similar manner. The railway will cross the Budleigh Salterton and East Budleigh road on a steel girder bridge. The gradients will be easy until within a short distance of Budleigh Salterton, when there will be a rise of 1 in 50. At the Tipton St. John end plant is being deposited and other preliminary work advanced. The engineer is Mr. William Clarke, of Parliament-street, Westminster, and the contractors are Messrs. Lucas and Aird, who are locally represented by Mr. Grainger.

◆

The Eastbourne Town Council have decided to promote a Bill, in the next session of Parliament, authorising the council to provide an independent supply of water for the town. For some time the water supplied by the Eastbourne Water Company has been very hard and heavily charged with salt. The company will resist at every stage the proposed action of the corporation.

An evidence of the return of confidence in New South Wales is given by the acceptance of Mr. Amos's tender by the Illawarra Harbour and Land Corporation. The contract includes the formation of a line of railway, the construction of harbour works, and the dredging of a channel, and the contract is to be finished by November 20, 1897. The contract price is £200,000.

The Earl of Northbrook has given to the Diocesan Church House, Winchester, a carved oak bookcase, capable of holding over 1,000 volumes. It has been made from undoubted old timber from ancient houses and churches in Winchester. It will be a central ornament in the library at Wolvesey Palace, now reclaimed from semi-ruin, and made fit for the central work of the diocese, of which, at one time, Wolvesey was the local palace, ere its partial destruction in the 18th century. The firm of Messrs. Matthews and Sons supplied the case.

The Urban District Council of Handsworth have applied to the Local Government Board for sanction to the borrowing of £8,000 for defraying part of the cost of erecting a technical school on land already in their possession, and an inquiry has been held by one of the Board's inspectors into the application.

The Wandsworth Technical Institute was opened for classes on October 1. The skating-rink, known as St. George's Hall, in High-street, Wandsworth, has been subdivided by brick walls, surmounted by glazed partitions, so as to provide a chemical laboratory with balance-room, a lecture theatre, physical and mechanical laboratory, a workshop for the bricklayers' and masons' work, and a very large room which provides accommodation for the engineering shops and the carpenters', joiners', and pattern makers' shops. Other classrooms and a drawing-office have been provided in the front building. The alterations have been carried out by Messrs. Parsons, under the direction of Mr. E. W. Mountford, F.R.I.B.A.

All Saints' Church, Norfolk-square, W., which was destroyed by fire in the spring of 1893, has been rebuilt from designs by Mr. Ralph Nevill, F.S.A., and will be reopened to-day (Friday).

The *Parish Councils Gazette* for Oct. 26th gives as a frontispiece an excellent portrait of Mr. Silvanus Trevail, J.P., C.C., vice-president of the Society of Architects, in his official robes as Mayor of Truro.

The Isle of Man Tramways Company have decided to convert their existing horse-line along the Promenade at Douglas into a cable line.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

York Architectural Society.—The annual meeting of this society was held at the Church Institute, York, on Friday night. The president, Mr. H. Perkin, who occupied the chair, was re-elected to office for the ensuing year, and Mr. J. Lane and Mr. A. W. Turner were elected vice-presidents. The other officers were also re-elected, namely:—Hon. treasurer, Mr. N. R. Yeomans; librarian, Mr. W. E. Walker; secretary, Mr. A. B. Burleigh. The committee was reappointed as follows, Mr. J. Ferguson taking the place of Mr. A. P. Skeat:—Messrs. G. Benson, A. H. Claypoole, J. T. Pegge, and A. Hirst. The society's prize of three guineas for the best design for a "Village Club-house," on an isolated site—cost of the building not to exceed £1,000 at 6d. per foot cube—was awarded to Mr. J. J. Kempley, pupil of Mr. W. G. Penty.

CHIPS.

The new additions to the infectious hospital, Northampton, have been warmed and ventilated by means of Shorland's double-fronted patent Manchester stoves, with descending smoke-flues, and patent Manchester grates, those previously supplied having proved very satisfactory.

Works of water supply, carried out for the Pickering Rural District Council at Levisham, were inaugurated last week.

A stained-glass window containing female figures which represent the cardinal virtues of Faith, Hope, and Charity has been placed in Cowick Church, Snaith, by Mr. B. Shaw, of Ferriby, to the memory of members of his family. The work has been designed and executed by Messrs. Powell Brothers, of Park-square, Leeds.

In an action for libel tried on Monday and Tuesday before Mr. Justice Wright and a common jury, Mr. John Cropley, a clerk of works, now employed on the block of buildings in course of erection in St. Paul's-churchyard, living at Walthamstow, recovered £50 damages from the editor and proprietors of a Walthamstow newspaper, in which, for political purposes, charges had been made reflecting on the character of plaintiff, who was a member of the district council.

At Tuesday's meeting of the London County Council, the General Purposes Committee was instructed to report upon the use of hoardings round the Council's works for advertising purposes. A proposal by Mr. L. Holland, M.P., to invite tenders for work only from firms having their works in the County of London was negatived by 68 against 26.

The first day's sale of the Liberator properties at Coventry Park, Streatham, took place on Tuesday, in the Great Hall at Winchester House, Old Broad-street, by Mr. Douglas Young, all being sold with the exception of three houses. The total sum realised was £28,070. There was a very large attendance of buyers, and the competition was keen.

Lord Dufferin, as Lord Warden of the Cinque Ports, has consented to sit for his portrait to an eminent artist. The picture will be placed in the ancient Maison Dieu Hall, at Dover, which contains portraits of Pitt, Wellington, and other distinguished Lord Wardens of the Cinque Ports.

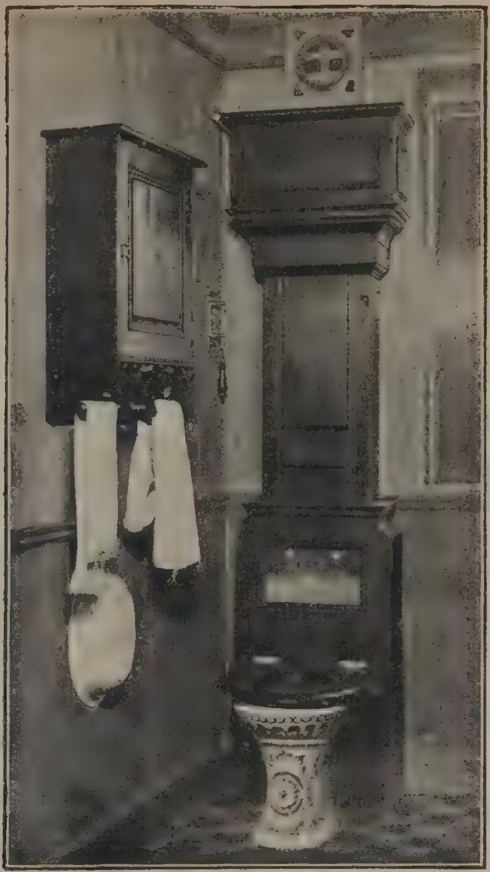
The Special Board for Classics at Cambridge University, with a view to encouraging archæological research in Hellenic lands, recommend that an annual grant of £100 for three years be made from the Worth Fund to the managing committee of the British School at Athens.

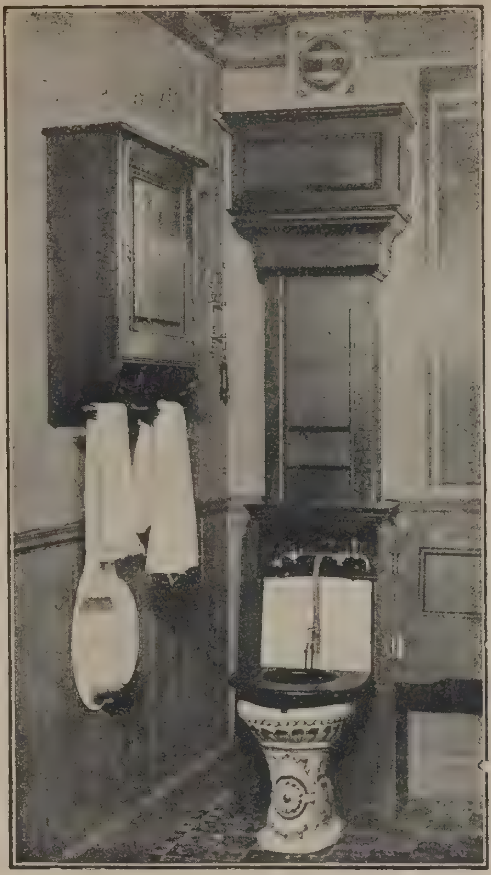
The new asylum now in course of erection at Newport, Isle of Wight, will be ventilated on the Boyle system, the latest form of the patent self-acting air-pump ventilator being adopted for the extraction of the vitiated air.

Aber-y-Nant, Llanidloes, lately bought by Dr. Morris, is being enlarged and renovated, having consulting and waiting-room, bedrooms, and surgeries added to the west wing. The builder is Mr. J. J. Meredith, Llanidloes, and the architect is Mr. T. G. Williams, M.S.A., 3, Cable-street, Liverpool.

The urban distant council of Barry, Glam., have adopted plans by Mr. J. C. Pardoe, their surveyor, for proposed permanent abattoirs and lairage, estimated to cost £6,000, to be built on a site between Court-road and Barry-road, Cadoxton.

The premises formerly known as the Knapp Inn and some adjacent cottages at Bradpole, Dorset, have been pulled down and replaced by a large residence. Mr. C. V. Johnson was the architect, Messrs. Thomas Stone and R. B. Williams were the builders, and the oak mantelpiece was carved by Messrs. Harry Hems and Sons, of Exeter. A dinner was given to the workmen engaged on the works one evening last week.





THE "SCIENTIA" WATER-CLOSET APPARATUS.

WE give two illustrations of a new w.c. apparatus which has been conceived by a well-known North of England architect of much experience in sanitary matters. The outstanding feature of the closet is that it combines within narrow limits several important purposes not hitherto connected with a w.c., and these additions assist in making the ventilation of the closet absolutely perfect. By the addition of a tap-chamber with hot and cold connections, the apparatus provides an excellent housemaid's draw-water and sink, while, at the same time, the existence of the hot-water pipe in the shaft of the apparatus creates a gentle and constant current, which at once removes all odours from the point where they are generated to outside the walls of the building. Advantage of these taps has been taken to introduce a most convenient form of fountain bath or hip bath. One of our illustrations shows this connection; the taps being under complete control, the temperature may be varied at the wish of the user, while the water is at once run off through the medium of the w.c. basin on which the bath sits. An enamelled iron basin is also provided for the same seat; this may be used as a wash-hand basin or as a bidet. Those who have the misfortune to suffer from certain complaints cannot fail to at once perceive the advantage of these two important additions at the particular point where they are so valuable, and many will consider that this handy little bath has some advantages over the cumbrous and costly sitz bath. Two cisterns are provided, one for the closet and another for the urinal, which is also an important feature. The urinal, besides having the benefit of the continuous ventilating current, is automatically flushed at each time of using. Were this arrangement adopted in even our most recently-constructed public urinals, a great and unnecessary waste of water would be avoided. A jet of gas is introduced into the tap chamber. This is sufficient to light the apartment, and in the few cases where the hot water may not be connected, the heat of the gas will create the ventilating current.

Owing to its independent system of lighting and ventilation, the "Scientia" is peculiarly suited for positions where the ordinary w.c. would be absolutely dangerous, and by its adoption in such cases much expense in structural alterations in our commercial and other buildings may be avoided. The "Scientia" in a most important point differs from all other closets—viz., that *by no chance* can any smell enter the house, as every particle of air within the closet basin is by the ventilating current drawn outside.

Our illustrations are from photographs of a closet fitted up at the works of the Burgh Cabinet Works Co., Easter-road, Edinburgh. This firm have made water-closet fittings a particular branch of their business, and along with the author, through various experiments, have now arrived at a definite and workable apparatus scientifically perfect.

In order to test the apparatus in the most crucial manner, it was determined to make the window to the w.c. chamber *a fixture*, so that it *could not be opened* under any pretext. Such an arrangement, we need hardly point out, would have been simply intolerable with an ordinary w.c.; but with this new form of ventilating w.c. it is found, after several months of constant daily use by a number of persons, that there is not the slightest trace of smell from the closet, though no air reaches it except through the doorway.

Where economy of space is a matter of moment, its compactness ought to commend it, as it embraces the following features in one apparatus:—1st, A water-closet; 2, an automatic suction ventilator; 3rd, a concealed urinal of the regulation height for adults; 4th, a lavatory with hot and cold supply; 5th, a housemaid's "draw-water," with hot and cold taps; 6th, a capacious slop sink where the hot and cold water provides for the proper cleansing of all vessels; 7th, a fountain bath or rising douch, in which the temperature of the water may be regulated at the will of the user.

THE APPRENTICE SYSTEM.

THE report on apprenticeship in the London building trades, which is the result of the recent trade conferences inaugurated by the Technical Education Board, gives many interesting particulars relating to the apprenticeship system in the London building trades. The Board secured the services of Mr. Oldman, the secretary of the National Association for the Promotion of Technical and Secondary Education, and his report has been published. It summarises the opinions of the employers of labour and the trade organisations on the question. We shall not attempt here to give a *résumé* of the whole report, but confine our attention to a few of the leading points of general interest. Out of ninety firms addressed, less than half replied, and these include general builders, a few joiners and masons, plasterers, plumbers, and smiths, and one painter and decorator. It appears that out of a total of 12,000 men, including labourers, in the building trades of London, a very small fraction—only 80—have been found to be apprentices. "Four firms," it is stated, "with a total staff of about 1,000 had not a single apprentice. It may be asked where the bulk of the young men come from, and how they are taught? The report attributes the dearth of apprentices to the engrossing nature of London businesses on their commercial side, to the extensive use of machinery, to the necessity of utilising all available space, and to the reluctance of employers to undertake moral responsibilities which they feel unable to discharge. The difficulty of keeping under disciplinary control youths who may disorganise the whole shop, or who become dissatisfied with the scale of wages, and endeavour to obtain the full pay elsewhere, is the main cause. In such instances the employer has no remedy except a legal one against such incorrigible lads; his business suffers. Those boys bound through the various organisations or City companies and boards of guardians give the least annoyance, and it is suggested that it would be well if all apprentices were subject to the control of a board acting as an intermediary between employers and parents. Learners have, it appears, equal advantages with apprentices, and employers in some cases prefer them, as they can be dismissed for misconduct. Both classes receive the same rate of payment, with annual additions. Referring to the views of employers as to granting time for apprentices and learners to attend technical classes, some firms make concessions for this purpose, one paying class fees and granting an afternoon weekly, others give permission to leave one hour earlier, but, as a rule, the full time is worked, though there are firms who encourage their employés to take advantage of these evening classes. On the whole, it is stated there exists a deep-rooted belief in apprenticeship as being the best means by which a boy can learn his trade. The employers generally urge that "classes should be restricted to persons actually engaged in the trade," and "that great care should be exercised to secure as instructors those who adopt such methods of teaching as will not fail to supplement the workshop training."

In referring to the trades, there is a strong feeling among workmen against "overlapping." Thus roof tiling is now often done by slaters and the bricklayers and tilers object to this.

Again, it is mentioned that the title of "carpenter and joiner" has lost its old meaning. Under the new system the carpenter is only regarded as being capable of doing the rougher kinds of work—such as flooring, joisting, roofing, centres, &c. On the contrary, the joiner is a more skilled workman, but is threatened by machinery, and machine-made joinery has a tendency to "transform the joiner into a wood fitter." As to masons, also, it is asserted that thoroughly skilled masons are not so often met with as formerly, and those capable of erecting a winding stone staircase are very scarce. In the trades of painters and decorators, plasterers, plumbers, a similar general deterioration or change appears to have taken place; very few painters understand the technical details of their trade. Masonry proper is not taught, and the classes that are formed—as those of the Science and Art Department and the City and Guilds of London Institute—are devoted chiefly to geometry and building construction, and the masonry classes are said to be monopolised by bricklayers, and taught by them. As to plumbers, while many value the certificate of the Plumbers' Company, others attach very little importance to it, and say that "there are many competent men who would be unable to pass the test," and that the certificate is no guarantee for good workmanship. The general opinion as to technical schools and classes is that they do not form a satisfactory substitute for apprenticeship, that there is no reality about the class. A distinction is drawn between a "decorative artist" and a "decorator." The former should be a competent draughtsman, having a knowledge of the human form and of design, conventional and natural ornament, the application of ornament and colour; and the latter should be able to execute any design made by the decorative artist. Few men are capable of making decorative artists, one in 100 probably, although the other 99 may make good decorators. The object of the technical school should be to teach how to become good decorators, in which case workshop practice and freehand and geometrical drawing should be taught. Into the suggestions offered by employers we cannot now enter; but we have endeavoured to show the general drift of the opinions entertained, and which have been summarised in the report to which we refer.

NOTES FROM PARIS.

THE question of supplying Paris with amply sufficient water for domestic and industrial purposes is recognised as being one of the greatest importance, and after the many inconveniences which Parisians have been obliged to submit to during the recent exceptionally dry weather, it is urgently desired that some decision be speedily come to regarding this all-important question.

When Belgrand, 30 years ago, proposed a scheme of supplying Paris with seventy million gallons of water per day, the town and suburbs counted a little over a million and a half inhabitants only; to-day the population is more than doubled. The annual increase of inhabitants in the town and suburbs averaging fifty or sixty thousand, at the commencement of the 20th century the total population will be at least four millions, or one-tenth of the population of France. The daily supply of water should, therefore, average 186 million gallons in order to realise the calculations of Belgrand, and at least an equal quantity for public uses, cleansing of the streets and drains. The actual deficit for private and public purposes is over 200 million gallons, and it seems scarcely possible to reduce this deficit in any reasonable proportion by supplies of water from the district surrounding Paris, for the supply derived from the basin of the Seine is constantly diminishing, the quantity not reaching above 44 million gallons in summer time, the extra supply from the Seine, the Marne, and the Ourcq being unwholesome, besides being considerably diminished in late years by reason of the numerous extra supplies drawn off for the use of the manufactories above Paris. It is, therefore, necessary to devise a scheme for supplying the town with a considerable quantity of water derived from sources at some distance from Paris, since the greatest supply which could be obtained from the neighbourhood would be far from sufficient. The scheme originated by MM. Badois and Duvillard, civil engineers, for obtaining an ample supply of water for all purposes from the French waters of Lake Leman, on the Swiss frontier, is greatly in favour, and although the work of canalisation would be difficult, long, and costly, yet it is probable that this scheme will be shortly adopted, as being the only one likely to afford an ample supply of water necessary to the town and environs of Paris. M. Badois was chief engineer of the working section of the Suez Canal, and M. Duvillard chief engineer of the Creusot works, so it is considered that the scheme and its execution is in very good hands. Lake Leman is at an altitude of 1,200ft. above the sea level, and would, therefore, permit the gradient of 2ft. 8in. per mile, allowing the water to arrive at Paris at an elevation sufficient to allow the proper supply of the town and environs. The scheme estimates the supply at 5,280gal. per second as an average, and 6,600gal. per second as a maximum in summer time, or from 440 million to 550 million gallons per day taken from the French side of the lake at about 1,300ft. distance from the shore, and at a depth of 130ft., at a point where the water is free from all impurities of the shore or surface, and remains at an almost constant temperature of 8° Centigrade. Lake Leman, supplied in greater part by the melting snow from the Alpine glaciers, has a superficies of about 148,000 acres, and a depth of over 1,000ft., containing, therefore, over 20 million of million gallons. The greater part of this water is derived from a French watershed of a length of about 32 miles, the supply feeding the lake varying from 22,000gal. per second in winter to 330,000gal. per second in summer, the supply, of course, being much greater in summer, owing to the melting of the snow on the watershed. The frontier line between France and Switzerland crosses the lake at about its middle longitudinally. Each country has, therefore, the property of the water from the surface to the bottom on its own side of the frontier line. France has, therefore, the right of using the water of her own property, on condition not to prejudice the owners of property on the shores of the lake. It is expected that no difficulties will arise regarding this question, and proper arrangements will be made to avoid injuring the hydraulic mills and power stations established on the shore of the lake at Geneva. As regards the navigation of the river Rhone, the scheme should in no wise prejudice this, for the level of this river is lowest during winter, and at this time the navigation is almost suspended, owing to the ice. In the summer the increase of water from the Alps is so great as to fully compensate for that taken from the lake for the supply of Paris. The aqueduct will be on French soil from its outset, its point of departure being near Thonon (Haute Savoie), the distance as far as Paris being as near as possible 330 miles, passing near Mâcon, Lyons, Nevers, Fontainebleau, Sceaux, and Versailles. The town of Lyons, at present very insufficiently supplied with water, being at only 13 miles from the proposed route of the aqueduct, will be able to take advantage of the supply, which would reach the town at an altitude of 300ft. above the sea quays. The canals along the route will also be fed with extra supplies, most acceptable during the dry season. Near Paris a reservoir to contain about 180 million gallons would be constructed at an altitude sufficient to afford the proper supply of Paris and neighbourhood.

The cost of the scheme is estimated at sixteen millions sterling, with an addition of four millions for interest on capital during the construction and for contingencies, another two millions being added to avoid all surprises which might occur. The necessary credit will, therefore, be twenty-two millions sterling, the estimated sale of water providing a revenue of 8 per cent. on the capital. If, however, the scheme is financed by the town of Paris itself, the economy to be realised would be great, and a larger profit made. The water of the Lake Leman at a certain depth has been found by analysis to be of great purity, and eminently suitable for drinking purposes. Five or six years would be necessary for the construction of the work. If, therefore, the scheme is at once voted, it is hoped that for the great fête of 1900 Paris will have a supply of water ample for its own uses and those of the many visitors expected during that eventful year.

The "Savoyarde," the immense bell destined for the Church of the Sacré Cœur, has just arrived at Paris, and has with some difficulty been hauled up the steep slope of Montmartre, and placed under a temporary campanile. The conveyance from the foundry of Annecy-le-Vieux (Haute Savoie) as far as Paris was not a simple matter, for the Savoyarde is 13ft. high, with a diameter of 10ft., the thickness at its base being 9in. It weighs 27 tons, the tongue alone weighing nearly 17cwt. Its cost was £2,600, the funds having been collected entirely in Savoie. The dedication is to St. François de Sales. On the outside of the bell are graven the names of the principal donors, the coat-of-arms of the town of Paris, and portraits of a number of saints. The ornamentation is in the Empire style. The metal of this bell is formed of an alloy of 78 parts copper to 22 of tin. It appears that the casting was very successful, and that the tone of the bell is exceedingly pure. The sound vibrations last seven minutes, and may be heard at 25 miles distance. The Savoyarde is the largest bell in France.

The Académie des Beaux-Arts has just elected M. Nenot, architect of the new Sorbonne, to a chair in the Section of Architecture, left vacant by the death of M. Ancelet. The honour was warmly disputed by four candidates, well known as distinguished architects, MM. Nenot, Guadet, Sédille, and Dutert. Despite the first series of votes in favour of M. Guadet, the final result was carried off by M. Nenot by a majority of three votes. The new member of the Academy is young for the distinguished position which has been conferred upon him, being only 42 years of age. Entering the Ecole des Beaux-Arts at the age of 17, his studies and talent enabled him to carry off the Prix de Rome in 1877. In 1882 M. Nenot obtained the first prize in the competition opened by the Italian Government for a monument to Victor Emanuel; but the monument remained unexecuted owing, it is said, to the jealousy of the Italian Government against a Frenchman carrying off the first prize. But several months later this young architect, at the age of 29, obtained the first prize in the competition for the reconstruction of the Sorbonne, and was intrusted with the work of executing what is now one of the finest monuments at Paris. Unfortunately a thoughtless youthful exploit at the commencement of his career was nearly the cause of spoiling his future, and was for a long time the source of much trouble to the rising architect. Returning from a hunting party, he thoughtlessly discharged his gun at an old cross on the border of the wood; an eye-witness accusing him of sacrilege was the cause of a condemnation to two months' imprisonment, his discharge from the army, and the loss of his military medal which he had won by exceptional deeds during the siege of Paris. This condemnation gave rise to much noise, and the Government, admitting it to be excessive, at length reduced the punishment to a simple fine; but the fact of the condemnation weighed heavy, and was for a long time the source of much disagreeableness and difficulty with the various administrations of fine arts. The young architect's courage and talent, however, at length won him great favour, and the Government decided to decorate him; but the condemnation of the Tribunal of Chartres remained an obstacle to this honour, the military rehabilitation not having been made. However, in 1885 a special order was made for rehabilitation, and M. Nenot was decorated with the Legion d'Honneur.

The Gobelins Manufactory has just completed the third of the large tapestry panels representing Literature, Science, and Art in antiquity, middle ages, modern times, destined for the decoration of the ante-chamber of the National Library in the Rue Richelieu. The twelve panels of the "mois grotesque," after the drawings of Ehmann, are also nearing completion. These panels are destined for the Sorbonne, and will figure at the coming Salons.

An interesting find has been made in the Cathedral of Angers—the discovery of the tomb of King René and his wife, Isabelle of Lorraine. The vault was found during some repairs being made to the pavement of the nave. The leaden coffins contain the bones of the once august couple, and through an opening in one of them may be seen the crown and sceptre on either side of the body.

The town of Paris has just inaugurated a bathing establishment for the use of communal school children, the supply of water for which is obtained from a rather novel source. The warm water is furnished from an artesian well 2,350ft. deep, supplying 2,500 gallons per hour at a temperature varying between 27° and 30° Centigrade. The baths are about 500ft. long by 130ft. broad, including 250 cabins, drying and douche rooms.

The work of installing the system of drainage *tout à l'egout* at Marseilles is being rapidly pushed forward; but it is feared that when ready the water supply of the town will not be sufficient to afford the water necessary for the proper flushing of the drains and sewers. A scheme of further water supply is being urgently considered, and it is to be hoped that the work will be speedily executed, for the apparent want of forethought concerning sufficient water supply for flushing purposes when arranging the *tout à l'egout* system has done much harm to the cause of this method of sanitation. The lack of sufficient water for the necessary cleansing of the small proportion of drainage already executed at Paris has turned many against this system, owing to the evident inconveniences, which would not have declared themselves if the supply of water for the sewers had at the outset been sufficient.

The Exposition of Work continues to be a success as regards the daily concerts. A new and somewhat tardy addition to the building section of exhibits is being arranged in the upper galleries. This may possibly prove more interesting than the existing portion. A rather novel idea in the new section is the exhibition by a well-known architect of the work done by an architect for the construction of a large dwelling-house, consisting of a large wall-surface covered with the preliminary sketches, small and large scale drawings, details, working drawings, &c., actually done for the work of building an existing immeuble. The public will, therefore, possibly for the first time, have an opportunity of realising the large amount of work done by an architect in the construction of an ordinary dwelling-house.

English admirers of the celebrated and regretted Viollet-le-Duc will be pleased to learn that a very fine edition of the unpublished drawings of the master is being prepared under the patronage of the Administration of Beaux Arts. Those who have seen exhibited at the Trocadero Museum the numerous sketches and drawings of this fervent admirer of the architecture of the Middle Ages have, without doubt, longed for a collection of copies of the most original and interesting. Thanks to the zeal of the well-known architect, M. de Baudot, and M. Roussel (secretary of the Trocadero Museum), a series of perfect reproductions have been made of some of the most interesting of the drawings found in the portfolios left by Viollet-le-Duc. The greater portion of these reproductions consists of measured sketches, compositions destined for the restoration of Notre Dame, of the Château de Pierrefonds, the Cathedral of Clermont, and the Church of Saint Denis. M. de Baudot joins a biographical notice on the life and work of the late celebrated architect.

An interesting, because novel, competition is opened by the well-known daily paper, the *Figaro*, for a new building contiguous to the existing offices with their original façade on the Rue Drouot. The requirements of the proposed building consist of the usual printing offices, administration offices, libraries, and all the dependencies necessary to the business establishment of an important paper. The chief feature of the ground-floor plan is, however, to be the Salle de Dépêches—a now greatly necessary and much appreciated addition to the public portion of the offices of every Paris daily of any importance. This public hall for the exhibition of current news, telegrams, illustrated papers from all countries, actualities, photographs of public men, and the exhibition or sale of interesting novelties, is daily becoming of more and more importance. A dozen designs by well-known Parisian architects have been sent in for this competition, and in each of them the public hall has evidently received special attention, arranged as a well-lighted, spacious, and elegantly-decorated lounging salon, easily and largely communicating with the street, and offering a bright invitation to the passer-by who has a little time to spare, and who wishes to learn the current news, or look at the illustrated journals. The premiums for this competition are £200, £120, and £80, for first, second, and third respectively.

The committee of the Exposition of 1900 is at present arranging the programme of the competition for the two important palaces to be built in the Champs Elysées, on the site of the shortly to be demolished Palais de l'Industrie. The presidents of the Society of French Artists, the National Society of Fine Arts, and the Society of Architects are invited to take part in the meetings of this committee. The programme will be made public as soon as it has received the sanction of the Paris Municipal Council.

A sum of £400 is being voted for the purpose of verifying the assertions of the authors of the various schemes now proposed for the purpose of supplying Paris with an ample quantity of water for domestic purposes. Amongst these schemes is one proposed by Baron Tyndal—a Dutch *savant*—which is extremely interesting as regards the method of purifying water of a doubtful character, such as the Seine water, which the inventor proposes to sterilise and make fit for drinking purposes. The system, briefly, consists in sterilising the most contaminated water by means of a powerful current of electrified air—in other words, pure ozone. The polluted water from the Seine, on which conclusive experiments have been tried, becomes, after the passage of the ozone electrified by a current of from 10,000 to 30,000 volts, of a perfect purity, and, according to the assertions of Doctors Nocard and Roux, perfectly free from any trace of microbes or impurities, and in every way fit for drinking purposes. It will be the duty of the examining committee to find out whether this system may be applied with an equal effect to very large quantities of water. At present the experiments, made in the galleries of the Champ de Mars, have been confined to reservoirs containing about 500 gallons only.

Paris, Oct. 19. ARTHUR VYE PARMINTER.

CHIPS.

The Great Western Railway Company are inviting tenders for the construction of a branch railway in South Devon, from Yealmpton to Plymstock.

A golfers' hotel is about to be built at Luccombe, near Bonchurch, Isle of Wight. The building, which will cost about £17,000, including the suite of Turkish baths, will occupy a site of 40 acres, which has been laid as an 18in. hole golf-link.

At a meeting, on Friday, of the Records Committee of the Cardiff Town Council, reports were received as to the progress of the work of Mr. J. Hobson Matthews as borough archivist. It was considered desirable that Mr. Matthews should bring the collection of materials to a close with the end of the present month in view of an authorisation from the council for the preparation of a full report.

The Marquis of Londonderry on Saturday presented to Colonel J. W. Cameron, of West Hartlepool, a portrait of himself, painted by Mr. A. S. Cope. Colonel Cameron has asked the town council to accept the portrait, and to hang it in the council chamber.

At the annual meeting of Greenock Dean of Guild Court, Dean Watson reported that the value of new buildings, additions, and alterations to buildings in town amounted in value to £21,285, as against £33,792 in 1894, and £54,170 in 1893. Amongst the buildings at present in course of erection in town were three churches.

The interesting parish church of Ewerby, near Sleaford, has just been restored at the expense of the Earl and Countess of Winchilsea. Among the interior enrichments are a new oak reredos, brass eagle lectern, full set of altar frontals and hangings, with dossal and brass lamp standards for the sanctuary. All the above fittings have been obtained from Messrs. Jones and Willis, of London and Birmingham.

An extensive addition, costing upwards of £7,000, is being made to the Devon and Exeter Hospital, from the designs and under the superintendence of Mr. Cole, of Exeter. The contract has been let to Messrs. Tree and Bolley. The floors are to be fireproof, on the Mark Fawcett system.

On October 2 the new buildings of the Putney School of Art were opened by Sir Arthur Arnold. This school was established about eleven years ago, and, until the present month, has been accommodated in two rooms above the parish offices. The treasurer of the school, Mr. W. J. Lancaster, has purchased a new site, having erected the school now opened wholly at his own expense, and has leased the premises to the committee at a very low rent. The school comprises on the ground floor an elementary room, measuring 48ft. by 36ft., which can be divided by curtains into three rooms, a modelling room, a room for the headmaster, a needlework room, porter's room, cloak-rooms, &c.; on the first floor an antique-room and life-room, divided by a sliding partition, and a wood-carving room. In the basement are caretaker's premises and the heating-chamber. The school has been erected by Messrs. Holloway Bros. to designs prepared by Mr. Thos. W. Willis.

Park-street Congregational Chapel, Hatfield, was reopened last week after renovation and improvements, carried out by Mr. F. Dunham, of Hatfield.

Good progress is being made with the erection of the exhibition buildings at Cardiff, the electric light being employed so that the work can be pushed forward at night.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to THE STRAND NEWSPAPER COMPANY, LIMITED.

TERMS OF SUBSCRIPTION.

One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India, £1 6s. 0d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front-page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No Front-page or Paragraph Advertisement inserted for less than 5s.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page Advertisements and alterations in serial advertisements must reach the office by Tuesday morning to secure insertion.

SITUATIONS.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is ONE SHILLING FOR TWENTY-FOUR WORDS, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., LI., LIII., LIV., LVIII., LIX., LX., LXI., LXII., LXIII., LXIV., and LXV. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

RECEIVED.—J. E. Alloway.—Land Surveyor.—E. W. S.—C. R. and Co.—F. G.—L. G. F. (Staines).

Correspondence.

A PRINCELY PREMIUM.

To the Editor of the BUILDING NEWS.

SIR,—At a recent meeting of the Northallerton Urban District Council a resolution was carried that invitations be sent to three or four competent engineers asking them to formulate a sewerage scheme suitable for that district, and that the council should offer a premium of £15 for the scheme which they decided to accept. Surely the district council made a serious mistake when they resolved to offer the magnificent sum of £15 as a premium, and Mr. Baines forgot himself when he indulged in such an outburst of generosity towards three or four "competent" engineers when he moved that they should be asked to formulate schemes of sewerage for an important place like Northallerton, and that the successful engineer should be paid the sum of £15, which is about equal to a penny per head of the population, and about one-third of a penny in the pound on the general district rate of the district. What a fortunate man the engineer will be who succeeds in winning the premium! He will be rich beyond the dreams of avarice, and when his fellow townsmen learn of his sudden acquisition of wealth they will denominate him the local Rothschild, and make such calls upon the sum standing to his credit at the bank—great in consequence of the splendid shilling (£15)—as would in time ruin a Crœsus, to say the least of it. Think of the orphans he could endow; the school children he could entertain; the schools he could found; the aged poor for whom he could build almshouses; the reduced gentlefolk he could provide with annuities; the friends to whom he could give regular supplies of creature comforts, and last, but not least, he could now afford to give the council the £15 for the establishment of a Dutch parliament, and secure to them in perpetuity a plentiful supply of pipes, and cakes, and ale. A "competent" engineer has become so, solely in consequence of his lack of experience and learning and the expenditure of time and money; and one in four can well afford to work for nothing and find himself and pay assistants, and keep an office open and bear all the local burdens, and make a present of his surveys and estimates to any local authority generous enough to accept them free of cost. The labourer is not worthy of his hire, and the ox which treadeth out the corn shall be muzzled. Any "competent" engineer who is large-hearted enough and has the temerity to comply with an invitation of the Northallerton Council, which expects something for nothing, is not worth his salt, and ought to (as he would no doubt) earn the contempt of the engineering profession. I have yet to learn that a man's services are to be rewarded according to the measure of the poverty of the local authority requiring his services. If I thought that such bounty as that proffered by the Northallerton Urban District Council were to be my reward, I would ask my father to cancel my articles with the "competent" engineer under whom I am serving, and either to hire me out as a crossing-sweeper or put me as an apprentice to a hawker of sand and rubbing stones, so that I might have the hope of some day securing a competency, and of eventually retiring to a suburban villa and becoming a famous district councillor moved only by one feeling—that of saving the rates and paying every man according to his worth—his worth being assessed by me.—I am, &c.,

October 23. Apprentice C E.

◆

CHIPS.

In the list of adjudications in bankruptcy published in Tuesday's *London Gazette* the name appears of Roby Edward Carpenter, of Burton-on-Trent, architect and surveyor.

Upon the occasion of the reopening of Morton Church, Bingley, on Saturday last by the Bishop of Ripon, a stained-glass window, which has been presented to the church by way of memorial to the Garritt family, was unveiled. The work is from the studio of Messrs. Powell Brothers, of Park-square, Leeds.

In the case of Alfred Carden, of Brighton, architect and surveyor, the order for discharge from bankruptcy has been suspended for two years, ending September 20, 1897.

The Board of Management of the Manchester Royal Infirmary voted, on Monday, £1,000 to be expended in the consultation of an architect, the preparation of plans, and estimates for a new building.

A lecture on "Rembrandt True and False," with illustrations, was delivered yesterday (Thursday) afternoon by Sir Francis Seymour Haden, F.R.C.S., P.R.E., in the Lecture Theatre of the University Museum at Oxford. This lecture was given at the invitation of the Curators of the University Galleries, who arranged for exhibition in the galleries a large series of the etchings of Rembrandt, placed approximately in chronological order, as determined by Sir Seymour Haden.

At Dumbarton, on Monday, Provost Blair turned on the gas to a large new holder which has been erected at the Corporation Gasworks. The new tank is of telescopic design, and has a capacity of 125,000c.ft. The contractors are Messrs. Laidlaw and Son, of the Barrowfield Ironworks, Glasgow.

Mr. W. N. Colam, of Westminster, waited on the Lord Provost's Committee, at Edinburgh, recently and explained a report he had submitted for converting the existing tramway lines to mechanical haulage. Finally Mr. Colam received instructions to prepare his plans for the immediate equipment of twenty-four miles of track, and to prepare machinery with power to work eleven miles more of extensions.

The urban district council of Hornsey, N., have raised the salary of Mr. Lovegrove, who was elected as their surveyor twelve months ago, from £500 to £600 a year.

The urban district council of Crewkerne are about to proceed forthwith with the extension of the eastern sewerage system outfall, under the direction of Mr. B Slade, their surveyor, the Local Government Board having sanctioned the borrowing of £5,500 for carrying out the works.

The sale of the Somerset and Dorset estates of Viscount Bridport began at Taunton on Wednesday. The prices obtained were not high, and many of the lots were withdrawn.

The municipality of Paris having granted 20,000 francs for the purpose, new buildings are to be erected at the Salpétrière Hospital for the treatment of nervous and mental affections by electricity.

Intercommunication.

QUESTIONS.

[11442.]—**Woodworking.**—I should be extremely obliged if you, or any of your readers, could inform me of a systematic method of obtaining and proportioning the cost of working of five working machines—viz., two circular saws, truing up, thicknessing, and vertical spindle machines, driven by gas-engine and worked by a man and youth, who fill up spare time at the joiners' bench. The main difficulty lies in the fact that the thicknessing machine and large saw use three or four times more gas power than the spindle and other machines. —Woodworker.

[11443.]—**Oil Gold.**—Will someone kindly inform me whether gold leaf or gold paint is intended to be used by the following expression—viz., the mouldings to be "gilded in best oil gold"? Being a matter of dispute, a reliable opinion would be valued.—H. B.

REPLIES.

[11437.]—**Concrete Floors.**—For a stable, a safe total load per square foot may be taken at 300lb. I should say the joists you propose are quite sufficient filled in with cement concrete. The latter may be made of Portland cement and coke breeze 1 to 4. Coke breeze is light, and has many advantages for wooden floors, as it can be nailed to, but where strength is required, broken brick or slag is better. As to the safe load per foot super. of a floor of cement and breeze 9in. thick, experiments vary too much to afford any certain data. Col. Seddon's tests of supported slabs are given in Sutcliffe's treatise on Concrete; but the dimensions given would support a much greater load than that of horses.—G. H. G.

[11438.]—**Discharge of Pipe.**—

$$28\sqrt{\frac{d^5 \times F}{L}} = \text{supply in gallons per minute.}$$

$$28\sqrt{\frac{4^5 \times 167}{20{,}460}} = 28\sqrt{\frac{1{,}024 \times 167}{20{,}460}}$$

$$28\sqrt{\frac{171{,}008}{20{,}460}} = 28\sqrt{\frac{42{,}777}{5{,}115}}$$

$= 23 \times$ say, $2\frac{3}{4} = 77$gal. per minute $= 77 \times 60 \times 12 = 55{,}440$gal. per day.—Allen T. Hussell, Ilfracombe.

[11440.]—**Lead Lettering.**—"Bristol" asks, When did this come into use? I should say that it is perhaps the most ancient form of known inscriptions, for it is mentioned in the Book of Job, 1520 years B C. See Job xix. and 24th verse, where, in the land of Uz, it was customary to put important records on the face of the rocks, many of which, some in Egyptian and some in the ancient Greek, are to be seen at the present day, though no doubt of later date than the time of Job, who, wishing to make a permanent inscription of his faith, would have it cut in the rock with an iron pen—*i e.*, a steel tool, and leaded in for its greater permanence. It is, therefore, only reasonable to suppose that lead was used for this purpose at his time—viz, 3,415 years ago. It is quite certain that lead was known as a metal previous to this time, and is probably the most ancient of the metals in the order of human discovery.—K. MacP.

[11440.]—**Lead Lettering.**—In the graveyard of East Brent Church, in Somersetshire, I recently noticed an old inscription on a headstone, all the letters being inlaid in lead, The wording, I see on reference to my pocket-book, ran:—"Here lyeth ye body of Grace, ye wife of N. Barrow, who dyed Sept. 21, 1705." The face of the stone (under an old yew-tree) is much worn away, but the inlaid metal lettering is in excellent preservation. This is the oldest example I know.—Harry Hems.

[11441.]—**Fungus.**—The fungus you complain of growing round the ends of joists in the stone basement walls and other parts is no doubt the particular kind which is the cause of "dry-rot." The rotten ends of the joists, if still firm, had better be cut off and replaced, or iron shoes made; other less affected parts may be treated with a pure solution of corrosive sublimate in water, used hot (one ounce to a gallon has been recommended), and may be used as a wash, or wash the parts with dilute sulphuric acid, after scraping off all the fungus. The want of a cavity in the basement wall is the cause of the mischief, and there is probably no sufficient ventilation. Unseasoned timber in such conditions become a prey to dry-rot. All the roots discovered should be cut away, and the wall, if possible, rebuilt in the portions complained of. The ends of joists are often exposed to the fungus of dry-rot, or, as it is named, *Merulius lachrymans.* —G. H. G.

◆

A monument is to be erected in Quebec to the memory of Samuel de Champlain, whose name is so intimately connected with the early history of Canada. Artists, sculptors, and architects are asked to send in plans, models, or drawings up to Jan. 2nd, 1896. The cost is not to exceed £6,000 sterling.

Since the Yōst Typewriter Co, L'd., moved into their new premises at No. 50, Holborn-viaduct, a few weeks ago, two more gold medals have been awarded to the popular Yōst, raising the total number to ten. The Belfast Art and Industrial Exhibition was the occasion of the most recent award.

The memorial stone of the new theatre being erected in High-street, Stratford, was on Monday laid by the Mayor of West Ham. The architect is Mr. Frank Matcham, of Warwick-square, W.C. The new theatre will be erected by Messrs. Perry, of Bow. The interior will consist of three tiers of boxes, and will seat an audience of over 3,000. It will be built on the cantilever principle, with a capacious pit and gallery, doors opening outwards. The cost will be £32,000.

Legal.

THE NEW LONDON BUILDING ACT.

THE London Building Act, 1894, by Sec. 212, provides that any building begun, or "which is to be carried out under any contract entered into before the passing of the Act," may be completed under the old law, and shall be exempt from the provisions of the new Act. In the recent case of "Tanner v. Oldham" (*Times*, Oct. 27), a very important practical point was raised, and so far decided as to the meaning of the term "contract" as used in that section. It appeared that in January, 1894, a building agreement was entered into between the Haberdashers' Company and the respondent to build, amongst other houses, five in the Musgrave-road, Deptford, at a cost of not less than £380, and subject to plans and the approval of the company's surveyor. The agreement affected 43 houses altogether, and they were to be built so many per year spread over four years. It was also agreed that the work should be done in accordance with the Acts for the time being in force.

When notice was given to the district surveyor as to the five houses at Deptford in March, 1895, he objected that the proposed plans were not in accordance with the requirements of the new Building Act of 1894, and so the point arose whether the new Act applied, as the contract was made before it had been passed, and ultimately a case was stated for the opinion of the Court. It was argued for the surveyor that the contract named in the Act was the contract for the actual building, and not an agreement like this, which was to spread over four years. But Justices Cave and Wright did not adopt this view. They said that the surveyor's argument amounted to saying that the word "contract" ought to read as meaning "specification." The words were very wide, and there was no reason why their scope should be cut down so as to include only contracts for actual building. Mr. Justice Wright, indeed, went further, and held that, as this was not a public Act, it might well be taken that this clause was really a compromise, and so one that should rather be widened than narrowed in its interpretation. So this agreement, which is to extend to 1899, at all events, was held to be exempt from the Building Act, 1894.

Fred. Wetherfield, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

C. R.—Wall.—Bay Window.—View.—This raising of the wall cannot really have reduced your light or air, though it may spoil the view. But the law does not recognise any right of property or easement in a view or prospect; and so I do not see that you have any legal claim to damages.

J. B.—Wall.—Land.—Easement.—Unless the adjoining owner is under some covenant to keep his land walled in, he would probably have the right to pull down a wall built upon his own ground, and leave you to erect a wall or fence for yourself. There seems no evidence of any easement in this case, and at all events 30 years' user would be needed.

T. E—Ancient Light.—Angle.—Building.—There is no rule of law as to the angle of light. If your proposed building does not in fact reduce to any substantial extent the light hitherto enjoyed by these windows, then you would be safe. The angle of 45° is not conclusive, though it is often sufficient. The Court would decide upon the evidence of former light, and its recent or probable diminution.

◆

William Mead, a bricklayer, was charged at Stratford Police-court on Wednesday with intimidating George Boreham, a fellow workman. Messrs. Mowlem and Co. are building a Board school at Barking, and, consequent on a strike, they had to employ "free labour." The complainant was taken on under this condition, and it was stated that the prisoner, among others, abused and threatened him. A remand was ordered.

The corner-stone of the new district church of St. John, Hendon, was laid by Princess Christian on Wednesday. The first section of the church, which is being built near the railway station, will seat 500 persons, and will cost £4,000. It will be eventually enlarged so as to accommodate 1,000 worshippers.

The Staffordshire County Council met on Tuesday for the first time in the new council hall, the cost of which is estimated to be £50,000.

Mr. Rowland Plumbe, F.R.I.B.A., of Fitzroy-square, W., has been elected Master of the Painters' Company.

LEGAL INTELLIGENCE.

Construction of the London Building Act, 1894.—Tanner v. Oldham.—(Queen's Bench Division, Oct. 25, before Mr. Justice Cave and Mr. Justice Wright.)—This was an appeal by special case from the refusal of a police magistrate to convict under the London Building Act, 1894. The question arising was this—whether a contract made before the passing of the Act of 1894 to erect a series of houses from year to year came within the exemption in section 212 of a contract entered into before the passing of the Act under which a building, structure, or work is to be carried out. The respondent was a builder, and on March 19, 1895, he served on the appellant, who is the district surveyor under the London Building Act, 1894, for the district of Hatcham, a notice which stated that the respondent would build five dwelling-houses on the north side of Musgrave-road, in St. Paul's, Deptford. It appeared to the surveyor that the houses proposed to be erected would be in contravention of the Act of 1894, and he accordingly served a notice of objection under section 150 of the Act. It was stated that the buildings proposed to be erected would be in accordance with the Building Acts in force before the Act of 1894 passed. The respondent appealed to the magistrate on April 5 against the notice of objection. It was then proved that, under a building agreement of January 3, 1894, made between the Haberdashers' Company and the respondent, the respondent agreed to erect no less than 43 dwelling-houses, to be built of such classes and descriptions, in such position, in such manner, and otherwise as should have been previously approved of by the company's surveyor; and it was agreed that five of such houses should be erected on the north side of Musgrave-road, should be built at a cost of not less than £380, and that the plans, &c., should, previously to the commencement thereof, be submitted to and approved by the said surveyor. It was also agreed that six houses should be finished before March 25, 1895, ten more in 1896, 1897, and 1898, and the remainder in 1899. It was further agreed that all the works should be executed in accordance with the regulations of the Metropolitan Building Act, and any other Act of Parliament, whether local or general, for the time being affecting the premises. The London Building Act, 1894 (57 and 58 Vict. cap. 213) provides as follows by section 212: "Notwithstanding anything contained in this Act, a building, structure, or work which has been commenced before, and is in progress at the commencement of this Act, or which is to be carried out under any contract entered into before the passing of this Act, may be completed subject to and in accordance with the provisions of the Acts relating thereto as are in force immediately previous to the passing of this Act." Mr. Cripps, on behalf of the district surveyor, urged that the contracts exempted from the provisions of the Act of 1894 by section 212 were not contracts such as this. The words of the section, "building, structure, or work," pointed to a contract for carrying out a particular building; it did not apply to a contract of such a general character as the present, which was to be in force for four years. It was not impossible that there might be contracts to take effect for a much longer period still; moreover, the contract provided for fresh Acts becoming applicable. The Court, however, after hearing Mr. Jelf, supported the decision of the magistrate. Mr. Justice Cave said he was asked to hold that the word "contract" in the section meant specification. If this had been intended, it would have been very easy to say so in the section. The words, however, were wide, and the contract in question came within them. The provision in the contract about the buildings being executed in accordance with any Act of Parliament for the time being affecting the premises did not carry the matter further, because the real question was whether the Act applied to the contract at all. Mr. Justice Wright concurred. He thought that the Act not being a public Act, it might be presumed that the insertion of a clause of this description was in the nature of a compromise, and, at any rate, the words should rather be widened than narrowed in interpretation.

The fifteenth session of the Institution of Junior Engineers will be inaugurated this (Friday) evening by a meeting to be held at the Westminster Palace Hotel, Victoria-street, S.W. The chair will be taken at eight o'clock by Professor Alexander B. W. Kennedy, past-president, and an inaugural address will be delivered by the president elect, Mr. Archibald Denny.

The County Court Judge for Kent, on Wednesday in last week, decided in favour of the defendants in an action brought at Chatham against the Formby Cement Works Co., Limited, by a labourer named John Nicholls, residing at Upper Halling, to recover £156 as damages for injuries, including a broken rib, received by him whilst at work on the 7th March last, owing to the defective condition of a portion of defendants' works at the opening of the deep chalk-pit sunk by them.

Our Office Table.

The annual *conversazione* of the Architectural Association was held on Friday evening at the King's Hall, Holborn Restaurant, and was very largely attended by members and their lady friends. A reception was held in the great hall by the President (Mr. W. D. Caröe) and the committee. The students' prize and other drawings executed during the past season were on view on the walls of the council chamber, and a large selection of mounted photographs executed by members of the A.A. Camera Club. The loan exhibits were reduced to smaller limits than has been the case during the past eight or ten years, and a regrettable feature, too, was that in no case was the designer's name attached to the fabrics shown. Messrs. William Morris and Co., of Oxford-street, W., had a choice display of wall-papers, chiefly of large, flowing, "all-over" patterns in low tints, and hangings. Messrs. Essex and Co., Victoria-street, S.W., also showed a number of wall-papers and hangings. Messrs. White, Allom and Co., Mount-street, W., exhibited furniture carved in low relief, in the styles of the Brothers Adam and of Louis XIV. to XVI. Mr. Alfred Stalman, Frith-street, Soho, had on view rich embroideries, dossals, altar-cloths, and church furniture, and Messrs. Vickers and Co., Bucklersbury, sent some tapestries, &c. The features of the evening's entertainment were the excellent selections of classical music performed by the members of the Rebec Orchestral Society, numbering 44 performers, the bâton being wielded by Mr. W. Horsey, hon. conductor, and as a lighter element, the banjo performances and songs of the well-known three Pierrots and Pierette, under the direction of Mr. Clifford Essex. The proceedings passed off successfully in every particular.

The new *Kalendar* of the Royal Institute of British Architects has just been published in readiness for the session of 1895-6, which will be opened on Monday evening next by Mr. Penrose's presidential address. Papers will be read during the forthcoming session on November 18, December 16, Feb. 3 and 17, March 16 and 30, April 20, and May 18. The prizes will be distributed, and a presidential address delivered to the students, on January 20; the special meeting for the election of the Royal Gold Medallist will take place on March 2, the annual general meeting on May 4, and the presentation of the Royal Gold Medal on June 22. Business meetings of members only will also be held on December 2, January 13, and June 8. The *Kalendar* increases in bulk year by year, and now numbers 352 pages against 311 in 1894-5. The number of Fellows is now 596 against 617 in 1894, 628 in 1893, and 617 in 1892; and the number of Associates is 924 against 872 last year, 828 in 1893, and 806 in 1892; and of hon. Associates 61, the numbers for the preceding three years being 60, 65, and 66 respectively. The total of subscribing members is thus 1,561, against 1,549 in 1894, 1,521 in 1893, and 1,489 in 1892. In addition to these there are also 11 hon. Fellows, 7 retired Fellows, and 55 hon. corresponding members, 142 students, and 708 probationers—two classes which show each year progressive increases. The grand total of members is 2,504, as compared with 2,273 in 1894, 2,122 in 1893, 1,922 in 1892, 1,739 in 1891, and 1,259 in 1885.

The opening lecture of the series to be given this season in connection with the Auctioneers' Institute was delivered on Tuesday evening in the large arbitration-room at 63, Chancery-lane, W.C., by Heber Hart, LL D., Barrister-at-Law, who took as his subject "The Law of Fixtures." The chair was occupied by the President, Mr. Frank Everill. The law relating to the annexation of fixtures from the soil, and to trade fixtures, and removable fixtures was lucidly explained and commented upon by Dr. Hart, who, in the course of his lecture, enumerated some of the articles which came under those various heads, and showed the difference of opinion that exists, even among judges and lawyers, upon the law relating to the removal of trade and other fixtures, as many of the judgments which have been delivered from time to time have confused the issue at stake. A discussion followed in which Messrs. E. George, of Newcastle-on-Tyne; J. F. Field and E. Pennington, both of Richmond; Norman, Peck, J. L. Johnson, E. J. Vaughan, and G. G. Hanham took part, and a hearty vote of thanks was accorded the lecturer.

The syllabus of future meetings for the present session of the Auctioneers' Institute, held on Tuesday evenings, in the large arbitration room at 63, Chancery-lane, W.C., is as follows:—Nov. 26, Henry Lynn, M.S.B.L., Barrister-at-Law, upon "Compulsory Purchase"; Jan. 7, 1896, E. W. Richardson, F.A.I., upon "Copyhold Enfranchisement" (Paper II.); Jan. 28, H. C. Richards, M.P., Barrister-at-Law, upon "The Law and Practice of Compensation in the County of London"; Feb. 25, John Hepper, F.S.I., F.A.I. (Leeds), upon "Provincial Auctioneers: Their Position, Practice, and Prospects"; March 6, lecture by A. J. Ram, Barrister at Law (Recorder of Hanley), upon "Valuations and Appraisements"; March 24, James F. Field, F.S.I., F.A.I., upon "Auctions: their Use and Abuse."

Blackpool, which already rejoices in a miniature Eiffel Tower some 500ft. in height, is about to add to her attractions a Great Wheel, to be built by Mr. Bassett, the engineer and constructor of the one at Earl's Court, and this novelty will be ready for use by next season. Mr. Bassett proposes that the new wheel shall not be quite so large as that now working at West Kensington, but it will accommodate more people at one time, and by making four revolutions per hour will carry 5,000 persons during that period. The enterprise is to be carried out by the Blackpool Winter Garden Company, who are now adding to their property a dancing hall, new floral halls, and a fresh elevation to Victoria-street.

At Bridlington, also, an effort is being made to attract pleasure-seekers. A limited liability company have purchased an extensive reach of foreshore and building land on the Hilderthorpe side. The land has a sea frontage extending a mile and 200 yards, of which 156 acres will be available for gardens and residential and public buildings. The remainder—over 30 acres—is foreshore. It is proposed to build a sea-wall along the entire length of the frontage, to have an inclosed spa and gardens, and to lay out a marine walk with a concurrent drive at the rear of the estate. The widest part from the sea-wall to the roadway is about 175 yards in depth. The foundations of the foreshore are considered absolutely reliable by Mr. Dixon, who built the wall at Filey, and this opinion is confirmed by Mr. William Beswick Myers, civil engineer, of Leeds, Filey, and London, one of the directors of the new company. The wall will furnish a promenade walk 36ft. wide along its whole length. A sloping bank of grass will lead to a second promenade, and behind the two there will be flower-gardens and lawns, ornamental lake and fountains, and tennis-court. The winter garden buildings will be semicircular, with the end frontages facing the sea. On the frontage of one end will be verandahs and balconies, rising to three stories, and surmounted by minarets, while the ground floor will contain refreshment and dining-rooms and buffets, and billiard saloons. Behind the other frontage will be a concert-hall or theatre of varieties, reading and news-rooms, and visitors' club. The bulk of the land not used for ornamental purposes will be allocated to villas, for it is not proposed, should the scheme prosper, to allow the erection of houses which would be architecturally inferior to the general plan of the front. In the centre of the court formed by the buildings there will be a band stand. There will be sea-water baths, and, later on, a promenade pier will be built. Hilderthorpe Lodge and grounds will be laid out as strawberry and tea-gardens, with athletic ground and bowling-green, and the whole of the buildings will be lighted by electricity and gas. It is also proposed to lay down an electric tramway through the estate from Hilderthorpe Lodge to the railway station, and possibly the line may be afterwards taken to Flamborough.

A correspondent points out that the arbitration as to the value of the St. John's Wood estate of the Eyre Trustees by the Manchester, Sheffield, and Lincolnshire Railway, the hearing of which closed on Thursday in last week, is by no means, as Sir Edward Clarke claimed, the largest case that has ever arisen under the Lands Clauses Act. As a matter of fact, the claim brought by the Earl of Derby against the Lancashire and Yorkshire Railway Company for the acquisition of property from his lordship's estate for the existing line of railway from Manchester (Victoria Station) through Cheetham Hill, Prestwich, and Radcliffe, was in many respects more important. The claim was for £500,000. The hearing of the case in London and Manchester occupied twenty days. The valuations of half-a-dozen surveyors in support of the claim ranged from £440,312 to £402,830, and the award of the sole arbitrator, Mr. T. B. Foster, C.E., of Manchester, amounted to £178,313.

The Salford Town Council received on Wednesday a report of the special committee appointed with reference to the borough engineer's department. The committee stated that they had come to the conclusion that the department of the borough engineer prior to Mr. Corbett's appointment was in a very unsatisfactory condition, and that the accountancy department especially had been permitted to lapse into a state of confusion. The evidence proved that, upon Mr. Corbett assuming the office of borough engineer the department was in a state of disorganisation; that the bookkeeping was in arrear, and the accounts in confusion; it appears to the committee that, although aware of the irregularities, the engineer did not alter or put in order the bookkeeping until the finance committee insisted upon the arrears being brought up to date. Since the dismissal of an official, twelve months after the appointment of Mr. Corbett, the accountancy of the department has undergone a complete transformation, and is now on a satisfactory footing. As the work of the engineer in connection with the Agecroft destructor, which was erected from his plans, the committee state that he committed a grave error in leading the committee to conclude that the plans placed before them could be carried out for £2,050. In respect of the extras incurred, they complain that estimates were not drawn up for contingent works required outside the destructor, such as gas and water fittings and other items as set out in the statement of cost of the destructor, amounting—beyond the original contracts of £2,552—to a total of £1,136 12s. 2d., this sum being exclusive of £258 0s. 8d., incurred in altering the destructor as it now stands, and making the total cost £3,947 13s. 2d. The actual outlay, contingent on the change of site, did not cost £700, as reported by the borough engineer at the Local Government Board inquiry, but £310 4s. 3d. as the result of actual measurements.

It is proposed to hold in Vienna an historical exhibition, referring especially to the times and persons connected with the Vienna Congress, 1815, on which England was represented by Lord Castlereagh and Sir Sidney Smith. The exhibition will be open from January 1 until the end of May, 1896. The sections of the exhibition, comprising all objects of the Empire style, will include:—Portraits, medals; pictures or prints showing the events, festivals, processions, &c., of the times; contemporary views of Vienna and its neighbourhood; fashions, costumes, uniforms, &c.; autograph letters, furniture, silver and gold plate, glass, Vienna porcelain, tissues and embroideries, jewelry—in short, all relics and objects which are connected in one way or another with the celebrities of those memorable days and the Napoleonic era.

Vast sums are being expended, and are about to be spent, at Johannesburg in brick and mortar; there are to be new churches, theatres, hotels, arcades, business premises, and private houses. A remarkable feature of this building boom is the number of buildings of four and five stories in course of erection and in contemplation. There is a good bottom to be got for a foundation at a depth of 8ft. or 9ft. from the surface; and all the larger buildings going up now have cellars underneath. Most of the houses in Johannesburg are built of brick. The bricks turned out now are fairly good, and they are a great improvement on what used to pass muster. The price at present is from £3 10s. to £4 per thousand; stone is not much used for building purposes in Johannesburg. House property is paying 15 per cent. in the town proper, and in the suburban districts 20 per cent.

The following building regulations are enforced in Stockholm:—(1) First-class houses must be constructed of either stone or brick. (2) The stairs of all such houses must be either of stone or iron, and fixed in stone walls from cellar to attic, having at least a thickness of 1ft. (3) Cellars must be constructed of massive stone arches, founded in mortar or cement, and must support the ground or basement floor. This floor should be constructed of iron beams, and the spaces between filled with broken brick, gravel, mortar, or clay, rendering it firepoof. (4) The attic must be constructed of fireproof masonry filled in between the beams of the upper surface, constructed of bricks, or tiles sunk in mortar or cement, forming a continuous solid floor over the beams. (5) Iron doors sunk in stone doorways shall be fixed for the closing of attic as well as cellar, and the doors locked at night to arrest draught in case of fire. (6) Where elevators are permitted, the shafts must be constructed of solid masonry, and all doors opening upon the shaft must be of iron, and close automatically. (7) Roofs must be cevered with tiles, slates, or sheets of metal. (8) The external walls of the house must be fireproof, and at least a foot in thickness. (9) The height of a building should, in general, not exceed the width of the street, and in no case exceed 69ft. (10) Only two-thirds of a plot of land must be built upon, leaving one-third for open spaces, but in the case of corner plots the houses may cover three-fourths of the area. (11) All flues and chimneys must be of ample size. (12) They must be regularly swept and regularly inspected officially.

◆

A fire broke out at Perth, Western Australia, on Sunday, which destroyed the Fremantle Railway Goods Sheds and the Queen's Warehouse. The damage is estimated at £50,000.

The Church of St. Stephen's, which has been for some time in course of erection at Craigie, Perth, is rapidly approaching completion, and will be opened in December. The church is in the Transitional Norman and Early English style, and is seated for 600 worshippers. It has cost about £5,000, and has been erected from designs by Messrs. J. and G. Young, architects, Perth.

On Saturday, at Dukinfield, Miss Astley formally handed over to the chairman of the Dukinfield District Council the deeds of the ground on which have been built the new premises of the Technical School. The new building, which takes the form of an addition to the first technical school, erected by Captain Astley in 1875, has cost £4,000. Every convenience is provided for the 450 students in attendance.

The Southampton Harbour Board have in contemplation an important scheme of electric lighting which involves an estimated outlay for station and plant of nearly £6,000. It is proposed to erect the station near the harbour offices on the Town Quay. The scheme is not yet fully developed, the plans having been sent back to the committee for revision

A proposal is under consideration for making a connection of the Great Western Railway at Tetbury—a branch from Kemble Junction—through Avening, Nailsworth, Newmarket, Uley, and Dursley with the Severn and Wye Railway at Berkeley-road, the Midland junction for Severn Bridge, and the Wye Valley. The proposal emanates from manufacturers and others at Nailsworth.

A claim by the Duke of Newcastle for compensation for the subsoil and minerals extracted by the Manchester, Sheffield, and Lincolnshire Railway Company in their tunnelling operations at Nottingham was tried on Saturday by Mr. Cripps, Q.C., M.P., sitting as umpire in Queen's Bench Court VI. Mr. Calvert, engineer, the borough surveyor, and others having given evidence, the umpire reserved his award.

The yearly report of the Building Committee of the Bradford Corporation shows that during the past municipal year they had approved plans for 532 new dwelling-houses, against 535 in the previous year, and 1,036 in 1893. Plans for 15 new warehouses and mills, as against 28 in 1894, 20 in 1893, and 23 in 1892. The plans of six churches and schools were approved. Twenty-seven new streets have been approved during the twelve months. Twenty-nine of the new houses have twelve rooms each.

Mr. George Baines, F.R I.B.A, 4, Great Winchester-street, London, E.C., has been asked to act as architect for a new Baptist church, to be erected in London-road, Lowestoft. Plans have been adopted which will involve an expenditure of over £3,000.

The successful completion of the sub-aqueous portion of the Blackwall Tunnel was celebrated on Wednesday by a luncheon given by Messrs. Pearson and Son, the contractors. Though the passage under the river is now complete, except that it is not yet lined with white brick, and the roadway is not formed, there remains much more to be done, and it is unlikely that the tunnel will be ready for traffic for 18 months yet. On the north side scme 1,200ft. of tunnel have yet to be made. The tunnel will be open for inspection by the public to-morrow (Saturday) and on Sunday, between 10 a.m. and 10 p.m., for the benefit of the Poplar Hospital for Accidents. The charge for admission will be 3d. Mr. W. Crooks, member of the London County Council for Poplar, will meet the parties and explain the nature of the works between 4 and 7 on Saturday, and 6 and 8 on Sunday.

MEETINGS FOR THE ENSUING WEEK.

Monday.—Society of Engineers. "Strains on Railway Axles," by Thos. Andrews, F.R.S., United Service Institution, Whitehall. 7.30 p.m.
Royal Institute of British Architects. Inaugural Address by the President, F. C. Penrose, F.R.S. 8 p.m.
Tuesday.—Glasgow Architectural Association. "Organ Building," by Hugh Dale. 8 p.m.
Wednesday.—Royal Archæological Institute. "Garlands," by E. Peacock, F.S.A.; "Signs of Old Fleet-street," by C. Hilton Price, F.S.A 4 p.m.
St. Paul's Ecclesiological Society. "The Ecclesiology of Ogham Inscriptions," by R. A. S. Macalister. 7.30 p.m.
Carpenters' Hall Lectures. "Sanitary Requirements," by Professor H. Robinson. 8 p.m.
Friday.—Architectural Association. "Pompeii," by Talfourd Ely, M.A. 7.30 p.m.

CHIPS.

The old town hall at Cowbridge, Glam., built in 1830 on the site of the Bridewell, was reopened on Thursday in last week after renovation, including the enlargement of the chief room by 100 sittings, and the provision of a new suite of rooms on the ground floor. Mr. C. B. Fowler, F.R.I.B.A., of Cardiff, was the architect, and Mr. Alfred Jones, of Cowbridge, the contractor; the cost has been £900.

The Northallerton Rural District Council have elected Mr. Richard Burton as surveyor of highways.

Mr. W. J. Bird Clerke, M.I.C.E., an inspector for the Local Government Board, held an inquiry at the Town Hall, Cardiff, on Thursday in last week, into the application of the town council for sanction to borrow £12,885 for purposes of electric lighting, £1,576 for the improvement of Roath Park, £500 for the purpose of public lighting, and £200 for laying out Windsor Esplanade Gardens. Evidence in support of the proposals was given by Mr. W. Harper, borough engineer, and by Mr. Massey, electrical engineer to the corporation.

Chard Town Council adopted, on Friday, a scheme for the disposal of the sewage of the town at an estimated cost of £4,500 and an annual outlay of £354. The outfall will be on the eastern side of the town, at Tooches, the plan providing for treatment by chemicals partly, and partly by irrigation.

The Royal Society of New South Wales, whose house is in Phillip-street, Sydney, have just had painted, on the flat surface of the plain stone front, a "cornice" with truss blocks. The building is about 30ft. wide, and this cornice runs across about 28ft., leaving a foot at each end for return!

The United Free Methodist chapel at Hopwood, Lancs, was reopened last week after alterations, carried out by Mr. D. Blakeley, builder.

A provisional license has just been granted by the Hants justices for a large hotel proposed to be built on the western side of Alum Chine, Bournemouth. The hotel, of which Mr. Moore is the architect, will cost about £10,000, and will contain 43 bed and sitting-rooms, besides the usual public apartments.

St. James's Church, Mangotsfield, was reopened after restoration, the works including renovation of seats and removal of pew doors, repairs to masonry and roofs, and provision of new lectern in oak. Messrs. Hatherley and Carr, of Bristol, were the builders.

Operations have been commenced for the extension and restoration of St. Mary's parish church, Todmorden. The scheme includes the erection of a chancel at the east end, estimated to cost £1,000. The plans of Mr. Medland Taylor, Manchester, have been selected. The improvement will include a stained-glass east window, as a public memorial of the late John Fielden, Dolroyd Castle, Todmorden, and Grimston Park, Tadcaster.

The Mayor of Accrington laid, on Saturday, the foundation-stone of a cottage hospital for the Accrington district. The building will cost about £4,000.

On Saturday the foundation-stone of the Glasgow Masonic Halls was laid by the Provincial Grand Master, Mr. John Graham, of Broadstone. The building is situated at 98 and 100, West Regent-street. The part fronting the street will be five stories in height, and will be let for commercial purposes. At the rear will be a large Masonic hall, measuring 65ft. by 40ft., and capable of seating about 450 persons. Adjoining will be two lodge rooms. The buildings will cost about £16,000. Mr. J. L. Cowan, I.A., of Glasgow, is the architect.

Two statues are about to be erected, facing each other, in the Red Row at Calcutta. One is in honour of Lord Roberts, and the other of the Marquis of Lansdowne, and both will be executed in London by Mr. Harry Bates, A R A.

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXIX.—No. 2131.

FRIDAY, NOVEMBER 8, 1895.

SOME PERILS OF CIVILISATION.

WE are often told, though not so often now as in the twenty years of national self-glorification which followed the first Reform Bill, that "Peace has its victories, not less renowned than War." But we hear little of the price which Peace has to pay for them. Even here, nothing is to be had for nothing. In mechanical conquests, as well the territorial ones, men have to give their lives. How many colliers perish annually to provide our factories with fuel? How many railway workmen are maimed or killed that we may ride about in luxury? The same sort of question might be asked about all those other industries which make the modern world what it is. We do not see the heaps of slain, we do not hear the cries of the wounded, and we try comfortably to imagine that they do not exist. "Half ignorant, we turn an easy wheel, That sets sharp racks at work to pinch and peel." But, once in a while, we catch our own fingers in the machinery. Then we drop our platitudes about the victories of peace and the triumphs of civilisation. We get a glimpse of the reality, and it is well for us and for others that this glimpse should not soon pass from our recollection.

The latest of these accidents, as we write, though by the law of chances it is likely enough that a still later one may have occurred before this number is in our readers' hands, is what the newspapers have named "The Strand Explosion." The average reporter, it is true, finds "explosions" everywhere. It is an "explosion" if some unfortunate child soaks its clothes with petroleum, and then sets light to itself while trying to dry them. It is a "terrific explosion," or was a few years ago, when the side of a great gas-holder gives way, and the gas burns quietly, though in a gigantic flame, 50ft. or 60ft. high. But in the Strand, the reporter seems for once to have been right. Not only did some houses entirely collapse, but people in others were thrown out of bed by the shock. "There was a terrible bang," and a mass of flame is said to have rushed out of the end of the court. For complete details we must, of course, await the public inquiry. But it seems hardly doubtful that this was only a more destructive example than usual of the gas explosions which take place nearly every week. It happened in a structure weakened by age, and perhaps not originally very strong; in a locality full of people, and in a place where its effects were concentrated for want of room. So it came to pass that, instead of the ordinary blowing-out of windows and the customary damage or destruction of the person who smells a leakage and goes to look for it with a light, more than 30 human beings suffered, and one has died. The fall of the houses most affected is, however, the singular feature of the present calamity. It does not seem fully explicable on the theory that the explosion only took place in the cellars. The topmost brickwork of the walls, too, is strangely injured. It is said that one of the ruined dwellings, at least, was built with hollow walls, and a theory is put forward that the gas, or rather the mixture of gas and air (because coal-gas alone is not explosive), accumulated in the cavities.

How far this idea is supported by facts we shall learn hereafter. But it certainly has possibility for its basis; and it deserves attention from those architects who adopt this peculiar mode of construction. Hollow walls seem to have been more in fashion formerly than now. They have been enthusiastically advocated in two or three of the professional journals, and they doubtless have their merits. But they have their dangers too, of which the one now in question is by no means the least. It is one not easily detected. If a gaspipe happens to be defective just where it passes into a dwelling from the outside, and if the inner skin of the brickwork is as sound as it should be, the occupant may practically be living, though he knows it not, in the midst of a powder-magazine, without the precautions which keep magazines comparatively safe. Some day a nail may be driven into a mortar-joint, or a few particles of mortar may fall out of one, and then the explosive compound in the cavity will pour in and light itself at the fires or burners. Again, if coal-gas can get into the cavity, sewer-gas may do the same. Its effects will be quieter; but, perhaps, in the end, not less deadly. Rats and mice, too, find a convenient habitation in the wall-spaces. They are mortal, even when let alone; and some people are unwise enough to poison them. If they die in their runs between the two thicknesses of brickwork, they will, as Henry V. said of his dead soldiers, "break out into a second course of mischief; killing in relapse of mortality." The arrangement, in short, which is to keep out damp, may keep in things which are even worse; and there will be no getting at them without knocking an originally weak structure to pieces. Possibly a hollow wall 16in. thick, if it stood alone, might take rather more wind-pressure to push it over than a solid 14in. one. But wind is seldom a source of peril in these islands. When structures fail, it is much oftener from pressures or thrusts arising out of their own construction; and to these a hollow wall offers little resistance. Suppose it to be made up of a 9in. and a 4½in. thickness, with a 2in. space between. Unless the cavity is to be extremely damp, the 9in. wall should be outside. But if it is, the internal joists and plates, the beams and trusses, will only have a half-brick wall to rest on; and though this may be bonded to the whole-brick one by ties at the usual intervals, it will be anything but a satisfactory support. In some of the South Coast towns, therefore, where hollow walls are in favour as a means of keeping out the driving rains, builders prefer to put the thinner wall on the exterior. This may answer their purpose when they build to sell; but will saddle the purchaser, in time, with difficulties he did not dream of. Moreover, the system is not as cheap as it looks. Inexperienced persons might expect that a mere cavity would cost nothing. In practice it is otherwise. It seems to be the custom to value it as solid brickwork, because of the extra trouble, and the cost of ties. When we add to this the cost of the contrivances, which in careful work have to be put over door and window frames to keep off dropping moisture; and when we allow for extra thickness of frames, or extra depth of reveals, we shall see that slate, or even tile-hanging would not be much dearer, and that a cement surface would be cheaper by far. But we do not advocate such cement architecture as one generally sees at Brighton, or such slate-hanging as disfigures Southampton. It takes an architect, and not an ambitious house-agent, to deal with these things; though, given the architect, there is a reputation waiting for him when he can put up new houses with slated walls as artistically treated as half a dozen old ones are at Penzance.

Artificial earthquakes are growing common here. Pedestrians who like a little excitement may look forward, any day, to seeing a few yards of the pavement or the roadway hoisted into the air, and may expect, if they have ordinary luck, to know how it feels to be hoisted with it. This, of course, is the result of the make-shift, hand-to-mouth system on which our gaspipes and our electric mains are laid. The rival illuminants, being two of a trade, seem never to agree. The gas leaks out into whatever spaces it finds vacant, and mixes with the air, so as to be ready for mischief. The electric current discovers a gap, and sets up a series of sparks there. All is now prepared. The gaseous mixture increases in quantity; it creeps nearer and nearer to the spark, and, as soon as it reaches it, explodes. No living soul knows whereabouts underground there may, or may not, now be vacancies for explosive gas. No living soul knows how near to any such vacancies a series of sparks may be set up. Hitherto these little convulsions have chiefly taken place out of doors. But it is quite likely that others will originate in disused cellars or coal-places, holding sufficient gas to produce really striking effects. Most lihely we are as yet only in the day of small things as regards our artificial earthquakes; "all that they have done, but earnest Of the things that they shall do."

We have had several cases in our highways of what Americans call "electrocution." Hitherto it has been chiefly practised on horses; but there is no guarantee that it will not extend to the public generally. The wires are laid too near the surface, and insufficiently protected. When the roadway is soft, a horse's weight forces his hoof through it, and down to the electric main. It soon scrapes off the insulating material, and then the unfortunate animal forms a complete circuit — one leg receiving the current from the main, and the other three conducting it back to earth. It is what the scientific mechanician would call "an elegant arrangement." But it is one which, like the artificial earthquake, ought not to be put into action to the detriment of private individuals. The companies which destroy life and property should have to give ample compensation. And when we look at the expense of this; at the constant outlay which must be incurred for inspection while pipes and mains are just "dug in" anyhow and anywhere; at the cost to the companies which is involved in perpetually taking up and making good the streets; at the loss to trade which the consequent stoppage of traffic involves, and at the risk to health from the leakage of coal-gas and sewer-gas into the houses and the air; we cannot but ask whether it would not be cheaper as well as better to form proper subways at once. They would not only keep gas and electricity and sewers from doing mischief, but they would protect the water-pipes from frost, and contain the overhead wires which make all attempts at beautifying our towns ridiculous.

NEGLECT OF STRUCTURAL DETAILS.

IT is a common complaint amongst artificers engaged in building operations that the modern architect, as a general rule, knows less of practical details than his predecessor of the old days. We often hear a mason or a joiner say they cannot work to a certain detail drawing; that the detail, if executed as drawn, would be unsafe or unsatisfactory, or that there would be a useless waste of material. And it is probably often true that the average young practitioner knows far less about the best mode of executing certain details than the practical workman himself. But it must also be admitted that if the architect of the present day understands some details of his craft less thoroughly than his predecessor, he has to master a far wider range of subjects, and become proficient in matters which fifty years ago would have astonished his ancestors. Besides the addition of a large number of buildings which were unknown at that period, the modern architect has to adapt himself and his work to the development of problems which are quite new. The applications of sanitary science, of heating and ventilation, electricity in its many forms are alone requirements which impose upon him duties and responsibilities which were unknown to his predecessors. Look, again, at the new materials he has been called upon to adapt to his purpose—iron, concrete, terracotta, plasters and cement, and a variety of decorative materials too numerous to mention. There is a further reason why practical details are sometimes neglected by the architect. The manufacturing specialist has arisen with the demands on his trade, and he undertakes to supply the details and specification for his particular work, and relieve the architect of the labour and responsibility. Thus the cast iron manufacturer employs his own engineer or draughtsman; the constructional engineer supplies the drawings of all details for column and girder work. The heating and ventilating engineer undertakes to arrange the scheme of warming and ventilating of buildings that may be intrusted to him; so, too, does the gasfitter and electrician not only undertake to carry out the lighting of a building, but to specify for all that is necessary under the general supervision of the architect; and in respect of decorative materials like terracotta and faïence, the manufacturer is willing to supply his own designs. Who can wonder that the younger and inexperienced members of the profession avail themselves of these facilities: they save themselves a great deal of labour and responsibility, while their remuneration is unaffected. The temptation is too great, when, for instance, the engineer, who has a separate contract, agrees to supply all the details of the ironwork of a large building from the general design or sketches of the architect, to test every girder, to make all the necessary calculations and stress diagrams. A very glaring instance of this delegation of duty to a contractor has lately come to light from America in the catastrophe which recently befell the Ireland Building at New York, and killed several workmen. At the inquest held it was almost proved that the direct cause of the catastrophe was the reduction in the thickness of the concrete footing of the iron columns which gave way. The footing had been reduced to one-third, or less, of the thickness specified in the architect's specification and shown on his plans. Who was responsible for this departure from the plans and specification which had been passed by the City Department? It will probably never be satisfactorily cleared up; but if an architect who has skilfully designed a detail of iron construction, such as the footing of an iron column or its size and connections with other ironwork, is to be held responsible for a contractor's variation from his design, then we must commiserate with him. The instance serves as a warning to the profession to be not too anxious to delegate to others the details of their buildings. Our trans-Atlantic cousins are largely in the habit of engaging specialists in construction; but such accidents as this draws attention to the importance of a knowledge of detail amongst architects, as well as supervision.

Certain stages of building, and particular kinds of construction, call for the architect's immediate and personal attention. We cannot agree with those who expect the architect to watch every drain that is jointed or brick that is laid, as such attention would be quite impracticable and useless; nor do we think he ought to be made responsible for every settlement that occurs, owing to the footings or concrete not having been made deep enough. These are details which cannot be guaranteed or tested without constant superintendence which an architect is not expected to give. He would have to make trial borings of all the foundations or trenches to ascertain what depth of concrete ought to be laid in every part; he would have to watch the gauging of every yard of concrete, the tipping and ramming in of each trench, the weight of every bushel of cement, its fineness and due admixture with the aggregate. The drains would have to come also under his inspection, and every joint tested; the bricks be closely watched, and all broken bats and "shuffs" discarded; he would have to see that the bond was perfect, and the joints properly flushed with mortar.

It would be preposterous to expect him to discharge these minute functions. But there are certain stages in the construction of a building which ought to receive his particular care. We may call them, first, the Preparatory or foundation stage; second, the Progress or certificate stage; and, third, the Completion stage. The first, or preparatory stage, would include the foundations, basement, and drainage work of the actual building, and the preparation of all working plans and sections for these works, the sizes and depths of the bases of all columns and piers, construction and bond of walls and other details. During this stage the architect ought to be more than ordinarily active in superintending and in perfecting his detail drawings according to actual requirements, in seeing that every footing and base to columns has been carefully dimensioned to his drawings. We consider this preparation stage the most vital and important in the whole progress of the building, as attention to details here might avoid costly settlements and failures hereafter. And as the work is commenced, and the "key-note" of the whole properly sounded at the starting, so it is more likely to be followed by the contractor and the workman. We have repeatedly observed that a bad or false start influences the progress of the work throughout. The workmen take their standard from a good or a bad commencement, and it is very difficult to afterwards rectify mistakes or improve upon the initial stage; especially is this the case with brickwork. The second or certificate stages of the work demand also care in supervision, and, lastly, at the completion of the building it is necessary to make a careful examination of the work before the final certificate is given.

Then there are certain kinds of construction, the details of which are not familiar to the architect. Of brick and stonework he may claim to be master—they are, *par excellence*, architectural kinds of construction with which he is most often called upon to deal; the majority of buildings are of these materials. In the same category we may name woodwork. Other trades are much less known. We may first incidentally refer to ironwork details. There are a very few architects who know much about them, as they are generally carried out by the engineer. When the architect is engaged upon any structure in which iron is largely used, such as a large factory, business premises, or a market, he generally obtains engineering assistance by employing someone accustomed to ironwork, or, which is very usual, he leaves the details entirely in the hands of the iron firm, or the contractor who does the work. As a general rule this practice is found to answer. The expert employed gives his skilled attention to the design, drawings, and specification; so too the iron firm, for their own reputation, can be relied upon; and it is better that the architect should delegate his details to an expert, than that he should take upon himself to make details that are faulty. The iron firm are careful at least that there is no unnecessary waste of material, and in this direction, perhaps, their interest in the contract may incline them to go further than the architect thinks desirable. If they can save a quarter or half an inch in depth on a number of steel joists or roof principals, or reduce the diameter of columns or tie-rods, they may make a saving of cost of no inconsiderable amount, but the building may lose a great deal of its appearance and apparent strength by the process. In a large building a quarter of an inch reduction on the ties and bars would save several hundredweights, and, therefore, the cost. But if the architect prepared the details he might be able to produce the same result more effectively than the smith and founder. Take, for example, the order: "Cast-iron columns to purpose-made pattern, with caps and bases drilled for fitments." The foundry engineer reduces the weight of each column by some alteration in the design of the base or capital, by omitting certain flanges or members on which its strength and appearance much depend. The result is a saving of half a hundredweight, reducing the cost per hundredweight, say, 7s. per column, which will possibly go into the contractor's pocket. The contractor has persuaded the architect that such alterations would be better, or an improvement on the design. It is in cases like this that the practical knowledge of iron details is of such value to the architect. We could mention numerous instances of patterns being altered with the architect's concurrence simply because he considered himself incompetent to insist on his own detail being carried out. How often do we find stock patterns of castings selected for the simple reason that the architect finds it easier to do so. In matters of constructional ironwork, like girders, steel joists, and flooring, the architect relies upon the practical knowledge of the contractor. He is made resposible for the testing and safe loading of the girders and floors. If there is anything wrong in the design the iron firm is supposed to rectify the mistake. The details are practically left to him. It is the same with other branches of the building. The joiner is presumed to point out any defect in the working details of staircases or window casements; the plumber has *carte blanche* to do what he thinks best under the general provisions of the specification, and it is the same with other trades of a technical kind. The details are left to the care of each craft. No doubt a large amount of thought and trouble is saved by the architect; but is the design really benefited? If there is some guarantee of security and efficiency in this delegation of detail, there is also a want of unity and design; the details are not in harmony with other parts; they are crude; the easiest and least costly mode of construction is adopted. The architect has lost control over these trades, simply because he has to some extent relinquished the design of their details. To take a common matter like gasfitting, the work is left entirely to the fitter. The specification only provides for the number of burners and their positions, thereby permitting the gasfitter to run pipes of insufficient diameter, or too large, for the supply of gas; and is it not the same with electric-light installations, hot-water piping, and nearly every other special trade in which the study of details becomes absolutely necessary to the efficient carrying out of the work?

ARE THE BUILDING TRADES DECLINING?

As we have been told that British agriculture is a thing of the past, so there are others who tell us of the decline of the building trades. On all sides we hear of the deteriorating influences of the want of proper apprenticeship, the evil of recruiting from the lower orders of each trade, the short period of servitude. In the old days men were taught the principles of their trades: the bricklayer was instructed in bond, arch, and gauge work, cutting and rubbing, and other manipulations; the carpenter went through a course of instruction in converting the raw material, in setting out roof-trusses, in constructing domical and circular roofs, semi-domes, in finding the hips and various bevels, in setting out arches and the construction of arch centres, in building up wooden beams and stiffening them, in modes of trussing, and scarfing, and tenoning. But now these things are "picked up" in a very haphazard fashion. The effects of this kind of training are now beginning to be apparent. The report on apprenticeship in the London building trades, of which we gave a summary last week, alludes to the results of the present system of training artificers; but there are one or two points of particular interest to the profession on which we may dwell briefly. First, the change in the *personnel* and character of some of the building trades, And for this purpose we take those of the bricklayer and carpenter and joiner as being specially influenced by modern conditions of work. Amongst builders it has been a general complaint that really skilful bricklayers who are able to do the best class of work are hard to find. Those who are competent to undertake the best work are few, and can consequently earn a higher wage. Arched and gauged work, including mouldings and cut-work, are quite beyond the province of the common bricklayer who has picked up his trade as a "learner"—by which term we mean one who has been admitted without agreement of any kind, often a raw boy-labourer employed by speculative builders. The report to which we allude speaks with some knowledge of the bricklayer's labourer. He begins by being put to work on an inside wall, in which duty he picks up something of the trade, though very imperfectly. To the rank of journeyman he reaches by obtaining employment on ordinary buildings. 'Having gained some knowledge of the craft under one firm, he obtains another berth, where he calls himself a bricklayer. He by this means escapes the vigilance of the real journeyman, who naturally wishes to exclude such men from his rank. In this way a class of men are introduced to the trade who are only able to do a very inferior kind of work.

Again, we have to consider other influences. Terracotta building has become a special branch of the trade requiring some knowledge of the material and mode of setting. Recently the practice of gauged work and arch-cutting, the requirements of ornamental or Queen Anne and Gothic brickwork, such as forming niches, oriel windows, gables, and moulded courses, have called for a class of experts who give themselves up to ornamental brickwork and cutting. There are thus three or four distinct branches, the effect of which is to alter the status of the ordinary bricklayer. The methods of setting out and applying bevels for arched work, of constructing groins, columns, and pediments, are unknown to the bricklayer who has chiefly been engaged in ordinary building.

Turning to the "carpenter and joiner," we are told that the title "has practically lost its old meaning." And there is much truth in this remark. Those who have watched the changes brought about by machinery, and by the importation of foreign joinery, must have clearly seen that this trade would be affected. The old-fashioned carpenter was a man well drilled in the principles of construction in timber. He could set out a king or queen post-truss, the ribs of a circular roof or dome, the hips and bevel of a roof. Now, as we are informed, he is "regarded as only capable of doing the rougher kinds of work, such as flooring, joisting, roofing, cutting moulds and centres for bricklayers, and attending on other trades." His work has developed into many branches. Formerly he was the general setter-out of the joiner's work, now the joiner directs. The latter is a "more skilled workman, as his outfit of tools indicates." The report to which we have referred says "the extensive use of machine-made joinery threatens to transform the joiner into a wood-fitter." Has it not done so already in the rank and file of the trade? Except the few specially skilled joiners who are employed on the highest class of work, the trade has been materially changed in consequence. He knows much less about the principles of his trade than formerly; his work is more mechanical and perfunctory in its finish, for he no longer exercises his skill in converting the material or in carrying through the design. Whether the "carpenter" proper will be soon extinct in London, as some contend, we do not know; but there can be little doubt that unless the carpenter can also turn his hand to joinery, he will have little chance of employment under the altered condition of the trade. The fact that the carpenter is now paid at a less rate than the joiner in many places shows very clearly that the former is in less demand. What we have said of these two trades is to some extent true of others. There has been a variation of type going on all round, owing to machine labour having been substituted for manual skill, with the result that the trades so affected have had to turn their attention to other branches. Thus it is well known that slaters now take tiling, which once belonged to a special class or to the bricklayer; the plasterer also interferes with the work of the latter in wall-tiling; the mason, who formerly worked in hard stone, takes soft stonework, and even brickwork and plastering; the ironmonger and smith often contract for plumbing work. All this "overlapping" is injurious to the real trades, and there is a natural aversion among workmen to the practice; therefore if the conditions of our industries continue to favour this interference, our building trades must suffer. A confusion is introduced into all building operations directly one man's trade overlaps another's, and the definite work and limits of each are lost sight of. To master builders and the architectural profession the questions we have raised are of importance, as it is to them the building artificer looks for encouragement of those things which tend to improve his technical knowledge and his position as a skilled workman.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE opening meeting of the sixty-first session of the Institute of Architects took place on Monday evening at 9, Conduit-street, W. The President, Mr. F. C. Penrose, F.R.S., occupied the chair, and there was a large attendance of members and visitors, including some ladies. The nominations were announced amid applause of Sir Frederic Leighton, P.R.A., and Mr. E. Faulkner as Hon. Fellows of the Institute. The President then read the

OPENING ADDRESS.

In his introductory remarks he referred to the fact that during the year they had lost by death 17 Fellows, including Ewan Christian, a past president, J. P. St. Aubyn, and Henry Clutton, of Hartswood, all of whom had been identified with the Institute during the whole course of its corporate existence. They had also to mourn the demise of E. G. Paley, of Lancaster, and two of their examiners, Ernest Turner and Harry Drinkwater, as well as Gordon M. Hills, the well-known archæologist, and Herbert Gribble, the architect of Brompton Oratory, and also Dr. Reichenspergen, of Cologne, and Richard Morris Hunt, of New York. The President also referred to the new London Building Act, which had come into force this year, and added that the current year had also witnessed at its commencement an important development in the examination system. Every fresh applicant for admission to the class of associates had now to ascend three stages of progression before he could pass as qualified for candidature. He had first to be admitted a probationer, then a student, then a candidate; and this required a minimum period of five years to accomplish. True, there were special facilities for architects in practice and chief assistants to enter for the single final examination; but, for all youths entering the profession, the three grades had to be successfully attained before an applicant could submit himself for election as Associate. The current year had also witnessed a revival of the Architects' Registration Bill; its attempted passage through Parliament had been opposed by the Institute, involving an expenditure of labour and of money which it was ill prepared to meet. What he proposed to say might be divided into two main heads—first, the treatment of architects by the public; and, secondly, the relations and services of the Institution to the profession and to the public. The President continued: There seems to be an impression abroad, and one very unfavourable to our profession, that the services of an architect are not required unless a building is to be of an ornamental character, and that when an architect is called in it must necessarily be more costly than in those cases where he can be dispensed with. We all know that that is a great mistake; but it would be mutually advantageous to the public and ourselves if it were realised that the well-ordered plan elaborated by a skilful architect must necessarily be economical in many ways, and if some initial expense has to be incurred by his insisting on sufficient solidity and good material, it is very soon recouped, and over and over again saved in the repair bill. If the employer asks for a building without ornament, the true architect will make no objection; he will know how to produce a good and comely, or even a stately, building without it. One of the greatest satisfactions that an architect can feel is when the ultimate cost of a building is kept very closely to the first estimates. When this has not happened it may very frequently be traced to a want of proper confidence shown to the architect at the outset. The employer supposes that it will promote economy if he names at first a smaller amount than he is prepared to spend. To this the architect adapts his design, and the work is commenced; but as it proceeds, the employer, or perhaps his wife, demands additional size or other modifications, which can only be introduced at a greater cost than would have been the case if they could have been embodied in the original design. Something of this kind can also have arisen from the work having been commenced in too great a hurry by the urgency of the employer, owing to his ignorance of the time required for the due elaboration of the design. Much time and much subsequent worry might frequently have been avoided by a few weeks', or even days', free intercommunication before the design was put into execution. In communications between architects and the district surveyors in London the latter are found almost invariably just and courteous; but in many provincial centres the local Acts and bylaws are administered under surveyors who have often had no architectural training whatever. Architects who may be practising in those places are frequently much harassed, and interfered with in an unwarrantable manner, even to the extent of the builder being ordered to alter parts of the work without any reference to the architect. Public or municipal buildings seem to offer the most frequent occasions for interference with the legitimate position of architects. The most unsatisfactory relationships between architects and employers are apt to arise in the arrangements connected with architectural competitions. That the competing architects are not unfrequently themselves to blame for part of this has often, and not unjustly, been said; but much of it is caused by the promoters of competitions, who ought to consider more than they are apt to do what is due to the profession. It is already a favourable sign that in very many recent competitions professional assessors have been appointed; but there has been in too many instances a want of proper consideration shown to the assessor's award. On the subject of architectural competitions in general, my immediate predecessor in this chair, Mr. MacVicar Anderson, has argued with great force that the principle of these competitions is altogether wrong, and beneficial neither to architects nor to the public. This statement, however, with respect to the former, perfectly true as it is, may not be quite so convincing to all of us as to the public; because, whether rightly or wrongly, young aspiring architects probably do think that from competitions, whether they are successful or not, they get an opportunity of advertising their powers. But as regards the public, it appears to me that Mr. MacVicar Anderson's argument is solid all round, namely, that a competition is not the way to get the best architectural result. An architect's best work cannot be brought out by competition. He must be serving two masters —one that which is best in the abstract, and the other that which is most likely to please the promoters, who often are very incompetent persons. It may be said by some that the spur of competition is useful in exciting genius; but a far healthier stimulant is the wish that a building which may have been intrusted to his hands shall redound to his credit. This is the true and only competition that ought to be encouraged. Then as to the bearing of the question with respect to our profession, my attention has been drawn by a friend to the case of the recent competition at West Ham. "Here," he writes, "75 designs were sent in for a building to cost £40,000. One man would get properly remunerated, two others get small inadequate premiums, and the remaining 72 will have lost all the time and money spent. At the ordinary professional charge for sketches only—viz., 1 per cent.—the amount would have been £400 for each of the designs, so that at this rate the cost of professional labour has been nearly three-fourths of the cost of erecting the building. Surely this must be a great loss to the profession as a whole, and the great majority of the competitors might have been better employed and more profitably. Business men have frequently expressed the utmost astonishment at this wasteful system." Another point which ought to be considered as exercising a very unfavourable effect upon architects who engage in competitions is the severe mental strain to which even a successful competitor must be subjected in compressing his work into too short a space of time. There is nothing in other liberal professions at all analogous to our architectural competitions, and they certainly do not raise architects in public estimation, particularly in the way in which they are so often conducted now. The practice has become so general that I cannot flatter myself it can be arrested; but it may be improved. Instead of resorting to competition, a far better plan for promoters would be to discuss among themselves and settle who the architect should be for any particular work. Committees of promoters who think they are securing the best result by eliciting, as they seem to expect, happy inspirations from a number of different minds and choosing the best of them—which by no means follows as a matter of course —go a very wrong way to work. Again, if there be any occasions when competitions are more undesirable than others, it is in cases where adaptations are to be made to existing buildings. In connection with the system already become so fashionable, which will be applicable both to open competitions and to those that may be restricted to a limited number, looking at the matter as much as possible from outside the profession, I would urge competitors to take the advice given from this chair by Mr. Waterhouse in his address to students in January, 1889—namely, that when unfair or obviously misleading conditions of competitions are issued by a promoter, the duty owed to the profession is to make no response. In short, Answer him not. Unfair conditions are not always—indeed, are not generally—the outcome of unfair or ungenerous feeling on the part of promoters; for their often objectionable clauses competing architects are much to be blamed. At various times architects have competed when they ought to have declined, and have thus led promoters to think that they will get a sufficient response under almost any circumstances. In many cases the authority of the assessor is reduced to the lowest possible degree, and in such instances architects ought to decline to compete. Mr. Penrose quoted in illustration the conditions of a recent competition, under which the committee might, by a majority of one, in consideration of the premium offered, impound the plans and put them into the hands of a clerk of works to execute! Surely in vain the net is spread in the sight of any bird, said the wisest of men; but he evidently had not reckoned for an architectural competition! In another case, however, for which the preliminary proposals had just been issued, the new clauses formed an agreeable contrast with those he had quoted—viz.: (1) The President of the R I.B.A. to nominate an assessor. (2) The assessor shall draw up the conditions of the competition, and, in giving his award, shall state in writing his reasons for doing so. All the competition designs shall, with the consent of their authors, be publicly exhibited after the award has been given. (3) The design awarded the first place by the assessor shall be the design adopted, unless it should be found that a majority of not less than three-fourths of the entire committee are in favour of any other of the competing designs, which in the latter case shall be adopted. Mr. Penrose continued: We are all convinced that no response ought to be made to an invitation issued for any competition, unless there be a professional assessor appointed; and it is self-evident that such assessor ought to be a man of high standing, and free from any local interest. But, with this exception, rather different views appear to be held respecting the degree of authority with which he ought to be invested in regard to the appointment of the architect to carry out the works after he has given his award. There is one thing, however, of extreme importance—namely, that he should not be called in, as is too often the case, when a number of designs have been sent in in answer to the unassisted invitation of the promoters, but that he should himself take the leading part in the preparation of the conditions and instructions. When this is done, promoters may be saved from making many mistakes. A very misleading error they often make is to give out a statement of their desiderata, and proceed to state a limit of cost, which are frequently quite incompatible with each other. Hence arises a source of very great perplexity both to the competitors and to an assessor appointed after the designs have been sent in, the latter finding it impossible to adjust the two irreconcilable views. There is, however, an objection of some weight, though not comparable with the absence of professional direction, in the drawing-up of conditions, that if the assessor is known beforehand, the competitors will be more or less influenced in their designs by the study of his known, or supposed, architectural bias; and this is perhaps the reason why the assessor has so often been only called in at the last moment, when all the mischief introduced by careless and misleading rules has been done. It is, however, a difficulty which, when thought of sufficient consequence, could be avoided by various means. Returning to the question as to the amount of authority which ought to be given to an assessor, he should not be merely allowed to recommend a certain course of action to the committee of promoters, but his position should be made predominant. As, however, the promoters can hardly be expected entirely to give up their control of the decision, I gladly endorse the condition already quoted, that the assessor shall have the duty of nominating the architect, unless his selection shall be challenged by three-quarters of the whole committee; and such a clause as this would satisfy our expectations, which several recent repudiations of the assessor's award have seriously disappointed. The course which appears to me to be the most desirable, and which coincides with the opinion of several highly-experienced assessors, forms one of the Suggestions printed in our *Kalendar*—namely, "That the promoters should, by advertisement, invite architects willing to compete for the intended work to send in their names by a given day, with such other information as the candidate may think likely to advance his claim to be admitted to the competition. From these names the promoters, with the advice of the assessor or assessors, should select (*a*)" [and this I hold to be the better course] "an architect to carry out the work, or (*b*) a limited number to compete, and each competitor thus selected should receive a specified sum for the preparation of his design. The author of the design awarded the first place should be employed to carry out the work." And to this might be added a very desirable suggestion, that some proper remuneration should be given to the architect selected if the work should not be carried out under his superintendence within some reasonable time. In regard to the second point alluded to at the outset—the relations of the Institute, the profession, and the public—the President remarked that, in the extremely able address that Mr. T. G. Jackson, A.R A., lately gave at the opening of the Liverpool School of Architecture, he spoke of the rise throughout the land of technical schools and institutes. Nothing, indeed, could serve to encourage those who had laboured in the cause of education for architects and handicraftsmen more than the foundation of the Liverpool School, under the combined auspices of that city and of Victoria University; and he saw no reason why, after efforts similar to those which had resulted in success at Liverpool, other important cities in the United Kingdom, such as Edinburgh, Dublin, Manchester, Bristol, Oxford, and Cambridge, should not found or develop a like school, and a like professional chair of architecture. There was a matter very seriously affecting those whose daily duties lay with *pondere, numera, et mensura*, to which he thought it might not be out of place to refer. Not long since the Parliamentary committee appointed to consider the national standards reported in favour of our adoption of the metric system. The change would no doubt introduce certain far from unmixed advantages, but it would be attended with enormous trouble not to be got over for many years. He ventured to take that opportunity of bringing before the Institute an alternative which he could not but think worthy of consideration. Instead of swallowing the metric system as a whole, what he ventured to recommend would give to our commercial classes all that they could properly ask for, and to themselves and the millions of the industrial classes all the advantages which could arise from the metric system, with less than one-tenth of the disturbance. The scheme involved a very insignificant change in our own reckonings of length, weight, and capacity to render the English standards easily commensurable with the French. He would confine himself that evening to the measurements of length. "If our inch were," he said, "reduced in length by about one hair's breadth, ten such inches would be 25 centimètres, a measure which is current in Italy, the palmo having been altered so as to agree with the quarter of the mètre. I would therefore recommend the word palm to be used to denote a length of 10in., thus serving for general use instead of the foot, and giving us at the same time a decimal notation, whilst all small dimensions could be reckoned, as now, in inches, halves, quarters, and eighths, or decimals of the inch at pleasure. In our dealings with those nations that have adopted the mètre it would be only necessary to multiply or divide by four, as the case might be—that is, divide a measurement given in mètres and centimètres by four to bring it to English palms and inches, or multiply English palms and inches by four to bring them to the metrical scale. The slight alteration in the inch would not be felt in the dealing of our poorer classes, who are really the persons, both numerically and morally, to be considered, and the complication introduced in commercial transactions would be very slight. Scientific calculators could readily take care of themselves. Weights and measures of capacity could be dealt with in an analogous manner by an almost insensible alteration of the ounce or the pound, the pint or the gallon, though the necessity in these, perhaps, would not be so great, because the kilogramme and litre are more reasonable standards than the mètre. I am not advocating change, though I confess to leaning towards decimal subdivision and to a desire for greater uniformity and simplicity, especially in our measures of capacity; but if a change is to come, I trust it will not be by the metric system adopted *en bloc*." In conclusion the President referred to the continuous diminution in the class of Fellows, remarking that the accessions made during the past twelve months amounted to 5 Fellows, 67 Associates, 3 Hon. Associates, and 8 Hon. Corresponding Members. As a matter of fact, the class of Fellows had lost, not gained, strength. The Fellows, who last November numbered 617, at the present hour numbered 596, being a diminution of 21. The Associates, who a year ago were 872 in number, had, on the contrary, advanced to 924, being an increase of 52. In the course of the year only four out of the 872 had become Fellows, while one architect who applied, and who had never been an Associate, was elected a Fellow. Further, during the last two years (1893-94 and 1894-95) only four "outsiders" had been admitted to the Class of Fellows, though during the two previous years 56 outsiders were admitted; during the two years before 50 outsiders were admitted; and during the antecedent two years (1887-88 and 1888-89) 69 outsiders were admitted to the Class of Fellows. These outsiders were architects in the provinces, at foreign stations, in Australia and the Colonies, with a few Londoners —men who had had little, if any, opportunity when young of becoming Associates. Yet they would find that they constituted an addition of strength to the Institute, and in many instances had added lustre to the roll of Fellows. Again, of the 34 Fellows who sat on the present council, 14 were outsiders; but were he to read out the names of the 14, they would certainly agree with him in thinking that the Institute would have acted most unwisely and lost a great deal had it refused to admit them as Fellows simply because they had not previously been members of the Class of Associates. On this point, which he knew full well was a delicate one, much misapprehension seemed to exist both within and outside the Institute. In the first place, there was an abnormal amount of hesitation on the part of Associates long in practice to proceed to the higher grade. In the second place, too many practising architects of repute, and even a few of well-earned distinction, formed no part of the Institute, forgetful, as too many of them are, that its influence and usefulness would be infinitely greater were they members of the corporate body. It would be a very fit subject for the council to discuss whether greater facilities could not be made for the admission of Fellows from among those whose career showed that they would be worthy members of their body. It had more than once occurred to him during his tenure of office that one of the main reasons for the startling paucity of applicants for the Fellowship was the possibility that architects of mature age, men who had carried on extensive practice for the greater part of their lives—men whom they wished to see Fellows of the Institute, but who were not and never had been Associates—hesitated to take their chance of election at the hands of a body of electors, some of whom had only within recent years emerged from the position of articled pupils. It seems to him, for instance, somewhat sanguine to expect that men who were well-known members of the Royal Academy, of the Society of Antiquaries, and of other institutions in which for a long period they had been recognised as architects of repute and distinction, would consent to run the risks of an election dependent on the good or ill-will, or the prejudices, of some thirteen or fourteen hundred gentlemen, the vast majority of whom were their juniors, and some of whom were not even in practice. He therefore urged the Institute to consider whether the power of admitting such men to the Class of Fellows might not be confided solely to the controlling or governing body of the Institute, at least for the space of a year, or perhaps two years. The regulations which guided the council in the admission of applicants for candidature as Fellows were sufficiently definite to constitute a check on any improper attempt to make such admissions too general or indiscriminate. The change might be effected by the suspension of certain by-laws; and though such suspension would require the sanction of the Privy Council, he felt convinced that when the facts were properly explained, their lordships would acquiesce in the petition. What he proposed had good precedents to support it. For instance, in his own club (the Athenæum), the committee had power to elect from time to time distinguished persons without submitting them to the chances of a ballot of the whole body of members; and this was held to be a great honour by the persons themselves, while it was certainly of high advantage to the club. The way being thus opened, the council would have little difficulty in reaching the majority of those who should be part of the corporate body, and in effecting, to a great extent, the fusion with themselves of many, especially in the provinces, who resented the position in which they were placed from no fault of their own; but who were, nevertheless, forced to remain outside the ranks of the Institute, to their mutual regret, and, perhaps, to the latent annoyance of both.

Mr. Aston Webb, Vice-President, in proposing a hearty vote of thanks to the President for his address, which contained, as he observed, many practical and important suggestions, ventured to take exception to one or two points as to competitions. In most cases the promoters of a competition did not themselves know their requirements, and he thought that where the conditions laid down seemed intricate, difficult of interpretation, or incompatible, it was the duty of intending competitors to endeavour to ascertain their true meaning. The President had alluded to the material alterations sometimes necessary in selected designs; but in his experience the design selected by an able assessor rarely, if ever, required reconsideration on general lines. In conjunction with his friend, Mr. Ingress Bell, he had sent in very many competitive designs; but they had certainly never expended anything like the £400 mentioned as the average estimated cost of those submitted for the West Ham Technical Institute. It should be held to be the aim of assessors, when consulted as to the drawing up of conditions, to endeavour to lessen the outlay on the preparation of designs. The fact that competitors would come forward, even if the conditions were harsh, ought not to absolve promoters from striving to make fair conditions. Occasionally committees sought to set aside the awards of assessors, and he was glad that efforts were now being made to persuade the Durham County Council not to depart from the course usually adopted, of giving the execution of the work to the competitor named by the assessor. With regard to the selection question, he was by no means sure that the committees would make a wiser choice of an architect than of a design: they were usually as ignorant of the merits of the one as of the other. It was no more desirable that promoters should be absolutely bound by the advice of their assessor, than that a man should be bound without option to follow the recommendations of his lawyer or his doctor. As to the examinations, the action of the Institute in promoting architectural examinations was forced upon them by the younger men, and had been of great benefit to the profession and to students as showing what they ought to learn in their early days. The President had touched on the increasing paucity of Fellows; but it should be remembered that the class of Associates by examination was steadily growing, and in time this process must tell, and would make the Institute a more vigorous body than in the past. All should be indebted to the President for his suggestion that Fellows should be admitted directly through the council. Such a course would confer honour on both parties, and he believed the suggestion would be well received by the members, and also by outsiders.

Mr. W. D. Caröe, F.S.A., President of the Architectural Association, in seconding the vote of thanks, humorously remarked that he foresaw the day when the youngest Fellow at present on the roll would find himself by flux of time the sole survivor, and as such the only architect eligible for a seat on the council, or to assume the purple and ascend to the Presidential chair. The suggestion as to the admission of Fellows through the Council had his cordial support. In appreciative terms he referred to the long life which the President had devoted to architectural scholarship and to scholarly architecture, and put the vote of thanks, which was carried by acclamation, and briefly acknowledged by Mr. Penrose.

CONCERT HALLS AND ASSEMBLY ROOMS.—III.

By Ernest A. E. Woodrow, A.R.I.B.A.

We have now seen how a simple room may be used for many purposes, as in the case of a parish room, where such use was to be expected; but there are very many buildings which, in the first instance, are built for one purpose, and subsequently changed to be used for another. I have already mentioned the swimming-bath as a most common example of this class of building. The architect may have no other instructions than to provide a good bath; but when winter comes the owner floors over his tank and lets the hall to any person who will pay the hire, irrespective of the inadequacy of the exits and general provisions of safety. The architect must, therefore, be alive to the fact that this may happen, and where there is the slightest chance of it happening, erect his building with such exits, staircases, &c., as will be sufficient for a seated audience of the number that will fill the area of the premises. This will save his client a lot of money, as no structural alterations will be required when he applies to the authorities for a license. It must also be remembered that the dressing-boxes in a swimming-bath will be in the way when used as an assembly-room, and that the wood of which they are made will add greatly to the inflammability of the building. These should, therefore, be so arranged that they can be taken down and removed entirely from the hall when it is used for public entertainments and the bathing season is over I believe I am correct in stating that this requirement has been enforced in the conditions for a competition for the new baths in Shoreditch.

Another example of what a little forethought will do in enhancing the value of property is how the architect places his public room in an hotel. But for the fact that the largest room is often placed many feet above the ground level, is so mixed up in the fire risks of the hotel, and has no separate exits or staircase, this room might more frequently be licensed for public music and dancing, and be a source of revenue to the proprietor.

Again, we have seen how parochial rooms are always wanted for public assemblies, yet how often are they erected on some piece of back waste land where no proper ingress or egress can be obtained; where doors are made to open inwards, are fastened with barrel bolts which may fall and catch in the floor, causing disaster such as experienced at Sunderland some few years ago. Galleries are found in these buildings, even of recent erection, which have but narrow wooden staircases with winders leading into the same lobby as the floor of the hall. These staircases are little better than step ladders. The gas arrangements are most defective, as instanced in the Belfast catastrophe. No second system of lighting is maintained. The gas-meters are placed in dangerous positions; stoves are provided with flues passing near woodwork, and generally every known measure of safety is totally ignored. The general run of parish-rooms and school-rooms are the most ill-cared for and neglected places of public resort of any kind, and consequently among the most dangerous.

I fear it may be taken as a general rule that if an architect has to design a building, the use of which does not make it come under the regulations of the authorities, he seldom considers that those regulations are as applicable for the safety of a building used for lectures and social gatherings, as for concerts and dances. It is quite as necessary to look after the safety of an audience attending a teetotal lecture as one assembled at a music-hall where drinking is allowed in the auditorium. The lives of the one assembly are as valuable as the lives of the other—some might argue more so. The architect should, therefore, be alive to the fact that a building used by the public should be as carefully designed for safety, whether it is to undergo the criticism of the licensing authorities or not. By doing so, he is studying the greatest interest of his client, as he is erecting a building for which his client may eventually require the sanction of the authorities to hold certain classes of entertainment, which can only be held by having their license, and he will thus save the owner much annoyance, loss of time, and outlay for alterations.

London architects in the future will be restricted to a certain extent by such provisions of the New Building Act as relate to public buildings which are not licensed for music, dancing, or stage plays. It may not be out of place here to touch upon these points. The walls, roofs, floors, galleries, and staircases must be constructed to the satisfaction of the district surveyor, or, in event of disagreement, to the satisfaction of the new Tribunal of Appeal. Houses, &c., which are converted into public buildings must be altered to the approval of the same authorities. Staircases for the use of the public in churches, chapels, meeting-houses, public halls, public lecture-rooms, public exhibition-rooms, or public places of assembly, must be supported and inclosed by brick walls not less than 9in. thick; they must be of fire-resisting materials, with treads of uniform width—nothing, strange to say, is said about a uniform rise.

The width for staircases, internal corridors, or passageways must be 4ft. 6in. for 400 persons, 6in. to be added in the width for every additional 100 persons, until a maximum width of 9ft. is obtained; but where only 200 persons are to be accommodated, the width may be 3ft. 6in. Where a staircase is 6ft. wide or more, a central handrail is to be provided.

These requirements are based upon the old theatre regulations of the Metropolitan Board of Works, which were re-enacted in the present L.C.C. regulations for theatres and music-halls.

In lieu of a single staircase, corridor, or passageway, the new Building Act permits a substitution of two staircases, corridors, or passageways, each at least two-thirds the width required. When only one staircase is provided, architects may be expected to avail themselves of this provision, for two staircases are always better than one, and two staircases each 4ft. wide would be immensely more valuable than one 6ft. wide. A staircase wider than 4ft. 6in. is a mistake where crowds have to descend rapidly, as there is not sufficient support at the sides to insure people going downstairs without falling.

Separate means of exit into the street, or open spaces, from the galleries will in future have to be provided for places of public assembly which are not under the theatre regulations. Doors and barriers will have to be made to open outwards, and no outside locks or bolts allowed.

This is a great step in the right direction, but it still leaves much for the architect to do to make his building a safe one for the assembly of numbers of the public. It is a pity these sections of the new Act cannot be made to apply to old buildings used by the public.

The requirements for concert halls and assembly rooms which need, by virtue of the nature of their entertainment, a music and dancing license, I shall have to deal with in full as these articles proceed.

So far, I have been speaking of the room, or hall, used for many purposes, quite apart from the hall, which is designed and used for concerts only; but it is very seldom that a hall can earn an income by being used for only one class of entertainment: sooner or later the proprietor has to change his bill or put up the shutters. The architect must therefore remember this when making his design. It is true that the architect, however careful he may be in his observance of every detail for public safety, is always at the mercy of the mismanagers who are put in charge of the building on its completion. He may provide six exits from his hall, and the hall-keeper be of opinion that three are sufficient, and omit lighting the gas and lamps in the other three, as I have known to be the case. He may, and certainly will, if he be a wise man, put automatic bolts on his doors, and find the attendant add a padlock and chain so that they will not open; he may build store-rooms for the chairs, stage, orchestra fittings, &c., and the chairs and forms may be hurriedly placed in the passages and lobbies; he may see his exits obstructed during a performance by rows of chairs, the people seated thereon enjoying themselves, but quite oblivious of the fact that they are placing themselves and others in danger; his staircases may be blocked by ticket-boxes and barriers; his safety-lamps may be unlit; and the hose from his hydrants removed to wash down the yard; and yet the architect is quite powerless. The only satisfaction he has is that when a panic does occur, accompanied by loss of life, and followed by an inquest, he, at least, will be held blameless.

It is clearly the duty of the architect who has no control over mismanagement and the introduction of dangerous fittings, accompanied by such terrible risks, to, at least, provide a building where the fear of a fatal rush from panic will be brought to a minimum by the well-planned, well-placed, and numerous straight exits, the wide passages, and the well-designed staircases.

A large number of concert-halls and assembly-rooms are attached to town halls. These rooms in town halls are more frequently than not placed on the first floor over the vestry offices; their exits all deliver into a vestibule common to these offices and the public hall, and the fire risks from the offices are added to those of the hall. It is argued that the offices are not used at night when the hall is; but that argument is a poor one, for the very fact of them not being in use is an assurance that should a fire occur in them that fire will not be discovered till after it has got a good hold of the room, and until it is creating smoke sufficient to rise up the staircase into the hall and create panic. Again, a fire frequently smoulders for hours before it breaks out, so that the fatal spark may be actually locked in a room on the departure of the vestry officials, waiting to burst into flames when the hall is filled by the public.

Rooms should never be placed unnecessarily above the street level, especially when they are of such a size as to hold on the area or floor level as many as a small theatre. A theatre holding a thousand people is provided with numerous exits; but the architect who places six hundred to a thousand seats on the floor of a hall situated many feet above the street seldom gives as many exits to his hall as he would to a theatre of the same holding capacity.

There is one danger to the class of building of which I am now speaking which may not be often thought of—a danger arising frequently at political meetings or assemblies, where the audience are carried away by excessive excitement. I refer to that imbecile who finds relief to his feelings by calling out "Fire." Such dreadful insanity does possess some few, and whatever the cause of the stupidity, the effect is attended with great danger, especially in a densely-packed mob already worked up to a pitch of intense excitement. How can the architect contend against such odds as these? Only by safety planning.

COUNTY LUNATIC ASYLUMS.—XXXII.

By George H. Bibby, F.R.I.B.A.

LUNATICS' WARDS IN WORKHOUSES.

ONE of the earliest notices of the establishment of an asylum for the insane is in the life of St. Theodosius, who is said to have been born in the year 423, and to have died in the year 529, at the great age of 106 years. He is said to have established, near Bethlehem, a monastery, to which were annexed three infirmaries—one for the sick, one for the aged and feeble, and the third for such as had "lost their senses," in which "all succours, spiritual and temporal, were afforded with admirable order, care, and attention," and probably the fourth division of this establishment was occupied by the *working* inmates.

Perhaps the modern English workhouse exhibits, in a general way, the only corresponding existing provision (comprised in one institution) for three classes of the above description, for in workhouse buildings special wards are not only provided for the able-bodied and children of both sexes, but also for the sick, aged, and infirm, and for pauper imbeciles and lunatics, these latter being best housed when at some distance from the sane occupants, and as far as may be out of their sight and hearing.

I have already directed attention to the fact that the building requirements of the Local Government Board, as regards lunatics and imbeciles in workhouses, are far less exacting than those of the Commissioners in Lunacy for patients in county asylums (*vide* Building News, Oct. 18, 1895, p. 553). The result is that patients, being maintained at a less cost in workhouse lunatic wards, are not unfrequently permanently kept there; whereas they would be better provided for in a county asylum. This appears to be particularly evident in Ireland, as may be seen from the reports of the Irish inspectors of lunatics.

Until fifty years ago the buildings for pauper lunatics were nearly always inadequate for the purpose, both as regards construction and number, and vastly different in every way (and particularly as to management) to those now provided in these Islands. There can be no doubt that the local authorities had a great horror for all such institutions, as only causes of expense to the ratepayers, and frequently permitted the insane to live how they could. In a certain district (containing many resident gentry who were not remarkable for displaying less than the usual benevolence of their class towards the poor) two helpless individuals deprived of reason were allowed for many years to live in a most miserable condition, and no further illustrations as to the then necessity for improvement in asylum construction and management would probably be considered requisite.

In the first case an insane female occupied a wooden shed, resting against a garden wall, a receptacle of very slight materials, 5ft. long by 4ft. 6in. broad, pervious to the elements at every seam, and having no door to fill up the entrance except a bunch of rags, which could be suspended for that purpose. Her bedding was a bundle of straw, and her food was contributed according to the good-will of her immediate neighbours, for she was too old and feeble to beg. She occupied this place for about 20 years, and was supposed to have escaped from a lunatic asylum. She was at first possessed of some accomplishments (music and needlework), indicating an origin and education above the common rank. Having a horror for stone walls, she took up her quarters in an open shed; then she obtained an old hogshead, which she was permitted to occupy till it rotted about her, and subsequently obtained the garden-wall shed, where the neighbours usually contributed a few shillings at the beginning of each winter to obtain for her a rug and a few clothes. The guardians of the poor of the parish never paid the least attention to this unfortunate creature, or disbursed one farthing in her behalf.

The second instance is that of another insane woman, who resided (about a mile from the first mentioned) within an open shed near to a farmhouse. In this case the shed was merely an erection, consisting of two or three pieces of wood placed in a slanting position against a wall, and overlaid with a quantity of straw. It was quite open towards the north, and hardly approachable for filth. It was also too short for the extended body of a human being; yet there, with a small log for a pillow, and a few clothes supplied by the parish authorities, was the only home of this miserable woman. When she lay in this loathsome den, too wretched to be a proper habitation of a pig, she was obliged to arrange herself like a cat, with her head and feet nearly together. Her food was supplied by the spontaneous contributions of her neighbours, and otherwise she was not interfered with, although sometimes violent in her conduct.

In defence of the parish authorities it was stated that the two wretched women preferred their sheds to houses, and that "placing them in asylums would drive them frantic or destroy them." A surgeon is said to have actually given his testimony to this effect, adding, in the case of the first-mentioned woman, that "the treatment she received seems as kind and humane as the circumstances will permit." On the other hand, a newspaper reporter stated that when he went to her den he "found her sitting shivering with cold, and covered with wet rags—rags literally soaked with the rain which had fallen in torrents during the preceding night, and had come in through the numerous chinks in her wretched dwelling." Her straw was changed once a week. The attempts of these authorities to exculpate themselves only made their case the worse; for who ever heard of the freaks of insane persons being humoured, when it was necessary to take measures for humanely disposing of them? From this point of view an orphan might have been allowed to wander about like a wild animal, unclothed, unfed, uneducated, merely because she preferred freedom to being reared in a workhouse. The real cause of these women being allowed their own will was that it coincided with what was considered best for the parish funds, and the policy of some local authorities of half a century ago was to discourage all claimants for relief, and to endeavour to escape the necessity of sending paupers to lunatic asylums.

In the planning of wards for harmless lunatics and imbeciles under workhouse control, there are various points to which the Local Government Board direct attention.

In the first place, it must be borne in mind that in a large workhouse establishment there must be accommodation for the following classes, in addition to those kept as lunatics, and that whether a workhouse be intended for *all* the classes mentioned, or only for a single class, or for a few of those classes, it is essential that there should be a complete separation of the sexes, and also as far as may be of classes, and to this end distinct dormitories, day-rooms, entrances, staircases, yards, water-closets or earth-closets, lavatories, &c., should be provided for each sex and class. The classes to be provided for are—"Aged and Infirm," "Able-bodied," "Harmless Lunatics and Imbeciles," "Sick of all Classes," "Children," "Infants," "Aged Married Couples," "Probationers," and "Vagrants," and a complete workhouse for a large union should ordinarily comprise the following separated buildings—i.e., imbecile wards, isolation wards, sick wards, schools, vagrant wards, main buildings, and entrance buildings; but in small workhouses, where the number of inmates and officers is very limited, some of the above-mentioned separate buildings may be dispensed with.

The following are the requirements and suggestions of the Local Government Board as to accommodation for "short-period lunatics" in workhouses, and relate to the provision which should be made in workhouses for the accommodation of persons who are alleged to be, or who are, lunatics, and who are removed to the workhouse under section 20 or 21 of the Lunacy Act, 1890.

The extent of the accommodation will depend on the requirements of the particular union; but arrangements should be made for the simultaneous accommodation of persons of both sexes, with their attendants. In large workhouses provision for the reception of short-period lunatics may in some cases be suitably provided in connection with the wards already set apart for imbeciles; but in the smaller workhouses it may usually suffice to so arrange two wards and an attendant's room with padded room, that one of the wards may, if necessary, be entirely shut off from the other portion, for the joint use of a patient and attendant.

Each ward should be large enough for at least two beds, to enable a person in charge to be in constant attendance, and the amount of space allowed should not be less than 100ft. floor space, and 1,200ft. cubic for each bed. All sharp projecting angles should be avoided. Ward floors should be of wood. Ledges, architraves of doors, internal window-sills, and the like should be avoided. No brackets, pegs or nails, &c., should be fixed to the walls. Door-handles should be *sunk flush*, and doors arranged so as to open outwards. For wards of this kind strong window-frames, with vertical swing sashes, 6in. wide, extending for nearly the whole height of the window, glazed with small panes of stout plate glass, and working on pivots top and bottom, are suitable.

Artificial light should be furnished from the adjoining attendant's room through a fanlight glazed with ½in. plate, and under the control of the attendant, whose room should command a view of the whole ward by a small window of similar strength.

Ventilation and warmth should be provided in wards of this kind by an air-chambered grate in the attendant's room passing fresh warmed air into the wards; air-bricks should be fixed also in suitable positions, in addition to the opposite external windows, which are indispensable in each ward.

The imbecile wards should provide for the ready sub-division of the patients according to their habits and condition, and should be so arranged as to afford the utmost facility for the constant supervision of the patients; and as respects ventilation and all arrangements for the comfort of the occupants, they should be regarded and treated as *sick wards*.

The requisite minimum space per head for this class of inmate is, in the dormitories, 5ft. of wall space (irrespective of doors and fireplaces), 50ft. of floor space, 10ft. height, and 500ft. cubic space; while in the day-rooms 20ft. of floor space, 10ft. in height, and 200c.ft. of space are required.

Due provision should be made for securing cleanliness of person, and for the supply of hot and cold water; but in many cases a portable bath used in the ward may suffice.

In the above arrangements generally the requirements of the Local Government Board are below the standard of the Commissioners in Lunacy, and of the corresponding authorities in Scotland and Ireland; but for this difference there does not appear to be a satisfactory justification, the inmates of county asylums and of workhouse lunatic wards being alike dependent upon the ratepayers.

(*To be continued.*)

CAST IRON IN BUILDER'S AND CONTRACTOR'S WORK.—VII.

By Joseph Horner.

CONTINUING in detail the several points in which good castings differ from those which are imperfect or bad, Fig. 19 is drawn to illustrate the appearance of a spongy top face of a column casting. The sponginess may be greater or less in extent than that indicated by the drawing; but the general appearance is unmistakable, and the term "spongy" or "honeycombed" expresses exactly that appearance. The holes will range from the size of a pin's-head to that of a pea or a hazel-nut. When larger, they have gone past mere sponginess, and are termed blow-holes. Often, as in blow-holes, the worst does not appear on the surface—a film of metal conceals a lot of honeycombing. An inspector will try the most minute holes with a bit of wire or a long pin, and often discover in that way that a very small hole on the surface will extend for several inches beneath the surface, opening out really into a large blow-hole. Such sponginess is almost invariably found, when present, on the upper surfaces of castings, where the pressure is least; seldom on the lower, where it is greatest. In some positions it is of relatively little moment; in others it should condemn the casting. Those parts subject wholly to tension, as the bottom flanges of girders, should never be passed if the honeycombing is at all extensive or deep. In the case of lugs subject to tension, honeycombing such as that shown in Fig. 20, is quite condemnatory, even though all the rest of the casting were perfectly sound. Honeycombing on column flanges is also serious, because on the flanges the stability of a column largely depends, and the strain of the bolts is liable to pull such flanges off. Sponginess down one side of a column may or may not be serious, dependent on its extent and depth. A practised observer can usually form a correct opinion about that by probing, and by general appearance; but when columns have to be subjected to severe stress, it is better to condemn all which show any traces of sponginess. They can be well cast if the mould is properly vented, the metal clean, and sufficient risers put on. Minute cracks in columns have sometimes been pened over with a hammer. The same practice is resorted to when there are honeycombed surfaces, the hammer-blows closing them, and smoothing the surface over. The most satisfactory test for the closeness of grain and freedom from sponginess of a column is the hydraulic, just as it is used in the case of water- and steam-pipes.

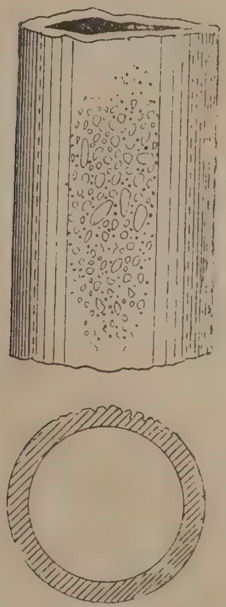


Fig. 19.

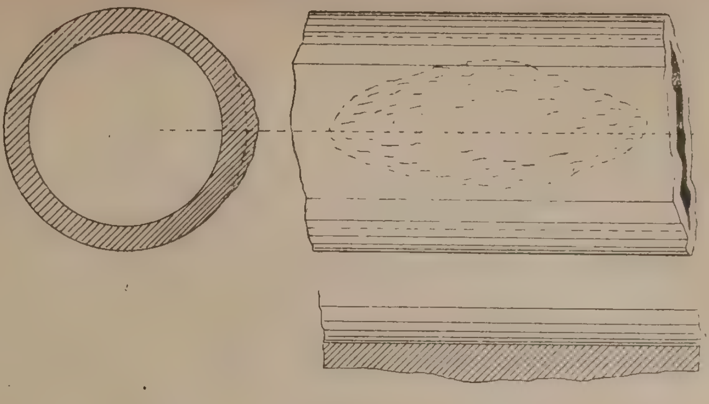


Fig. 22.

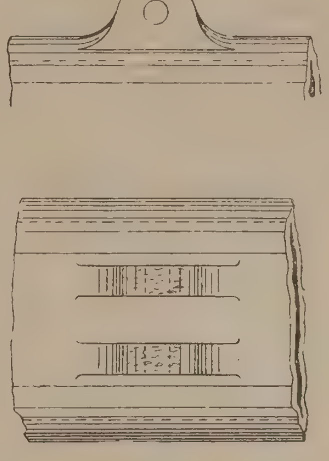


Fig. 20.

But there is an evil perhaps worse than this, and that is the presence of large blow-holes. The utmost care does not always suffice to prevent these. They are due to insufficient venting of mould or core, to moisture, and to the entanglement of air in the molten metal. Ample venting and steady pouring, with the use of risers, are the best preventives of blow-holes. Unfortunately, they are very often concealed by a film of metal, as in Fig. 21. Hence the top faces of all castings—which can always be known by the marks left from cut-off runners, risers, and chaplets—should be tested with hammer-blows, when hollow sounds will indicate the existence of concealed blow-holes, and a sharp blow will break through the thin film. Another way to detect them is to thrust a fine wire in some of the suspicious-looking small holes when such are present, when it will often penetrate several inches, revealing the fact that there is a blow-hole beneath. A smooth skin will often conceal hidden faults of this kind. Fig. 21 illustrates an extensive blow-hole in section below, and its locality and extent are indicated by dotted lines in plan above. Such blow-holes seldom occur, except on the upper portions of castings. These often extend over large areas without any external indication of their presence, because a thin film of metal so frequently covers and incloses them. They exist either with, or without association with general sponginess. As they generally occur on the top, and as they are often completely hidden, it is quite necessary to test all castings along their top faces with smart blows from a hand-hammer. Such blows do no harm to a good casting; but they will either return a hollow sound or break through the skin, if large blow-holes are underneath.

Blow-holes in castings are less serious when they occur in those portions subject to compression than in those subject to tension. A few blow-holes occurring at intervals in the former would not sensibly increase the risk of crushing; but in the latter they would be highly dangerous. The same remark applies to general sponginess or openness of grain. Blow-holes in the neutral axis of a casting are of no moment. This is illustrated by the fact that holes may be drilled in the neutral axis of a test-bar, and the drilled bar will sustain the same load as a solid bar; on the other hand, if the bar were turned upside down, bringing the thinner metal into tension, it would fracture quickly. The fact is also illustrated by the practice of lightening out a girder along the neutral plane. Sponginess on the compression side of a casting will slightly increase its deflection; but, all the same, it is risky to pass work in which blow-holes occur,

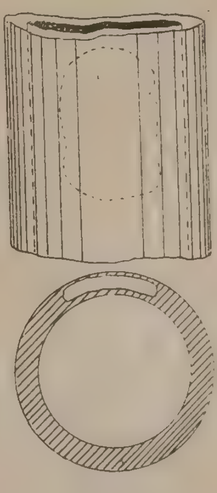


Fig. 21.

even in localities subject to little or no tensile stress; because if a casting is blown in one place, it may also be so in another, of which no indications are visible.

An extensive scab is shown in Fig. 22. Such scabs occur on all parts of castings—top, bottom, and sides. They are due to the washing away of sand caused by hard ramming, weak sand, and bad venting. The fettlers chip them off. But an inspector can see where such extensive chipping has been done, and all castings that show signs of much scabbing should be condemned. It is not because the scab has been cut off, but because it presence is a sure indication that there are masses of sand, corresponding in size with the scab, imbedded somewhere in the body of the casting. Such masses may or may not come to the surface. If invisible, they constitute a hidden source of danger. It is quite likely that the corresponding hole or holes are not to be found, being perhaps covered with films of metal, but there is no doubt about their existence somewhere. So that the presence of extensive scabbing is quite sufficient to condemn the castings in which it occurs as unsound.

Fig. 23, A, illustrates the defect which is termed a cold shut. Its presence should condemn any casting, no matter where it occurs. The casting is really as good as fractured where the cold shut occurs. It means this: that the metal has been pured so cold and dead, or that the metal has had so far to travel in the mould that it has become chilled; consequently, when opposing currents meet, they do not mix as perfect liquids, but only to a partial extent. Being so cold, they form a joint or imperfect union, much like a bad weld. These are also caused by using poor iron with no life in it, or by using iron badly melted, as well as by allowing iron to remain too long in the ladle before pouring. When only a moderate stress comes on the casting, the cold shut becomes the weak link in the chain. These shuts can usually be recognised by the rounded appearance of the edges along the irregular groove or fissure where the metals have met.

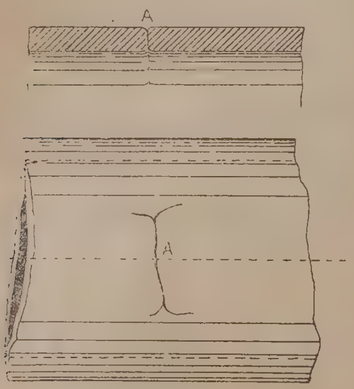


Fig. 23.

DESIGNING OF STEEL BRIDGES, THEORETICAL AND PRACTICAL. —XXIV.

IT was explained in our last article that the repeated applications of the same load will cause a bar or other section of iron and steel to fracture under a stress less than that of its ultimate statical breaking strength. A practical example, and the mode of calculating the dynamical breaking strength of a bar of iron, was also fully investigated. This rule, as it was stated, was applicable only to those cases in which the stresses induced upon the bar by the load were of the same character or sign. It is evident that some change must take place in any specimen of metal when subjected to the action of repeated application and removal of the same load, or otherwise we should have the statical strength of it equal to the actual breaking strength when under experiment. This change or loss of strength, for that is what it really amounts to, has been termed the "fatigue" of the material. Experiments on steel bars, made by Sir Benjamin Baker, in which the bars were repeatedly bent and twisted, demonstrated most conclusively that the fatigue of the material was greater when the repeated stresses were of a tensile character, and less when they were compressive. Although the distinction between the statical and dynamical breaking loads of iron and steel has been shown to be very considerable when the specimen was subjected to stresses of the same character, the difference becomes still more accentuated and most marked when the bar undergoes alternate stresses of tension and compression. The fatigue or loss of strength, which may be due to a deterioration of the elastic properties of the fibres, becomes greater, and the specimen consequently yields to a still smaller dynamical breaking weight. Railway axles when fractured constitute excellent examples of the truth of this statement. In their incessent revolutions the upper and lower fibres are continually subject to stresses of alternate tension and compression or "reversals." It would be beyond the scope of these articles to investigate this question more fully; but it will be again referred to in dealing with its effects upon the different members of open-web steel girders. The practical evil results accruing to members of girders from reversals is so well known to engineers that some of them design their bridges and roof trusses in such a manner as to avoid all probable chance of any of the parts of them being so acted upon. This is by no means an easy task to accomplish in theory, and it is exceedingly doubtful, having a due regard, especially in railway bridges, to unforeseen and inevitable working contingencies, whether so nice an adjustment of stresses is ever really arrived at. It is preferable to acknowledge the possibility of reversals on some, but not all, the members of a girder, and allow a margin for them than to attempt to prevent their occurrence.

As a matter of fact, some parts of nearly all bridges, roof and other structures, are exposed to alternating stresses, and it becomes absolutely necessary to provide for them, first by calculation of their actual amount, and secondly, by apportioning the sectional area of the material to adequately resist them. In the case of a bar or other specimen under experiment, let T be the greatest tensile stress to which it is exposed, and C the greatest compressive stress. Put S for the breaking strength of the bar under the same conditions of repeated applications of the same load as in our last article, and S_1 for its breaking strength when subjected to reversals. Let W represent the actual breaking weight to be calculated. Supposing the bar to be of steel or iron, we shall have—

$$W = S\left(1 - \frac{S\,T}{C}\right) + \frac{S_1\,T}{C}$$

making the ratio—

$$\frac{T}{C} = R$$

the equation becomes—

$$W = S\,(1 = R\,S) + R\,S_1.$$

Let a bar of steel be subjected to a maximum tensile stress of six tons, and a maximum compressive stress of nine tens, then—

$$\frac{T}{C} = R = \tfrac{2}{3}.$$

From this value of the vibrating ratios we obtain, substituting it in the above formula—

$$W = S\left(1 - \frac{2\,S}{3}\right) + \frac{2\,S_1}{3}.$$

From the results of experiments, we know that the following values have been found to hold for S and S_1 in tons per unit of area—

$$S = 16\,.\,S_1 = 9.$$

Inserting these values in the equation for W, we have—

$$W = 16\,(1 - 10{\cdot}7) + 6 = 11{\cdot}3 \text{ tons.}$$

The actual statical breaking weight of the steel specimen is about 29 tons, so the effect of reversals in causing "fatigue"—that is, in reducing the strength of the material, is sufficiently obvious. It has been stated that the total effect of alternating stresses or reversals is equal to the sum of the two descriptions of stresses regarded as being of the same character. Employing the same notation, if T and C be the maximum stresses to which a bar is subjected, and supposing C be greater than T, then it is not sufficient to design the bar of the proper form and sectional area to support the stress C, but it must be made strong enough to support a stress, S, equal to—

$$S = (T + C).$$

In the example above, T was made equal to six tons per square inch, and C to nine tons, so that instead of calculating the area of the bar and designing the form of its section to resist a compressive stress of nine tons, which would, *à fortiori*, resist a tension of six tons, it would be necessary to design the bar so as to enable it to withstand a stress of 15 tons.

Without adopting this rule in its entirety, engineers have for some time past recognised the necessity of employing a different distribution of the material in the various parts of girders and trusses than had hitherto been the practice. The old rule of the Board of Trade, fixing the safe-working stresses for wrought iron at five and four tons per square inch for tension and compression respectively, and at 6½ tons for steel, is too vague to be any longer applied indiscriminately to every member of an open-web girder. In a bridge liable to violent loads applied suddenly, some parts of the steelwork are considerably more affected by it than others. Girders of small span, such as plate and box girders, and others belonging to the same type, as a class may be included under the old regulation; but in structures in which there is a large range of stress, combined with heavy rolling loads, some nicer adjustment is, at any rate, desirable, if not indispensable. In some recent designs for very large suspension bridges in America the working stress per square inch for those parts of the bridge subject to reversals has been taken as one-fourth of that allowed for the wire cables and parts which are strained solely in tension. The general law governing the safe loads under the three conditions investigated may be thus expressed. If L represent the safe statical load, L_1 the similar load when the members are subjected to repetitions of the same stress, and L_2 the load when reversals take place, then—

$$L_1 = \frac{L}{2}, \text{ and } L_2 = \frac{L}{3}.$$

When treating in former articles the subject of steel-plate bridges, it was pointed out that, so far as choice was concerned, the designer had little or none. There are only three descriptions of this particular type of bridge—the tubular, the double-plate web, or box girder, and the single-plate. The first of these is obsolete, the second is unsuitable, and the third remains as an example of the principle "survival of the fittest." But in the matter of open-web girders, the engineer has almost an unlimited selection at his disposal, although there are only a certain number of recognised types of open-web girders and roof trusses. With the latter we are not at present concerned. It will be subsequently perceived that, although the number of actual types is limited—large though it is—the different manner in which the tracing may be arranged inside the members constituting the boundary lines or perimeter of the various girders, permits of almost endless combinations. It may be remarked that some of these bridge trusses—for there are bridge as well as roof trusses—are better adapted for timber than steelwork; and others, again, answer well when both materials are employed in the same structure. Steel and timber, provided the latter be in large scantlings, will make a good, strong, cheap bridge; but the combination is now seldom employed. In these compound trusses the steel may be used for the lower boom, and for other members which undergo stresses of tension, while the timber is employed for the members in compression. One advantage of this mode of construction is that, as the timbers decay and require renewal, the operation can be effected by removing them singly in succession, without the necessity arising for stopping the traffic. With the exception of the braced arched rib, in which the curved chords or booms are struck from the same centre, and its inverted form, the hanging girder, all open-web girders may be divided into two principal types or classes. The first comprises all those in which the flanges or booms are parallel to one another, and the second all those in which the same conditions do not obtain. Of all existing examples of the rigid braced arched rib, the finest is furnished by the bridge crossing the Mississippi at St. Louis. It is built of steel, consists of three spans, two side-spans of 502ft. and one central span of 520ft. There are four ribs in the total width of the bridge, which is 52ft. Each rib is built up of a pair of steel tubes spaced vertically, 12ft. apart from centre to centre, and braced together by diagonal bars. It carries a roadway above the crown of the arch, and a double "track" underneath the roadway, and cost £1,366,000. The hanging girder, by which is not meant an ordinary suspension bridge, although it may be *in posse*, is not yet *in esse*. A very good idea of the general features of this magnificent American bridge will be obtained from an inspection of Fig. 4, which represents a skeleton elevation of the central span, the upper and lower horizontal lines indicating the relative positions of the roadway and the double line of railway. If the arched rib be inverted, it becomes a hanging girder, shown in Fig. 5. There are some points of difference in the erect and inverted structures deserving of notice. In the first place, the tendency of the one is to thrust out the abutments; that of the other to pull them together. While in the arched rib both the concentric, convex, and concave booms are in compression, those of the hanging girder are in tension. Again, the vertical members in the former are also under compressive stresses, and those of the latter under tensile.

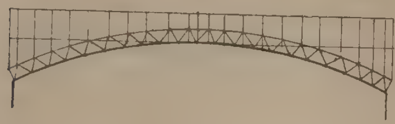


Fig. 4.

Since steel will carry a considerably greater load—that is, support safely a greater stress per unit of area, of a tensile than of a compressive character, it would be reasonably supposed that a type of girder or truss in which all its members were in tension, would prove the most economical form of construction. Theoretically yes, but practically no, or at least not under all conditions. The amount of material which is practically required to stiffen hanging or suspended girders is much beyond what is required for the arch type, which carries within itself a certain amount of rigidity, whether it be a plain solid arched rib, a braced rib, as in the example under notice, or a braced arch proper, which in reality, if the arch be hinged at the centre, consists of two braced cantilevers. The most recent, as well as the largest, example of this last-mentioned particular description of the arch form is that afforded by the Tower Bridge. Each of the lifting leaves or semi-arches are 100ft. in span, and are, strictly speaking, braced cantilevers, as already stated, and balanced by the counterweights hidden within the towers. Examples of the solid arched rib are numerous, from the small specimens spanning the underground stations of the Metropolitan Railway to the two steel arched ribs of the Harlem River Bridge, with spans of 510ft. each. As a corroboration of the statement respecting the amount of material required for the sole purpose of stiffening suspended girders, it may be mentioned that longitudinal stiffening girders are indispensable to all suspension bridges of great span. These girders, which are double—one on each side of the bridge—run the whole length of the span, and rest upon the floor beams which are supported by the cables. Not only do these girders carry no load themselves, but they even do not carry their own weight. They serve simply to distribute the rolling load; they add nothing to the strength of the bridge itself, and are absolutely so much dead weight. The more efficiently they affect this distribution, the greater is the check given to oscillatory vibration, the more are the disturbances due to the live load controlled, and the less the deflections in the cables and the whole system. Theoretically, these girders are liable to reversals, but rarely in practice. In a suspension bridge of large span, the weight of the pair of stiffening girders has been estimated as equal to nearly one-half the whole permanent load.

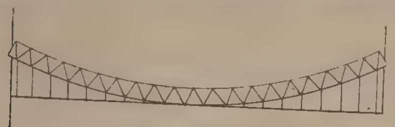


Fig. 5.

In addition to the general classification already given of open web-girders, it will be necessary to subdivide them under minor heads, as any alteration, either in the form of the booms, the angle of the bracing, the length of the panels, or the disposition of the loading, will, in one manner or the other, affect the relative value and economy of the whole structure.

* * *

New Y.M.C.A. premises in the High-street, Honiton, were opened on Friday. The building occupies the site of a disused boot factory, and has been erected from designs by Mr. Cole, of Exeter.

MESSRS. CHARLES JENNER AND CO.'S NEW PREMISES, EDINBURGH.

[WITH PHOTO-LITHOGRAPHIC ILLUSTRATIONS.]

THESE new premises have quite lately been erected by Messrs. Charles Jenner and Co. to take the place of the building which was completely destroyed by fire in 1892. This well-known establishment was founded in 1837 by Mr. Charles Kennington and Mr. Charles Jenner. Free Renaissance has been chosen by the architect as the style of the building, and it includes the characteristics of the Jacobean architecture of England as practised by Inigo Jones and Wren, as well as the French Renaissance of the valley of the Loire. The most striking and novel features of design are the shop arcading and the great octagon tower at the angle of Princes-street and South St. David-street. The arches of the shop arcade rise to a height of 22ft. above the pavement of Princes-street, and on that frontage of 80ft. there are six bays. Fronting St. David-street there are twelve bays, and the arcading becomes lower towards the north in consequence of the level of the street rising in that direction. Between the piers of the arcade the windows are recessed for 2ft., so that passers-by or intending purchasers are able to inspect the goods displayed without being jostled. The pier bases are of dark blue granite, nicely moulded, and the piers themselves are of rich red Aberdeen granite from the Hill O'Fare Quarry, all beautifully polished and in large blocks. Yellow freestone from Crags Quarry, Northumberland, has been used for the pier capitals and the arches, which are deeply moulded and carved, the archivolts having the keystones and billeting usual in the style. The main doorway in Princes-street, and the carriage entrance from St. David-street have deeply recessed porches, floored and lined with marble and granite, and the exteriors are pedimented and richly carved. Rising to the height of 120ft. above Princes-street, the great angle-tower has a very striking appearance. The orders of architecture have been replaced by statues upon the first and fifth floors representing various nations of Europe and America with which the firm have dealings. In the angle-bay of the tower typical female figures in national costume, representing England and Scotland, have been introduced. In the bay fronting Princes-street are similar figures representative of Ireland and France; whilst the bay facing St. David-street is occupied by representative figures of America and Germany. There are twelve statues, each of them being 10ft. in height. On the upper story the orders of architecture have been replaced by caryatides of a more conventional type. Sculptured representatives of various styles of beauty support the caps and superstructure of the gables and dormers, the lower parts of which features are treated in a more severe style, introducing columns with richly-carved volutes and scrolls. An outstanding feature of the building is the rich horizontal lines of decoration formed by the balconies upon the various stages. The street-floor balcony is a monogram in the Jacobean style, with the emblematic letters of Charles Jenner and Company intertwined. On the angle tower these balconies are more richly treated with carved shields, on which are placed the coats of arms of the chief cities of England and Scotland. The upper part of the great tower is most elaborately decorated. Arcaded windows, surmounted by a carved parapet with coats of arms in the centre panels, carry the eye to the flying buttresses, on which have been placed richly-carved figures representing the Four Seasons, while on a higher level the circular windows are ornamented with palm leaves. The pier-tops of the flying buttresses are domical in shape and richly carved. On one corner there is a handsome Renaissance tourelle which contains a staircase leading to a platform on the top of the tower. Carved cupids ornament the pediments of the door-pieces at the Princes-street and the St. David-street entrances, with emblematical signs illustrative of reception and despatch of goods. This is certainly a somewhat novel architectural treatment, but it harmonises well with the other decorations. There is also carved on each side of the doors the monograms of the present partners, Mr. James Kennedy and Mr. Donald Kennedy. If it be possible to construct a building absolutely fireproof, Messrs. Charles Jenner and Company's has that quality. To make assurance doubly sure, fireproof bricks have been largely used in preference to stone; even the external stone walls being lined internally with brick. Between the Princes-street and the St. David-street block a thick fireproof wall rises from the foundation to the roof, and the openings in this wall are protected by fireproof doors in the same manner as the iron curtain in theatres separates the proscenium from the auditorium. All the internal beams and standards carrying the various floors and roofs are of the best steel, and from the great strength of this material the architect has been able to reduce the number of these supports to a minimum. Every piece of steel-work is imbedded in Portland cement concrete, and is thus rendered impervious to the action of either fire and water. The floors are fireproof, and are constructed on a novel principle which combines unusual strength with extreme lightness. The spaces between the beams are from 10ft. to 12ft. wide. These spaces are covered with a single slab of Portland cement concrete from 3in. to 4in. thick, and the heart of this slab is filled with square steel rods closely set and laced together with wire to similar rods running in the opposite direction. By this means a floor capable of carrying several hundredweights to the superficial foot has been obtained, which can neither be damaged by fire nor water. This floor is covered on the top with marble or wood-block paving from $\frac{3}{4}$in. to $1\frac{1}{2}$in. in thickness, according to the situation and the wear and tear to which it is exposed. Even the roofs are constructed of steel and concrete, covered externally with slates and Val de Travers asphalte, so that the whole building is as nearly fireproof as the ingenuity of man can suggest. The architects are Messrs. George Beattie and Sons, 136, George-street, Edinburgh, and upon Mr. W. Hamilton Beattie, the senior partner of the firm, devolved the personal supervision of every portion of the building which he designed and carried out. The sculpture decorations were carried out by Mr. Birnie Rhind, R.S.A., Edinburgh; mason and brickwork, Messrs. James Young and Sons, Edinburgh; granite-work, Mr. Wm. Keith, jun., Aberdeen; glass enamelled drain-pipes, Messrs. Walter Macfarlane and Co., Glasgow; asphalte pavement and roofs, Val de Travers Asphalte Company, London; passenger and goods lifts, Otis Elevator Company, London and New York; pavement and floor lights, Hayward Brothers and Eckstein, London; pitch-pine and birch-block flooring, Wood Block Flooring Company, Ltd., London; shop counters, fittings, and fixtures, Messrs. Charles Jenner and Co., Edinburgh; pneumatic cash tubes, Henry Walker and Co., Newcastle; iron cisterns and tanks, Messrs. Braby and Co., Glasgow.

* * *

HANDBOOK OF GASFITTING.*

MESSRS. JAMES STOTT AND CO., the gas-lighting and ventilating engineers, and the patentees of the well-known and useful automatic gas governor, have brought out a little handbook for the use of architects and surveyors, with tables of tests by Mr. Arthur H. Crump. The profession have need of such a book of reference; for years the architect has been without any guide to gasfitting and lighting, and has been obliged to wholly rely upon the gasfitter for information as to technical points. In specifying for gas-fittings and ventilators, he has been obliged to consult catalogues that are not always reliable. As Messrs. Stott say in their preface, "the object to be obtained in fitting a building with gas-pipe is to provide for an equal distribution of gas, so that, when fully lighted up, the pressure will be found as nearly as possible equal at all points on the same level—a condition which gives the most efficient and economical results." The gasfitter has generally his own way in the selection and running of the pipes, for all that is generally specified is the number of places which are to be lighted; hence he is not particular as to how he can cut down the cost by using small and inefficient pipes. By the rules laid down in this little book the architect will in future be able to specify the sizes of all pipes, and the best methods of fixing them, so that nothing of importance need be left to the gasfitter. To further this object, a specification and bill of quantities are given as models, which, with slight alteration, can be used for all classes of gasfitting. Such matters as the quality and strength of pipes, these being of wrought iron, welded and screwed to the standard threads, and capable of resisting a steam pressure of 60lb. per square inch—bends, elbows, sockets, tees, wall-hooks, and a variety of other details are given. Several matters are discussed, as the height of gas-jets from floor—an important point in designing a scheme of lighting. A table is given showing the candle-power per 1,000sq.ft. of area. Here we find that for villa dining-rooms 250 candle-power is required; for schools and churches, 300 candle-power; for cottage parlours, 150 candle-power per 1,000ft. of area. It is most necessary to provide for this candle-power in providing gasfittings. Next the question of the kind of gas lights is discussed. For certain purposes group lights can be obtained in "Sunlight" patterns, having an aggregated value for lighting of 2,500 candles, with an efficiency of 25 to 30 candles per 5c.ft. per hour, and these can be combined with a ventilating arrangement by which the products of combustion can be carried away to an extractor. With regard to sizes of pipes, the architect often leaves this detail to the gasfitter, the result being that smaller pipes are introduced than are necessary for delivering the given quantity of gas. How few of those engaged in lighting buildings by gas consider the question of pressure, upon which the delivery depends, or the size of pipe necessary for a given pressure, or its length and friction! It is shown, for example, that the friction varies directly as the simple measurement of the internal circumference of pipe. Hurst's and Professor Pole's formulæ are given, which show that the carrying power of a pipe varies as $\sqrt{D^5}$, which gives a 4in. pipe 32 times the carrying power of an inch pipe. The authors say this cannot be verified, and they give a new formula and a table by A. H. Crump. Except for short branches, $\frac{1}{4}$in. and $\frac{3}{8}$in. pipes are to be avoided, as they are liable to choke up. For underground pipes, nothing less than $\frac{3}{4}$in. is recommended. A very useful table is given showing the number of lights that can be supplied from pipes of varying diameters and lengths, the pressure assumed being $\frac{7}{10}$ths of an inch. From this table it is seen how important a factor length of pipe is. Thus we find that a $\frac{1}{2}$in. pipe, 20yd. long, will supply seven lights. At 40yd. it will supply five lights, at 60yd. four lights, at 80yd. up to 100yd. three lights. The pressure on the pipes when all the lights are burning should vary as little as possible, and any excess of pressure is wasteful; hence the importance of regulating the sizes of pipes. Every gas consumer ought to know that every burner gives its best result at a certain pressure. Other sections treat on consumers' governors, pressure on upper floors, warehouses, gas-meters, fitting up cocks, underground pipes, gas-stoves and fires, ventilation, &c. The advice given on preparing contracts and the forms of specification and quantities are valuable. Messrs. James Stott and Co.'s little handbook will be a boon to the architect, and will save many mistakes in gas-fitting and lighting. It is published at the low price of 6d.

---

* Stott's Architects' and Surveyors' Handbook of Gas-Fitting. London: James Stott and Co., 174, Fleet-street, and Queen Victoria-street.

SPRUCE TIMBER FORESTS.

THE Maine forests are vast and magnificent, and may be estimated by riding through them for days together on the railroad; but those who are aware of the risk to which these forests are exposed by the opening of the great timber areas of northern Maine by rail, and the great destruction by fire caused to the American forests in the past by this means, entertain grave doubts of their safety. Wherever the path of the "iron horse" goes through the forests, the risk of a fire is great, which may sweep over township after township and destroy millions of acres of valuable timber. The *North-Eastern Timberman*, quoting the *Bangor Commercial*, says truly, "This is the menace of the future to our forest wealth," and can be guarded against only to a slight extent, as when it may happen no one knows, or where such a devastation would stop. The same journal speaks of another source of demand upon the forests—namely, "that of the great uses of spruce in the manufacture of pulp or paper stock." Formerly it was thought that only poplar and the finer fibre woods could be used for this purpose; but by improved machinery, spruce is said to be the chief dependence in the wood-pulp industry. In addition to this demand, the chemical-paper vats exhaust a large quantity. As the same authority points out, these requirements are sufficient to cause anxiety when it is calculated that, "at the present rate of consumption of spruce for paper-making, every spruce forest in New England will be stripped for profitable pulp-making trees in fourteen years." A report of the Labour Commissioner of the State of Maine gives some interesting facts as to this industry. He says: "In pulp-making, Maine is to-day in the very forefront; while paper manufacturing has become an industry of large magnitude. It is conceded by all paper manufacturers that spruce is the best wood for pulp, and Northern Maine is full of spruce, lying near its waterways, and easily accessible." The product is near the market, and New England will always be the centre of pulp and paper, as, of all States, Maine has the raw material in greatest abundance. American paper is finding a foreign market, and the export of Canadian spruce-pulp to this country is considerable; but of the duration of this pulp-paper there is some doubt.

FORCE OF THE WIND.

ON the 30th Oct., at the first meeting for the session of the City of London College Science Society, Professor Henry Adams, M.I.C.E., one of the vice-presidents, read a paper on "The Force of the Wind." After reviewing a number of the recorded experiments on wind-pressure, he tabulated the results upon a common basis to show that within certain limits the intensity of the pressure increased with the area of the receiving surface; but over large areas the maximum was not reached in practice, owing to the wind moving in concentrated gusts. An account was given of the pressure said to have been reached in various historical gales, and extracts from various standard works as to the proper pressure to be estimated for in designing structures. In conclusion, he suggested that, although 56lb. per square foot might be looked upon as the standard, this should be modified according to the circumstances of the case—viz., with the height from ground level, the unsupported width, and the angle of incidence. The pressures, according to the table submitted, varied from 16lb. at ground level to 80lb. at a height of 200ft., and in the latter case from 80lb. at a width of 10ft. to 40lb. at a width of 1,000ft., while the multiplier for angle varied from ·45 at 5° to 1·00 at 60° to 90°.

CHIPS.

A new convalescent house for female patients, erected at Murthly Asylum, Perthshire, was formally opened by Lord Balvaird on Saturday. A similar building is in course of erection for males, and the two are estimated to cost £9,000. The plans have been prepared by Mr. David Smart, Perth.

On Thursday in last week a new Primitive Methodist chapel was opened at Walton, near Peterborough. The chapel is of white brick, with stone dressings, designed by Mr. W. Hawkins, of Fletton, and built by Mr. Swain. The accommodation is for about 120, and the cost will be £300.

A stained-glass window has been placed in Sheldwich parish church, by the officers of the 11th Hussars, in memory of Lieut. the Hon. Herbert Miles, who died of enteric fever at Sialkot, India, in October, 1894.

Block III. of the Patent Office extension is fast approaching completion. The building is being erected for H.M. Office of Works from the design of Mr. J. Taylor, C.B. Mr. B. E Nightingale is the contractor. The floors and ceilings are fireproof throughout on the Mark Fawcett system.

On Saturday the memorial-stone of Heaton Moor Congregational church was laid. The cost of the church, which is to take the place of an iron building, together with that of the recently-built school, will be about £7,000. The church will seat ever six hundred persons, while the new school has accommodation for about 450.

The people of Weston-super-Mare have no fewer than three pier schemes engaging their attention at the present time—viz., the Knightstone Pier, which is being promoted by the urban district council in connection with two or three marine lakes and other improvements; the new low-water pier, which the present Pier Company are seeking powers to construct; and the Regent-street Pier, a Bill for which was obtained some years ago, and has not yet lapsed. On Saturday an extraordinary meeting of the present Pier Company was held to consider a report of the directors as to the construction of a low-water pier and other works, the raising of additional capital, to authorise an application to Parliament for powers to carry out the same, and for general business. The proposals were approved, and Mr. Yockney, of Queen Anne's-gate, S.W., was formally appointed engineer for the purposes of the Bill.

OBITUARY.

WE regret to announce the death, at the age of 62 years, of Mr. EDGAR PHILIP LOFTUS BROCK, F.S.A., F.R.I.B.A., the accomplished ecclesiologist and architect, which occurred at his residence, 6, Colville-square, Kensington Park, on Saturday. Mr. Brock had suffered for some months from cancer in the tongue, and underwent a painful operation in September last. He was, as a youth, a student in the Royal Academy Schools, and entered the offices of Messrs. W. G. and E. Habershon at the age of eighteen. When the brothers disconnected their practices, Mr. Brock remained as managing clerk to Mr. Edward Habershon, with whom he subsequently entered into partnership. The works of the firm of Habershon and Brock include Normanhurst Court, built for the late Thomas Brassey; master's house at Harrow, the laying-out of the Cawston Estate at Balham and the Manor Estate at Wellington, and similar works in Kilburn, Highgate, and Teignmouth. The most prominent work of the firm was, however, the numerous church buildings and restorations, the former including St. Augustine's, Highbury New Park, Hammerwood, Sussex, Wallington, Ore, and Hethersgill. On the retirement of Mr. E. Habershon, he left his share of the practice to Mr. Brock, who had since removed from Bloomsbury to Red Lion-square, and had carried out the various homes of the National Refuge Society, the German Orphanage, the Missionary College at Palestine-place, and many churches and schools. Mr. Loftus Brock had for many years held the office of honorary secretary to the British Archæological Association, and his extempore addresses in churches, given during the annual excursions (which were arranged under his supervision), were delivered in a lucid and popular style, and with an easy flow of language which brought home to the least informed members of these gigantic picnic parties the salient features and peculiarities of the buildings visited. He had also been the hon. secretary to the Society for the Encouragement of the Fine Arts since its foundation, and for many years had acted as cicerone at the excursions of the Kent Archæological Society. Mr. Brock joined the Royal Institute of British Architects as a Fellow in 1882, and at the time of his decease was serving as a member of the Committee of Literature. He was the author of many papers and essays on antiquarian subjects, and frequently lectured on similar topics. We gave Mr. Loftus Brock's portrait in our issue of Nov. 14, 1890.

MR. CHARLES BROWNE, F.S.A., whose death, at 21, Fellows-road, South Hampstead, occurred on Friday, was born in London in 1821. He was educated at King's College, London, and at Wadham and Worcester Colleges, Oxford, where he had a distinguished career. He was called to the Bar in 1846 at Lincoln's Inn, and practised at the Chancery Bar until a few months ago, when he retired through ill health, being, with one exception, the barrister of longest standing then in practice. Mr. Browne was a member of the legal council of the English Church Union from its commencement, an authority on ecclesiology and kindred subjects, and a member of many learned and scientific societies. He had delivered several lectures on antiquarian subjects before the Society of Architects, the St. Paul s Ecclesiological Society and other bodies.

MR. EDWARD LANE, the borough surveyor of Wokingham, died on Tuesday week, aged 68 years. He is survived by his wife, one son, and three daughters. The deceased, who had lived all his life in Wokingham, was for some years previous to the dissolution of the old local board inspector of nuisances and surveyor. On the constitution of the present town council he continued to hold these offices, together with the school attendance officership for the borough.

* * *

The town council of Reading are in correspondence with the Local Government Board with reference to an application from the council for sanction to borrow £8,000 to build an art gallery, and so increase the available space at the museum, where more room is needed to house the additional Roman remains constantly being found at Silchester.

Colonel A. G. Durnford, an inspector of the Local Government Board, conducted inquiries in the new Council Chamber, at Haslingden, on Tuesday week, relative to the application of the town council for power to borrow £3,100 for the sewering of Rising Bridge, and £1,700 for a new fire station to be erected near the municipal offices at West-view.

CONTENTS.

Some Perils of Civilisation ... 655
Neglect of Structural Details ... 655
Are the Building Trades Declining? ... 656
Royal Institute of British Architects ... 657
Concert Halls and Assembly Rooms.—III. ... 659
County Lunatic Asylums.—XXXII. ... 660
Cast Iron in Builder's and Contractor's Works.—VII. 661
Designing of Steel Bridges, Theoretical and Practical.—XXIV. ... 662
Messrs. Jenner and Co.'s New Premises, Edinburgh 663
Handbook of Gasfitting ... 663
Spruce Timber Forests ... 664
Force of the Wind ... 664
Obituary ... 664
The Building News Directory ... xi.
Our Illustrations ... 665
Building Intelligence ... 684
Engineering Notes ... 684
Architectural and Archæological Societies ... 685
Competitions ... 685
Correspondence ... 686
Intercommunication ... 687
Legal ... 688
Legal Intelligence ... 688
Water Supply and Sanitary Matters ... 689
Our Office Table ... 689
Meetings for the Ensuing Week ... 690
Tenders ... 691

ILLUSTRATIONS.

THE HALL OF THE MERCERS' COMPANY.—MESSRS. CHAS. JENNER AND CO.'S NEW PREMISES, EDINBURGH.—ALL SAINTS CHURCH, BELFAST.—PASSMORE EDWARDS FREE PUBLIC LIBRARY, EDMONTON.—HOUSE AT CHIPPENHAM.—NEW BACON FACTORY, BRISTOL.—FURNITURE DESIGNED BY MR. R. BROWN, JUN.

Our Illustrations.

CITY GUILDS.—XII.: THE MERCERS' HALL STAIRCASE.

The black wainscot work of the handsome old hall of this the leading company, makes the interior of the famous building one of the most interesting still existing among the historic halls of the City of London; but, unfortunately, the apartment is so very dark that a photographic view is well-nigh out of the question, even during the clearest days in the summer. Mr. Sandell took a series of views for us; but the heavy shadows and absence of reflected light rendered the results scarcely so satisfactory as could be desired; indeed, the hall itself requires to be seen at night-time, when illuminated, to be properly examined in detail. The chapel occupies the site of the house of Gilbert à Becket, in which his son, Thomas, the murdered Archbishop of Canterbury, was born in 1119. We hope to give a plan of the premises when we illustrate the older portions of the buildings, at an early date, on which occasion some particulars of the history of the place will more accord with the illustrations. To-day we show the new staircase, which was erected about 15 years ago, when the façade buildings in Cheapside were carried out from the plans of the late Mr. G. Barnes Williams, the Company's architect. The interior fittings were designed by the late Mr. J. G. Crace, and executed under his supervision. The staircase is reached from the principal entrance in Cheapside by way of a floridly-treated vestibule in oak, carried up some 14ft. high, and above that the walls are hung with leather. The ceiling and cornice, in imitation of oak framing, are carried out in plaster. The area of the staircase is about 45ft. by 20ft. on the ground-floor level, and the height is about 40ft. The stairs are 8ft. wide, and have balusters with carved and fluted features, the newels being surmounted by sculptured lions bearing shields. One of these animals is seen in our accompanying view. The walls of the upper part of the staircase are lined with leather, and the oak frieze and cornices are relieved by gold and bronze enrichments. The lunettes are filled with three paintings, representing the Arts, Commerce, and Industry, the remaining compartment being occupied by a window. In the middle of the ceiling occurs a painting of Mercury by Barrias. This hardly comes into our present picture. Below, a great feature is made of the hall chimneypiece, erected in stone, under the middle landing of the grand stairs. We shall give before long an illustration of this part of the building, which is very picturesquely treated.

MESSRS. CHARLES JENNER AND COMPANY'S NEW PREMISES, EDINBURGH.

(For description, see p. 663.)

ALL SAINTS CHURCH, BELFAST.

This church is about to be erected in University-street, Belfast, and is designed to seat one thousand people on the ground floor, galleries being altogether avoided. The exterior facing of the church will be of white sandstone from Scrabo, and the interior dressings of red Dumfries stone. Mr. William J. Fennell, of Belfast, is the architect.

PASSMORE EDWARDS FREE LIBRARY, LOWER EDMONTON: CHARLES LAMB MEMORIAL.

This new public library, the free gift of Mr. J. Passmore Edwards to the town of Lower Edmonton, is about to be erected on the "Limes" site, at the corner of Plevna-street in Lower Fore-street, as a memorial to Charles Lamb, whose famous name is so prominently associated with Edmonton, where he lived and died. The land, which is being acquired from the Leathersellers' Company for the purpose, is situated close to the town-hall, and occupies in every way an advantageous position, central and convenient to the whole of the district. The building has been planned with a view to facility of administration and complete supervision; economy of working, necessarily in such an institution, being of prime consequence. On entering the building, beyond the vestibule, the reading and newspaper room, 40ft. long by 20ft. wide, will be found to the right, with ample windows towards the south and west, securing a cheerful aspect. To the left is the lending-library, with a long counter, and ample space for borrowers, divided only by an open arcade from the hall, so that the public can at once see from whence books may be obtained; and besides this great advantage, an uninterrupted view is secured from the attendants' counter direct into the public reading-room through the glazed screens in the arches on the other side of the hall. The old plan of inclosing the borrowers' counter by solid walls has been found a mistake, for the very good reason that thereby the officials are needlessly cut-off from the public part of the building, and their work of supervision and control is seriously impaired. Immediately at the end of the lending library is located the boys' room, completely under the eye of the librarian and his assistants, and well isolated, too, from the reading-room—which is a distinct gain. Facing the entrance at the other end of the hall is a wide stone staircase leading to a roomy gallery on the first floor, suitable for the display of local maps and charts, and forming an approach to the reference and magazine rooms, which are so contrived as to be under ready supervision. A space for the use of ladies is provided beyond the magazine-room, if required. On the second floor are placed the book-store, files, and mending-rooms, all in direct communication with the main departments below by spiral staircases. Lavatory conveniences are provided for the staff, but not for the public. Experience has shown that this is the best plan to adopt. The librarian's house has a private entrance from Plevna-street, and his comfort is provided for without excess of accommodation. The living-room is on the first floor, with three bedrooms, bathroom, &c. The kitchen and offices are in the basement, where likewise are the heating-chamber and fuel-place for the library, and shut off from the private apartments. The elevations are in red brick with stone dressings, and green slates are used for the roofs. The front is emphasised by a projecting porch of two stories in masonry. At the angle of the two main façades, and overlooking the two thoroughfares, a shield-like trophy, depending from the first-floor cornice, will be carved with the dedicatory inscription to Charles Lamb. Bas-reliefs will enrich the front elevation with portraits of Keats and Lamb. The commissioners will lay out the ground and inclose the site suitably with wrought-iron railings. Mr. Maurice B. Adams, F.R.I.B.A., is the architect.

PEW HILL HOUSE.

This house is being erected upon the site of an old house at Pew Hill, Chippenham, for Miss Dickson, sister of Sir John Dickson-Poynder, M.P. for the division. The house is built of Kingsdown and Hartham Park stone, and the roof is covered with green slating. In designing the house, an attempt has been made to combine modern requirements with the picturesque beauty of the Elizabethan stone buildings of the district. The work has been well carried out from the designs of the architect, Mr. T. B. Silcock, B.Sc., of Bath, by Messrs. Jacob Long and Sons, builders, of Bath, assisted by Mr. E. J. Trotman as clerk of the works. The drawing which we reproduce was exhibited at the Royal Academy this year.

BACON FACTORY, BRISTOL.

These premises have lately been completed for Messrs. Naish and Son, bacon curers. The shop-front is faced with Box Ground stone, and the factory at the back, with local Pennant stone. The interior of the shop has been lined with white and brown glazed bricks, the brown forming a dado with moulded capping. The interior woodwork and fittings are of pitch-pine, and the outside woodwork, teak. The whole of the floors are constructed with Stuart's granolithic fireproof flooring, except cellars, which are laid with Pennant paving. The premises have been adapted to the requirements necessary for the killing of 500 pigs a week, with pig-pens, sawdust-loft, boiler and engine-room, hanging-house, smoke-stoves, cellars, chill-rooms, lard and sausage-rooms, packing loft and stores, and provided with all the latest appliances and machinery for killing and singeing pigs, lard-refining and sausage-making, and refrigerating plant for chilling bacon. The building is lighted throughout by electricity, which was executed by Mr. A. S. Scull, of Bristol. The contractors for the works were Messrs. Hatherly and Carr, Bristol, the whole being carried out under the direction of Mr. James Hart, architect, Bristol.

FURNITURE FROM AMERICA.

Simplicity and good proportion are the leading characteristics of the modern American furniture, of which we herewith illustrate half-a-dozen examples from the designs of Mr. R. Brown, Jun., architect. Perhaps the most original piece is the Wall Table, suitable for a hall; the deep verge-shaped sides under table-top have a fresh and unhackneyed smack about them, to which the appropriate carving contributes in no small degree. The writing Bureau and upright Secretaire are both serviceable articles, and in good taste, the latter, when closed, occupying small space. The short Settle embraces a valuable locker-room under seat, while the piece of furniture, based on the design of our old livery cupboards, appears in a more interesting light by reason of a rather novel treatment of some of its parts. We are indebted to the *American Architect* for these subjects.

CHIPS.

New police quarters for single men have just been built at Watford, for the Herts County Council. Messrs. Clifford and Gough were the contractors, and the work has been carried out from plans by, and under the direction of, Mr. Urban A. Smith, the county surveyor.

Mr. Stephen Adam, Glasgow, on Saturday delivered the second of the series of Glasgow art lectures in the Corporation Art Galleries to a large audience, taking for his subject "Truth in Decoration."

The standing joint committee of Staffordshire are about to erect a new police-station in the centre of the city of Lichfield, under the superintendence of Mr. John P. Osborne, F.R.I.B.A., of Birmingham.

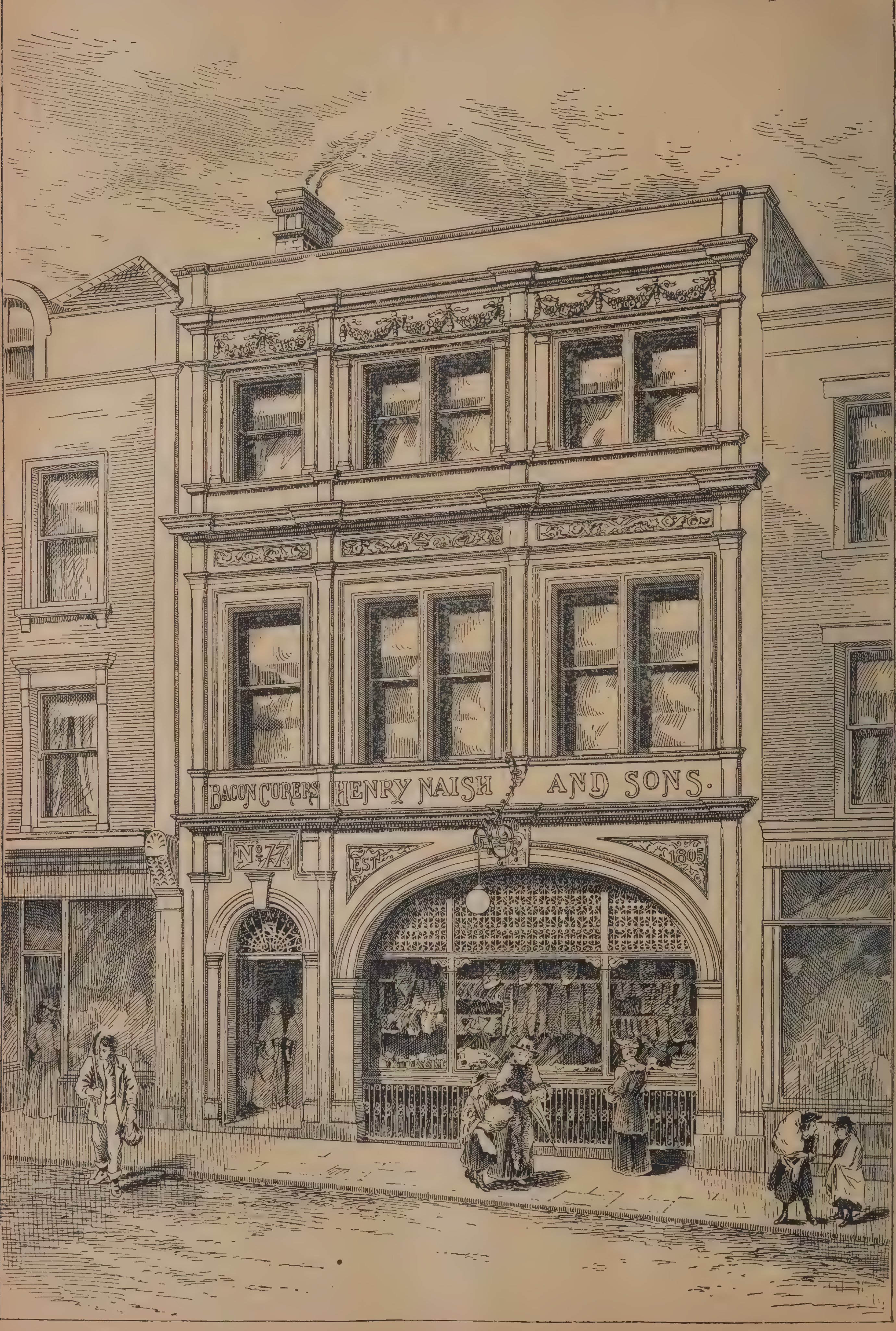
The County Council of Denbigh have raised the salary of Mr. Ellis W. Jones, district surveyor for Wickham, by £25 a year.

The death is announced of Mrs. Mary Anne Everett Green, who for the last thirty years has compiled the calendars of State papers in the Record Office. She had published thirty volumes of calendars, extending over the period from Edward VI. to Charles II. Mrs. Green, who was the widow of Mr. G. P. Everett Green, died on Friday last, aged 77 years.

On Saturday last the Belfast Industrial Exhibition, which was opened in April last, was closed. It has not been a financial success. There will be a loss of about £1,200.

A chancel screen in oak has been placed in St. Matthew's Church, Ipswich, as a memorial of the late Mr. D. H. Booth, mayor of the borough in the year 1881. The screen has been designed by Mr. John S. Corder. It is 12ft. 9in. high, and has a width of 14ft. 4in., is divided into seven bays, the centre one being much wider than the others and forming the doorway. The six bays flanking the doorway are filled in solid to about 3ft. 8in. from floor with carved and traceried oak panels. The screen is carved and enriched on both sides, and every panel, spandrel, and crocket is of different design. There are 102 spandrels, 97 crockets, 15 finials, and 56 carved cusps, all varied. The design was carried out by Mr. Fred. Bennett, builder, Ipswich, the carving being executed by Mr. John Groom.

NEW BACON·FACTORY · BRISTOL· FOR · MESSRS H·NAISH & SONS·


BACON CURERS HENRY NAISH AND SONS.
No 77
EST 1805

ALL·SAINTS·CHURCH·BELFAST·

WM·J·FENNELL·ARCHT.

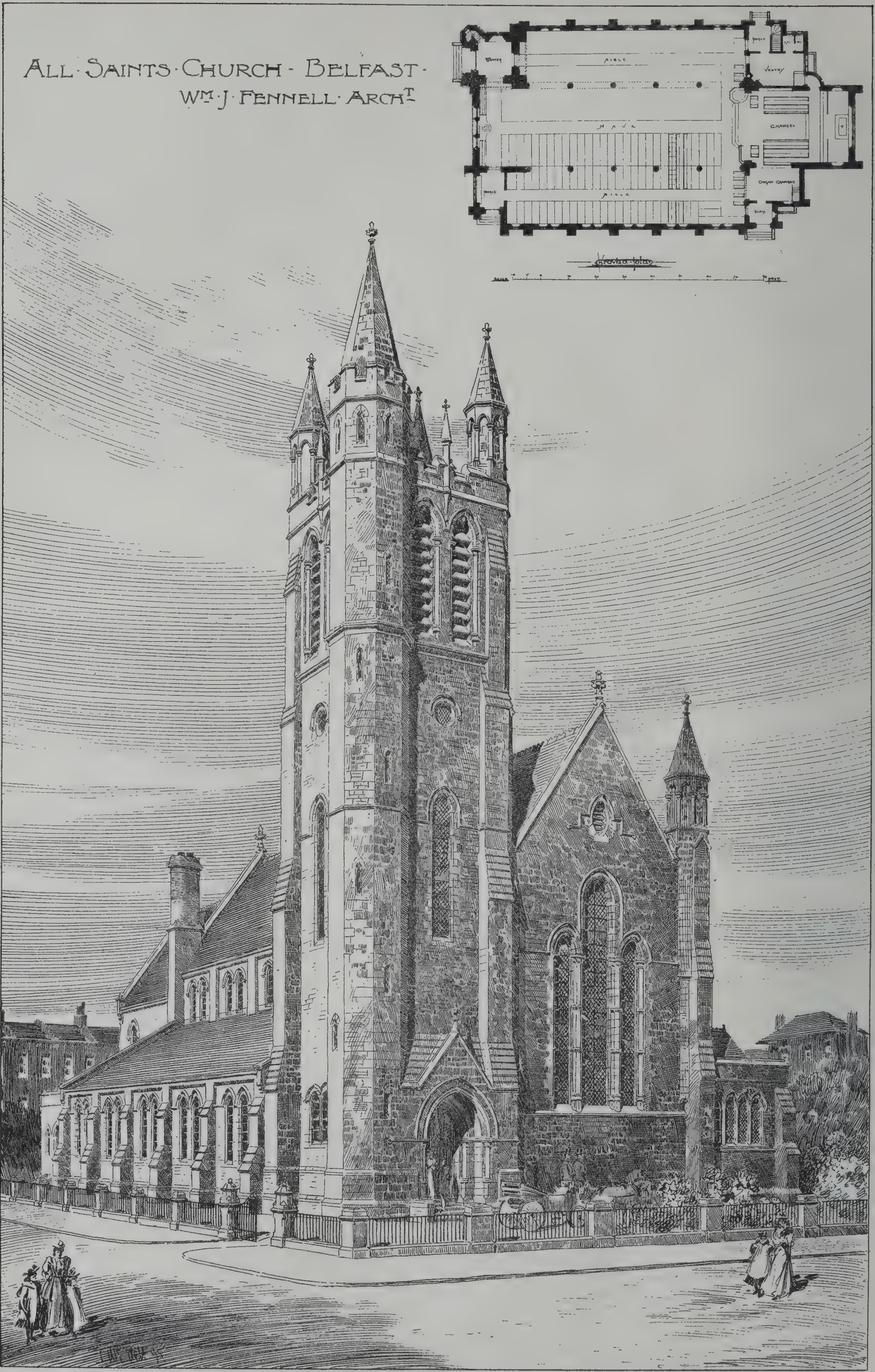
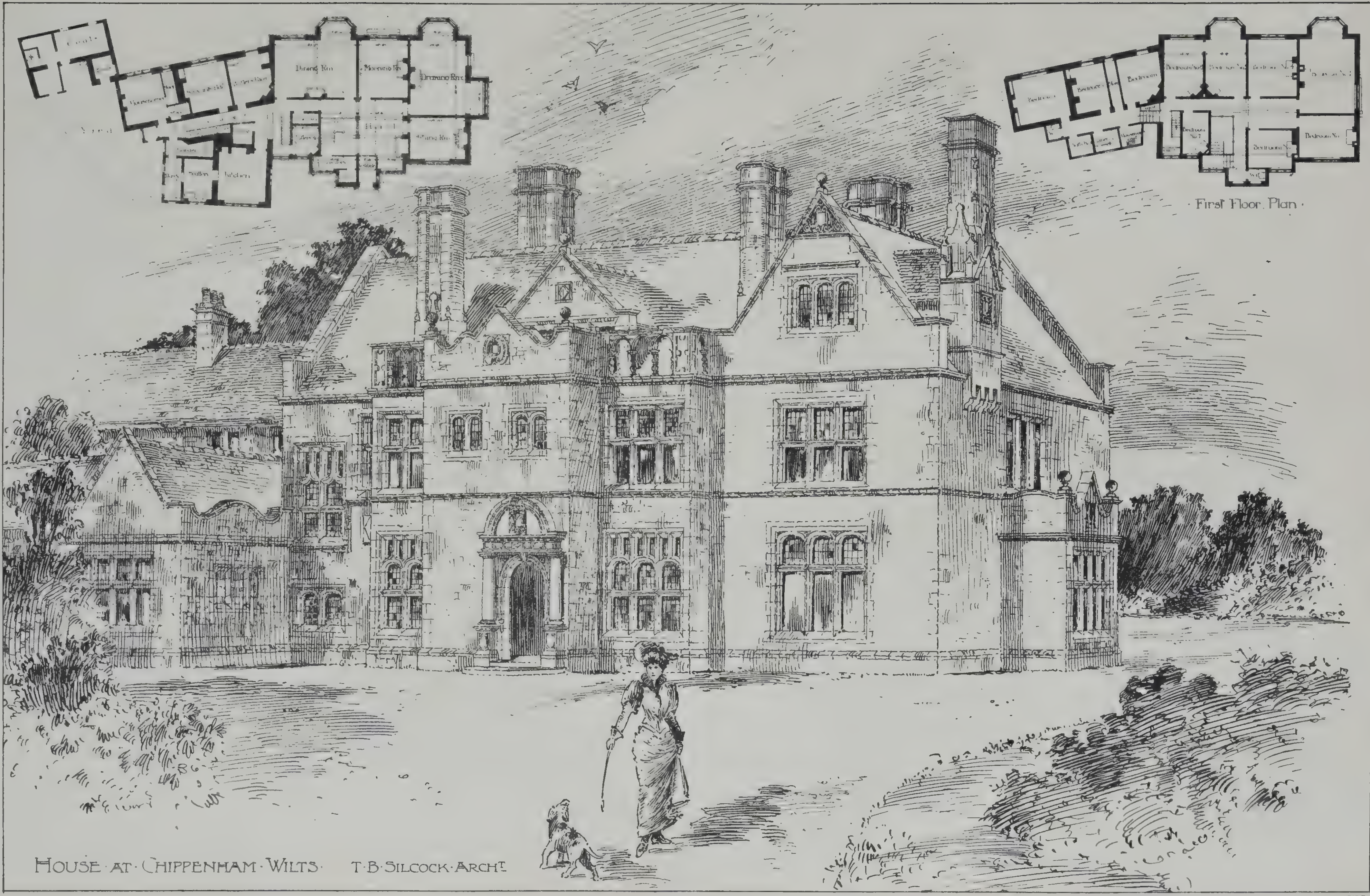
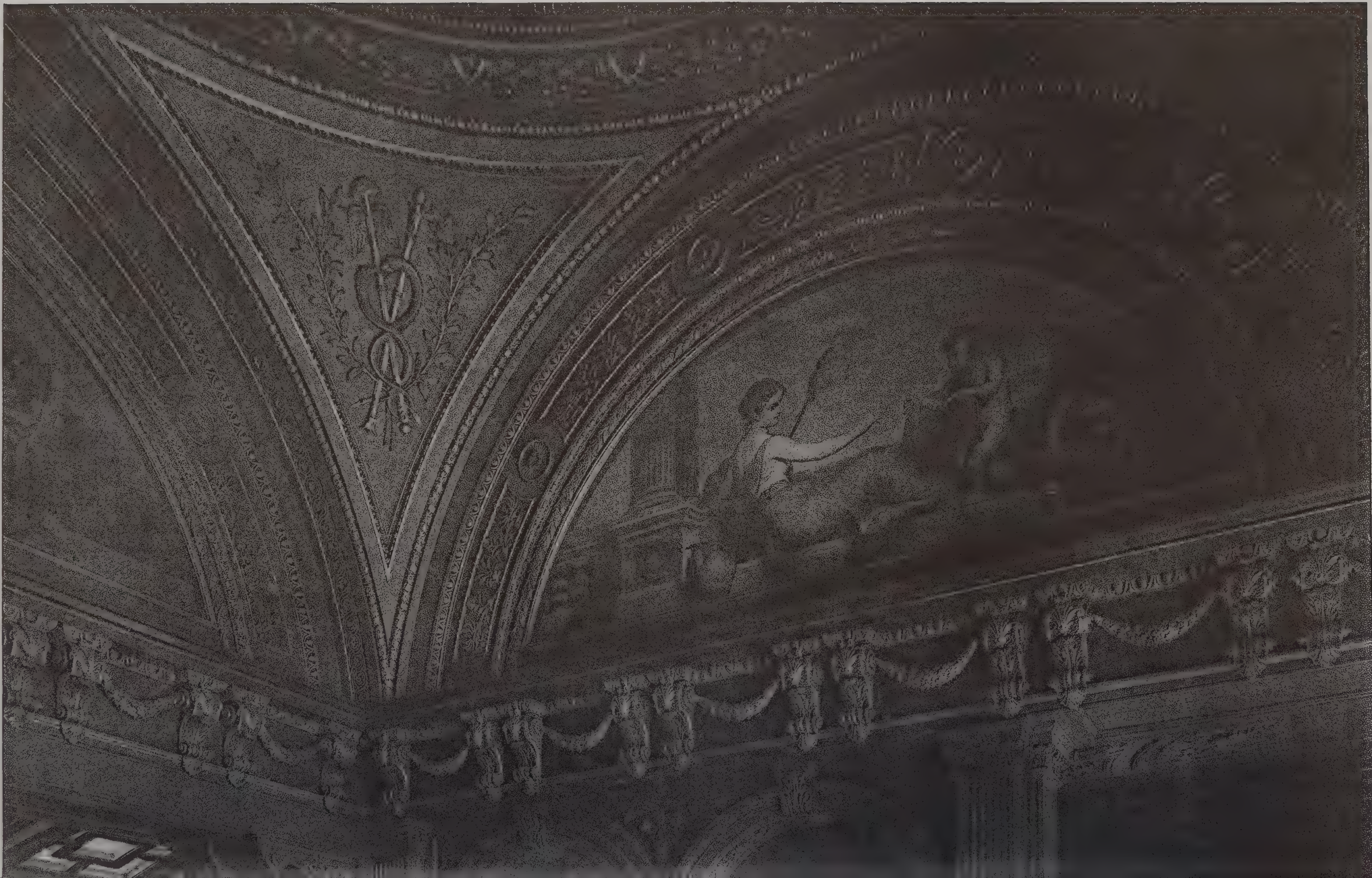


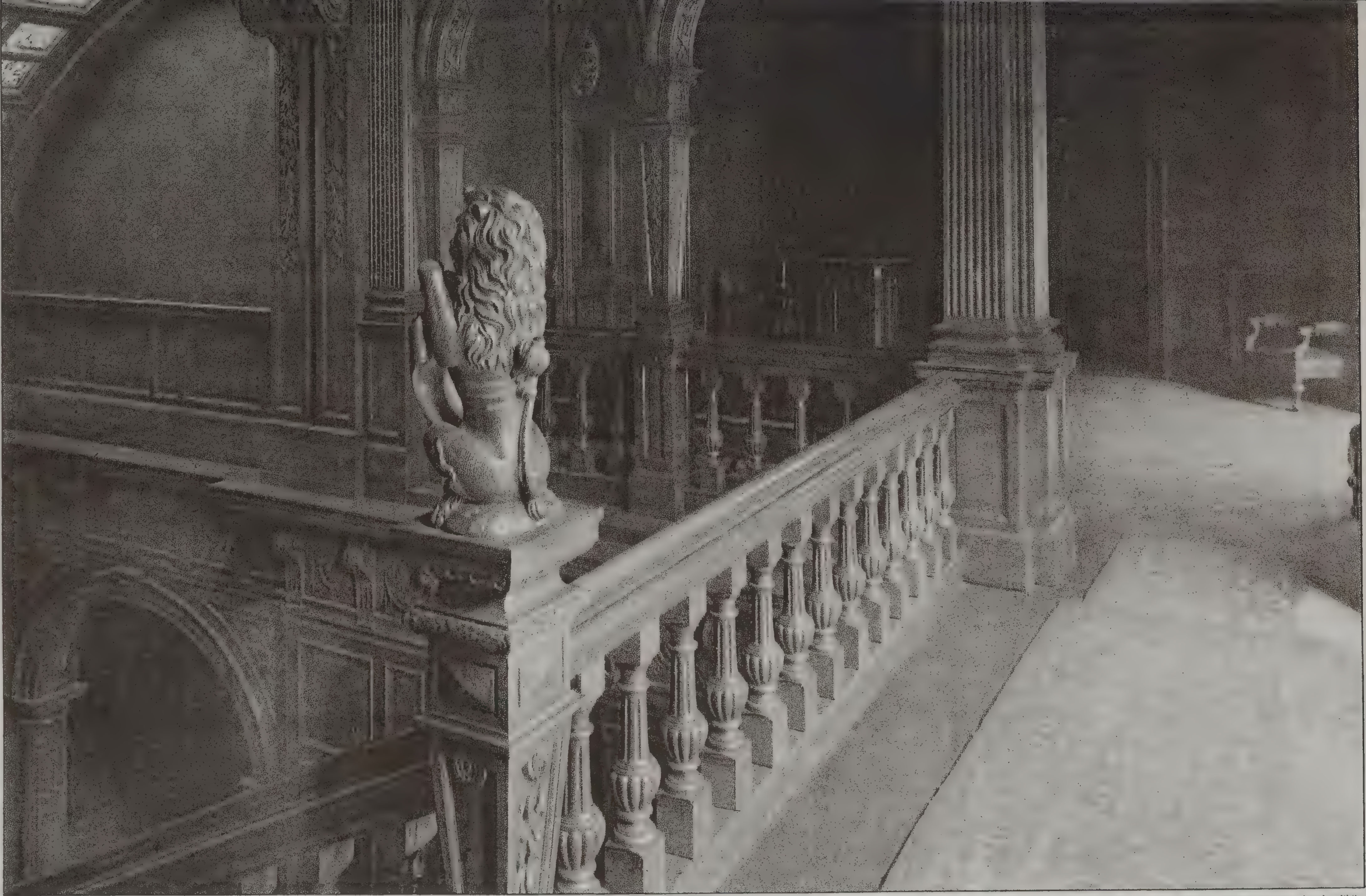
Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C



HOUSE · AT · CHIPPENHAM · WILTS · T · B · SILCOCK · ARCHT.

Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C.



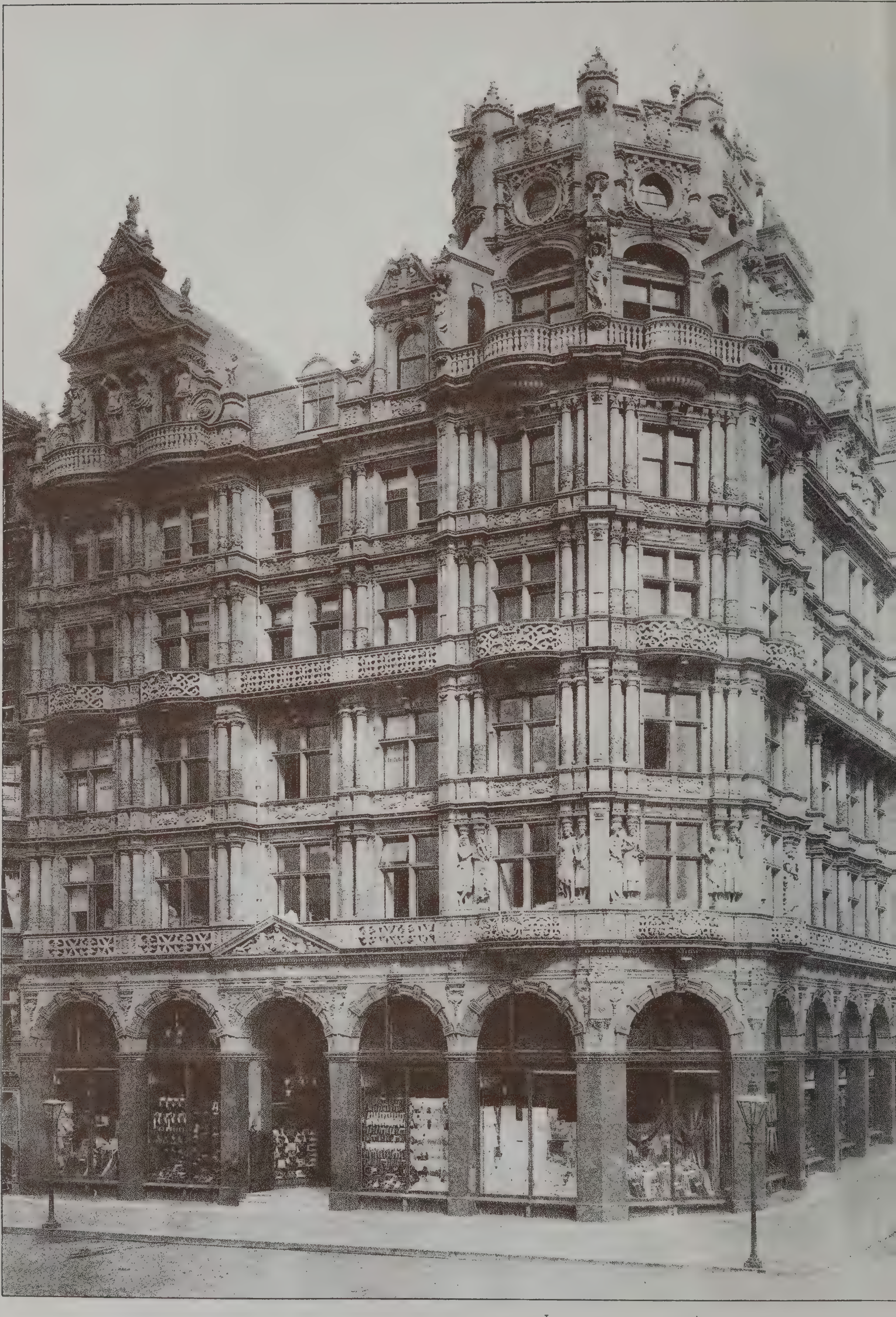


PHOTOGRAPHED·WITH·A·SANDELL·PLATE·

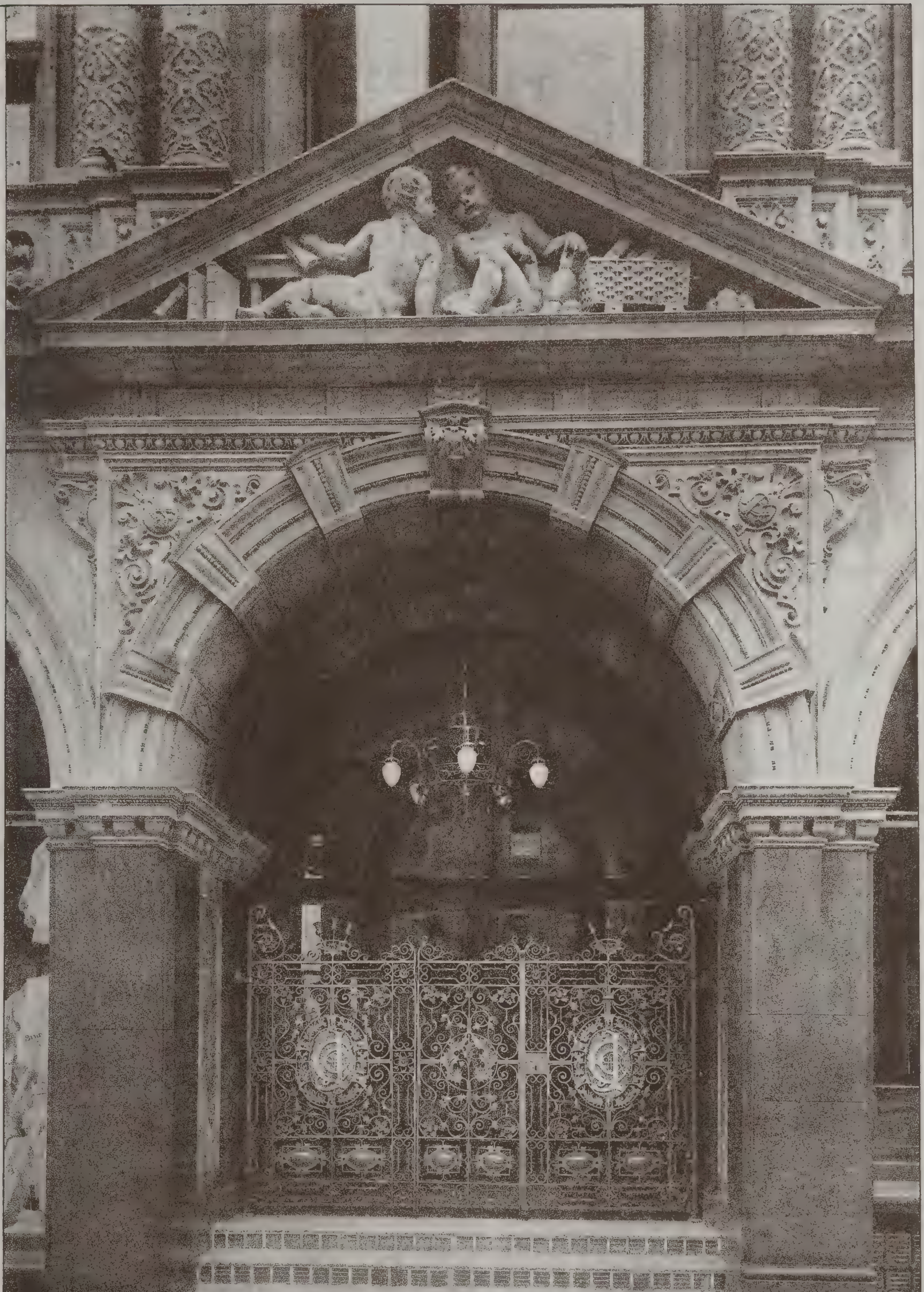
"PHOTO-TINT," by James Akerman, 6, Queen Square, London, W.C.

THE·CITY·GUILDS·Nº 12·

THE·HALL·OF·THE·MERCERS'·COMPANY. THE·STAIRCASE.



MESSRS CHAS· JENNER· & COYS NEW· PREMISES

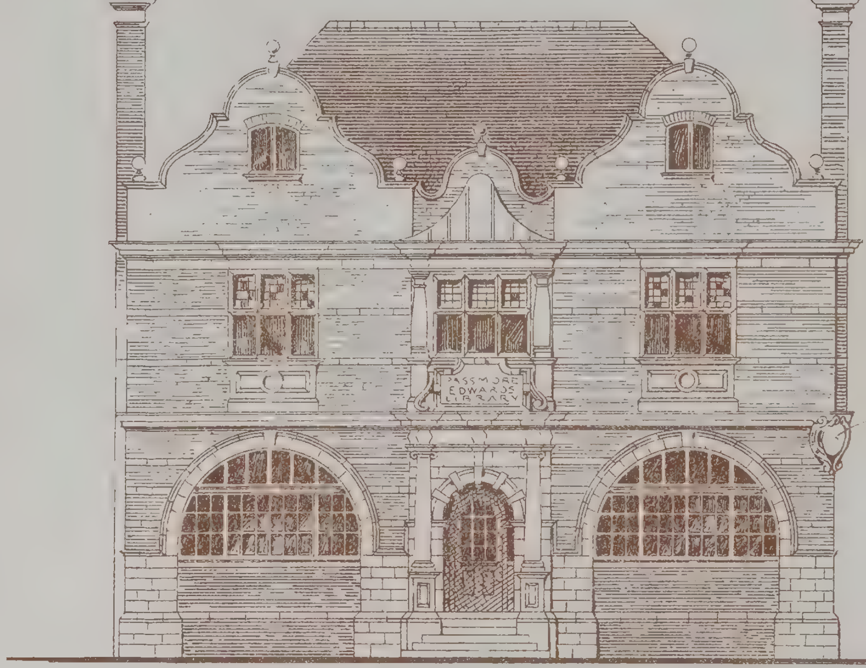


"PHOTO-TINT" by James Akerman, 6, Queen Square, London, W.C

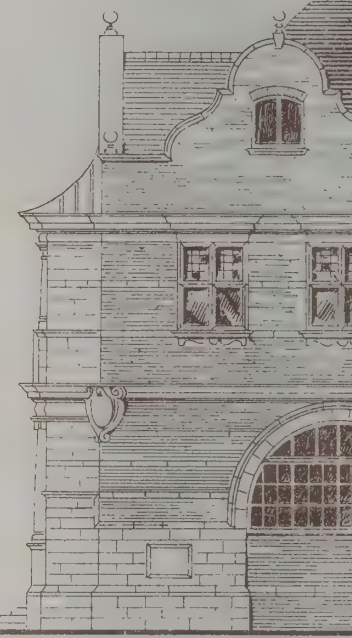
EDINBURGH N B· MESSRS GEO·BEATTIE & SON· ARCHTS

PASSMORE EDWARDS FREE PUBLIC LIBR

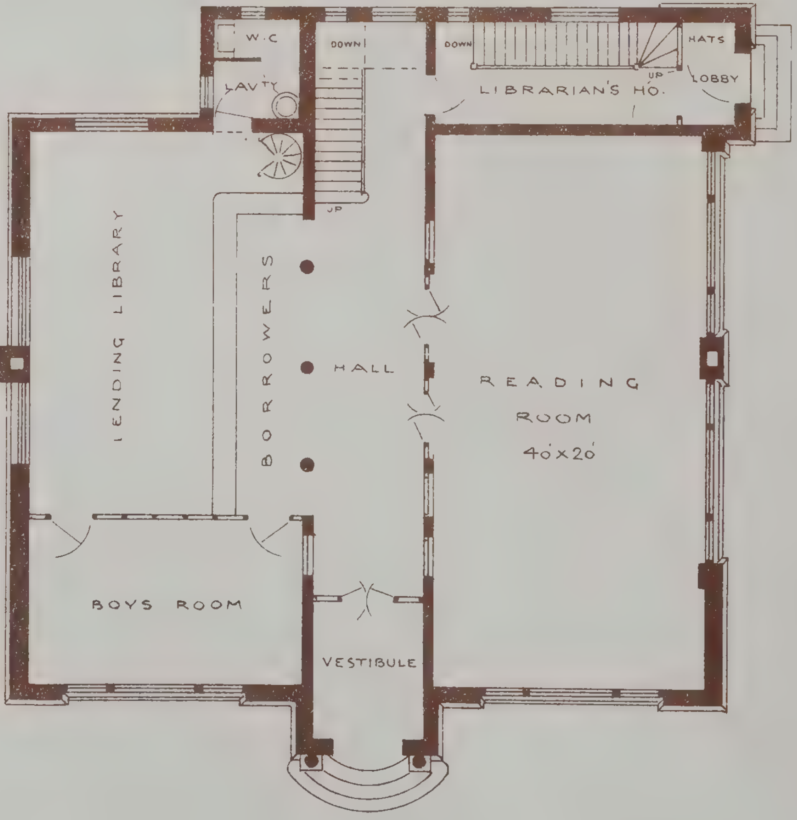
(CHARLES LAMB MEMOR



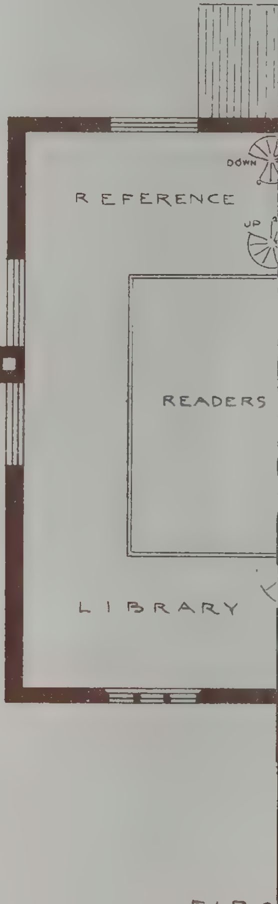
LOWER FORE STREET FAÇADE



PLEVN



GROUND PLAN



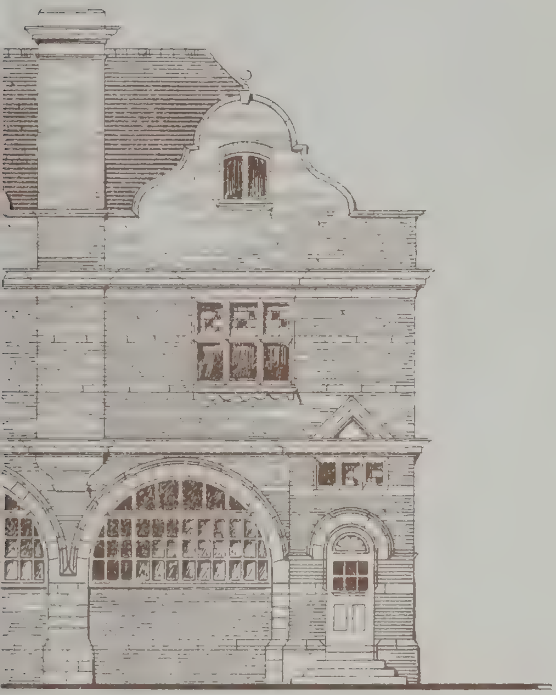
FIRS

ARY

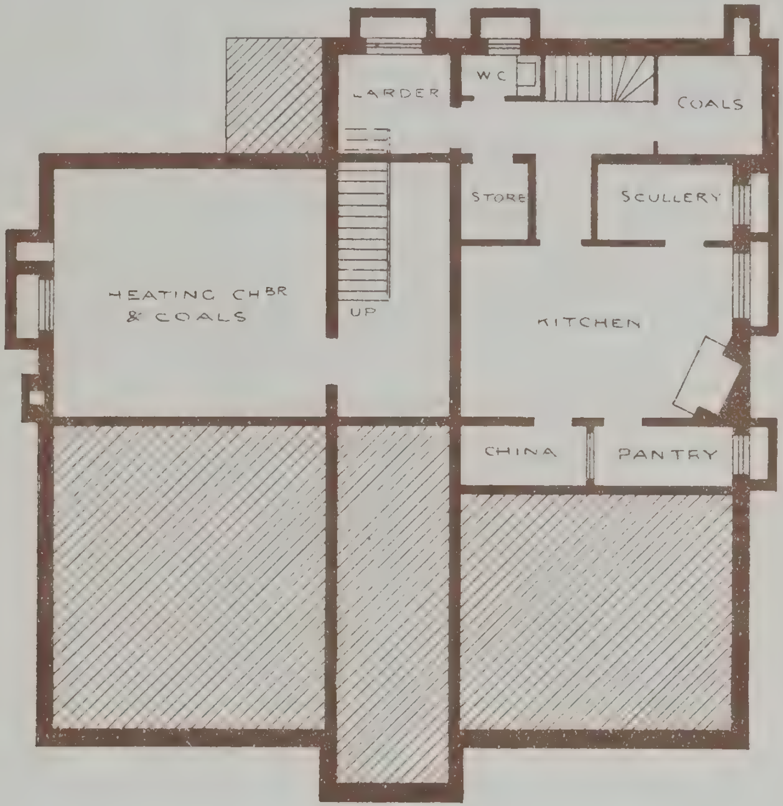
AL)

LOWER EDMONTON

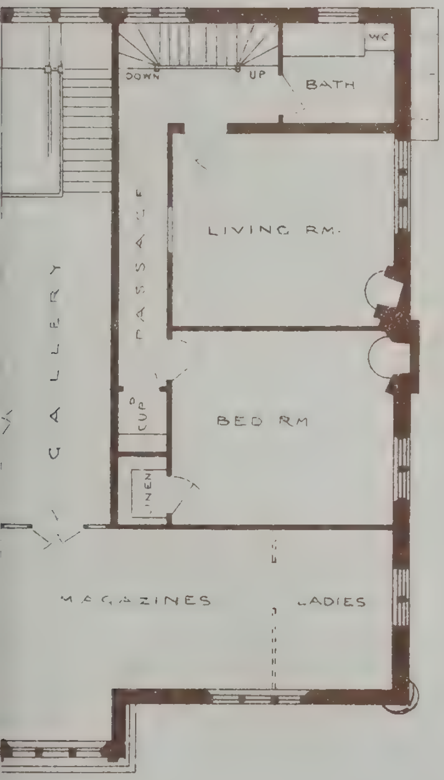
MAURICE B ADAMS F.R.I.B.A
Architect
SEPT 1895
Chiswick W

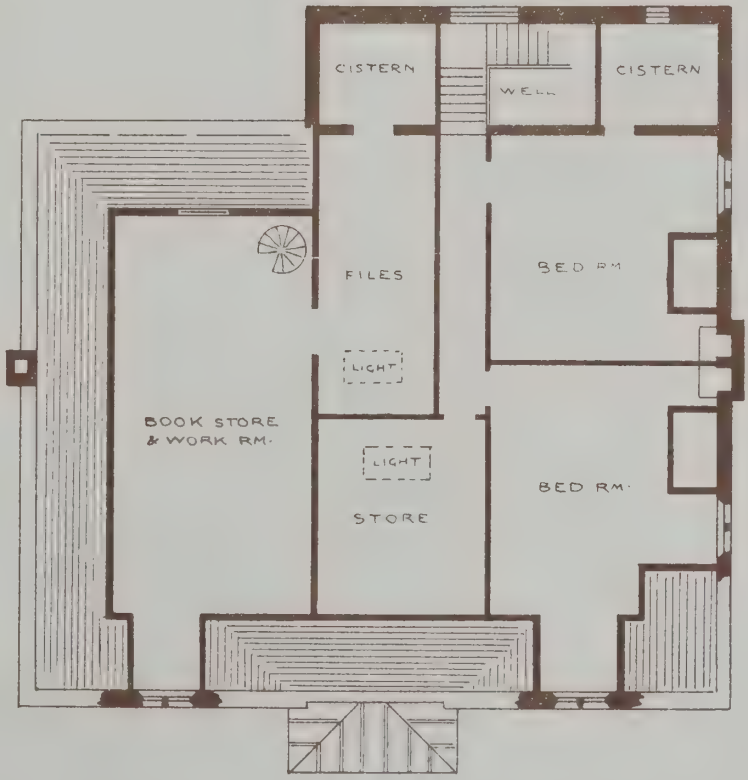


A ST FRONT



BASEMENT





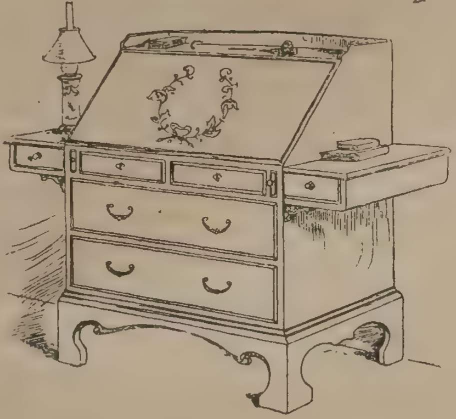
FLOOR

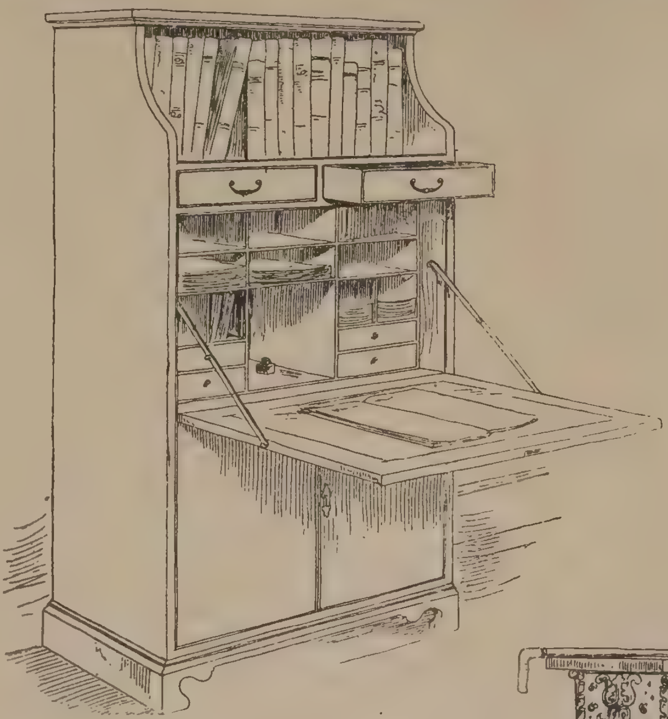
TOP FLOOR

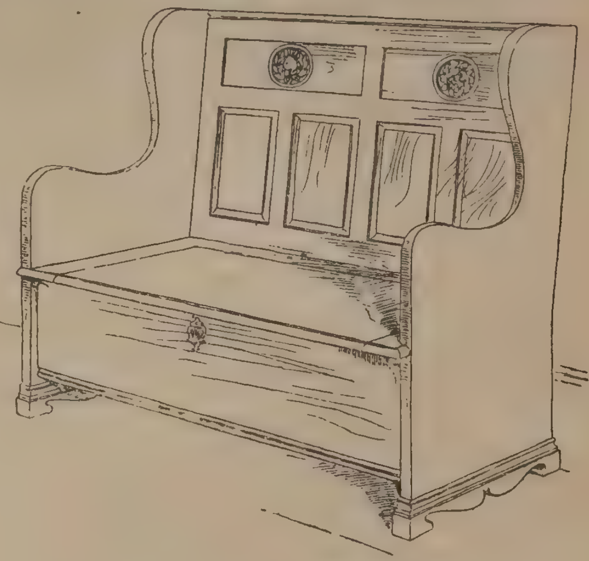
Photo-Lithographed & Printed by James Akerman 6 Queen Square W

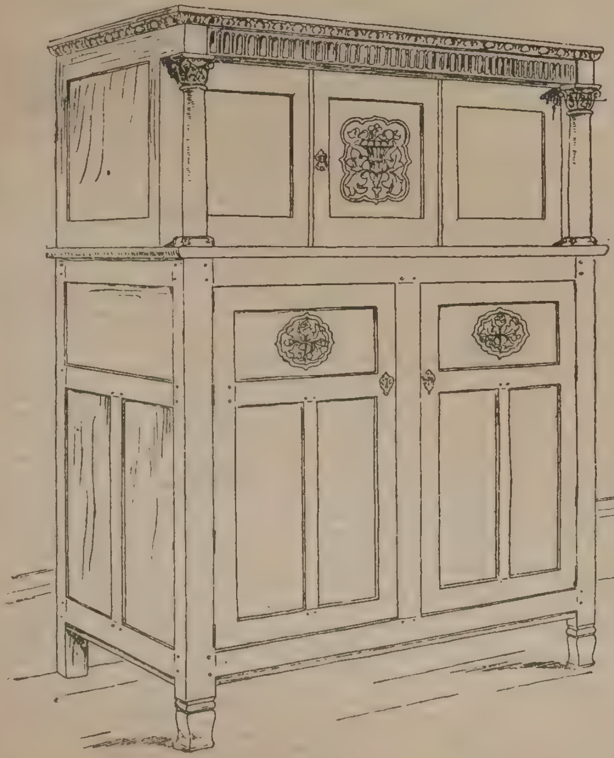
LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

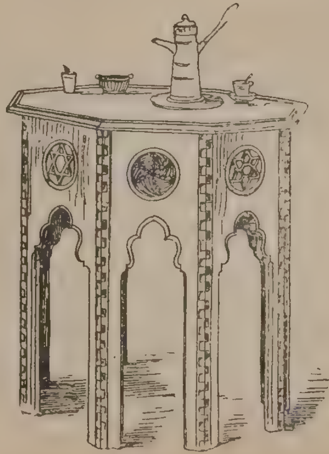
· FVRNITVRE .·. designed · by · R · Brown · Jr. Architect

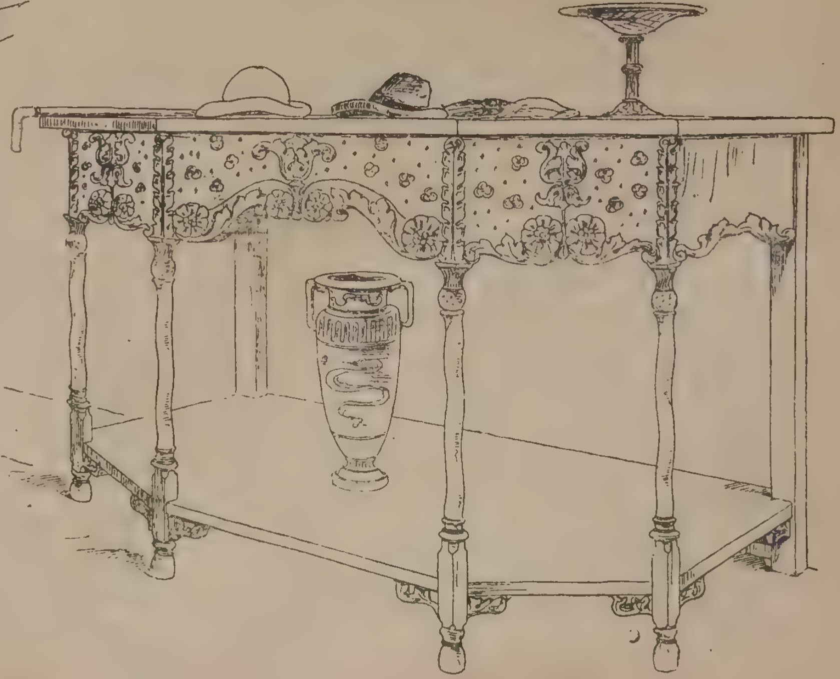












Building Intelligence.

Ashton-upon-Mersey, near Manchester.—The foundation-stone of the schools in connection with St. Mary Magdalene's Church was laid on Saturday last. The architects for the schools are Messrs. Whitelegg and Whittaker, of 16, Albert-square, Manchester. The schools will accommodate 94 infants and 206 boys and girls in the mixed department. The infants' room will be 37ft. 8in. by 20ft., and the mixed school is 57ft. by 37ft. 6in. For school purposes, the mixed department will be divided by movable glazed screens into four rooms, which will accommodate 96, 44, 33, and 33 children respectively. There will be lavatories and cloakrooms for each department. There will also be a cookery-classroom in the basement 20ft. square, having its windows entirely above ground.

Boscombe.—The Bishop of Winchester consecrated, on Tuesday, the new Church of St. John the Evangelist at Boscombe, Bournemouth, which has been erected at a cost of about £14,000, to accommodate 1,100 persons. The site was given by Sir George Meyrick, the ground landlord. The church is built in the 14th century style of architecture, with a nave 107ft. long by 26ft. wide, north and south aisles of corresponding length, and 13ft. 6ft. wide. The building externally is of flint with Castle Cary bands and Bath stone dressings, and it is intended that there shall eventually be a tower and spire 150ft. high. The architects are Mr. J. Oldrid Scott, F.S.A., of London, and Mr. C. T. Miles, of Bournemouth. The building will be lighted by electricity.

Bury, Lancs.—The new Conservative Club was opened on Oct. 19. It has been designed by Mr. A. Hopkinson, architect and surveyor, of 15, Agur-street, Bury, and has been erected at the corner of Moorgate and Peter-street. The premises consist of a club proper and a steward's house. On the right of the entrance is a meeting room, 34ft. 6in. by 29ft., with platform for speakers. Adjoining there is a smoke-room. On the left of the entrance there is a reading-room, 19ft. by 13ft. The basement contains heating-chamber, and wine, spirit, and beer cellars. The caretaker's house communicates with the club. A pitch-pine staircase leads to the first floor, which contains billiard-room, 34ft. 6in. by 29ft., having an opén-timbered roof, and fitted with two tables; the steward's parlour, 15ft. by 14ft.; reading-room, 14ft. 6in. by 13ft., and a committee room, 13ft. by 12ft. The exterior of the building is faced with Accrington pressed bricks with Greetland stone dressings. Messrs. Thompson and Brierley, of Bury, have been the contractors for the brick, stone, and wood work.

Edinburgh.—A contract has been entered into by the Edinburgh and Leith Gas Commissioners with Messrs. Robert Bruce and Sons, Greenside-place, for the construction of the new chimney at the New-street works. The chimney, which is to be erected at the extreme southern boundary of the works, will be 250ft. in height from the ground level, with 23ft. of a foundation. It will rest upon a bed of concrete, 32ft. square and 7ft. 6in. in thickness, and at the base, where the stalk will be 11ft. in diameter, the ring will have a thickness of three and a half bricks, gradually tapering until at the top the thickness is reduced to one and a half bricks. The contract provides for the chimney being faced with terracotta brick, with stone bands at intervals, and for the top being of an ornamental nature, with a panelled arcading in stone or in buff brick. It is expected that the chimney will be completed in six weeks from the time work is commenced, which will be almost immediately. The cost of the chimney will amount to £3,490.

London.—All Saints Church, Norfolk-square, W., which was destroyed by fire rather more than a year ago, was reconsecrated on Nov. 1. The old walls have been in part retained, being coated externally with red brick. Entirely new arcades have been built considerably farther apart than the old, and the material for this and other dressings is terracotta. The roof is of Oregon pine and deal left unoiled and unvarnished. The slates are laid in concrete plaster in the manner introduced by the architect. The passages and chancel are floored with mosaic. The stalls and seats to nave, which are of somewhat Jacobean design, are of Padouk, a hard and fine red wood from Burmah. The principal feature of the outside is an ornate terracotta porch at the west end, with five gables covering three doorways and two recesses. The proposed terracotta belfry stage and spire have still to be carried out, as well as a carved oak canopy over the altar. At the east end of south aisle a morning chapel has been arranged on the site of the old gallery stairs. The contractors are Messrs. Perry and Co., of the Tredegar Works, Bow; and the architect is Mr. Ralph Nevill, F.S.A., of Chancery-lane.

Millbrook.—The new parish church was consecrated on Friday. The building is in the style of the Cornish and Devon churches of the 15th century. The chancel has a lofty arch, having on the north side a vestry and organ-chamber, and a chapel on the south side, with arches opening into the chancel and nave. The tower, the lower stage of which only has been built, is on the south side of the church. All the windows and doorways are of Polyphant stone. The pulpit, octagonal in form, is of traceried and carved work in oak on a base of Beer stone, made by Mr. Herbert Read, of Exeter, from the design of the architects. The altar, of similar treatment, has also been made by Mr. Read from the architects' drawings. Messsrs. Hine and Odgers, of Plymouth, are the architects.

St. Alban's.—The Herts County Council received a report at their quarterly meeting as to the progress that is being made with the new asylum just begun at Hill End, Beastney, near St. Alban's, from plans by Mr. G. T. Hine, of Westminster and Nottingham. The institution will cost, it is estimated, about £120,000, but at present the only contracts entered into are with Mr. Miskin, of St. Alban's, at £2,976 for foundations, another with the same contractor on a schedule of prices for the sinking of wells, and a third with Mr. Hallam, of St. Alban's, for the construction of an iron fence. The Great Northern Railway are making a siding to the site from the new station they are about to erect in the neighbourhood. At present the administrative department and accommodation for 560 patients is being provided, but the entire scheme will comprise 800 beds.

◆

The restoration of St. Mary's Church, Whittlesey, has just been commenced, under the superintendence of Mr. W. Cantwell, of that town.

The Kirk Memorial Evangelical Union Church, the foundation-stone of which was laid on Saturday, is situated at East Montgomery-street, Edinburgh. It is designed in the Early Perpendicular style, with nave and transeptal projections. The pulpit will be placed at the junction of the west transept and choir arches. The church is to be seated for 400, and the hall below will accommodate 200 persons. Vestry, session house, and classroom accommodation is also provided for. The architect is Mr. Hippolyte J. Blanc, A.R.S.A., of Edinburgh.

The water supply of Wotton-under-Edge is now complete. The engineer (Mr. Cotterill) visited the whole of the system last week, previous to handing a certificate to the contractor, Mr. S. Ambrose, releasing him from all responsibility. The waterworks are entirely in the hands of the rural sanitary authority of Dursley. The inhabitants have not only a good supply of water, but the work has been carried out at a low cost, the supply being brought into the town by the natural force of gravitation.

The mosaic which decorates the third cupola of the Escalier Daru in the Louvre (a portion of a general scheme of decoration) is now finished. The vault above the grand antique sculpture known as the Victory of Samothrace is thus decorated with four large figures upon gold grounds, representing the four great ages of ancient art, the Egyptian, Assyrian, Greek, and Latin, and, in four medallions, portraits of the great masters of those epochs.

It is proposed to construct an electric tramway from Blackpool to Fleetwood, the route to be from Talbot-road Station, along Dickson and Warbreck roads to Gynn; along the cliffs through Little Bispham, leaving the cliffs at Anchorholme, and following the road to Rossall; from thence across the fields to Flakefleet, in a straight line along the north-west side of the Copse-road into West-street, Fleetwood, and by way of North Albert-street to the Euston Barracks.

A memorial has just been placed over the remains of the late wife of Mr. H. G. Armstrong, of Heathcote, Wellington College, in the graveyard of the Church of St. John the Baptist, at Crowthorne. The pillar is a monolith of Dartmoor grey granite, treated as a four-holed West Country cross, moulded upon the upper part; none of it is polished, but the whole of the masoned faces are "double-axed." A curbing of the same material is laid round the grave. Messrs. Harry Hems and Sons, of Exeter, carried out the work.

Engineering Notes.

The Central London Railway.—The work of constructing subways beneath the space opposite the Mansion House in connection with the new underground railway will shortly be commenced. Plans have been submitted, and will be carried into effect by Sir Benjamin Baker, Sir John Fowler, and Mr. J. H. Greathead. The line will extend from Shepherd's Bush, where also the electric generating station will be erected, to Liverpool-street Station, the length of the double lines of tunnelling being six and a half miles; and there will be *en route* fourteen subterranean passenger stations, at depths varying from 65ft. to 70ft. from the ground surface. The motive power will be electricity. The line will consist of two iron tunnels, each 11ft. 6in. in diameter. These tunnels will be driven on the air-block system, although it is expected that the London clay will be continuous the whole way. There are only two short curves of three or four chains radius on the whole of the line, which may thus be regarded as practically straight; and the heaviest gradient against the load will be 1 in 100. The estimated outlay is £3,500,000. The metals will weigh 100lb. to the yard, and the road-bed will be made correspondingly stable. The carriages will each afford accommodation for 48 passengers.

CHIPS.

The Statute Labour Committee of Glasgow Corporation have agreed to recommend the erection of a suspension bridge for foot passengers over the Clyde at Oatlands Ferry or Polmadie, the exact site to be subsequently fixed.

In order to construct a new reservoir to hold 1,000,000 gallons of water, and to lay duplicate pipes to the source of supply, some miles from the town, the Yeovil Town Council have resolved to apply for a Provisional Order.

Extensive experiments are being made in the nave of Canterbury Cathedral, with a view of testing the possibility of overcoming the acoustic difficulties. Should they be successful, it is proposed to place a Dean Payne Smith memorial pulpit there, and to make increased use of the nave for special services.

A new church is about to be built for the Bishopsthorpe district of York. Mr. C. Hodgson Fowler, F.S.A., of Durham, is the architect.

The Preston Town Council decided on Thursday in last week, by 37 votes, that the town clerk take all necessary steps to prepare and introduce in the next session of Parliament a Bill for powers to borrow a sum of £160,000 for training walls, dredging plant, dock equipment, &c., for the purpose of the Ribble undertaking.

Mr. Gascoigne Hastings Fowler Jones, architect, has been elected without opposition to the York City Council.

The Liverpool School Board have accepted a tender from Messrs. Thornton and Sons, amounting to £20,455, for the erection of new head offices at the corner of Sir Thomas-street and Cumberland-street.

The new Corporation Waterworks at Launceston were opened on Friday by the mayoress. The total cost of the works and pipes, and the acquirement of certain water rights and easements, has reached some £11,000 or £12,000.

With the view of further improving the tramway service in Glasgow, it has been decided to inaugurate through rates between the northern and southern and the eastern and western extremes of the city. It has also been resolved to acquire ground at Dennistoun terminus sufficient to allow of the erection of stabling for 350 horses and the necessary complement of cars.

The Duchess of Teck will attend St. Luke's Church, Kingston-on-Thames, on Saturday in next week, the 16th inst., on the occasion of the dedication by Dean Hole of three chancel windows to the memory of the late Lady Wolverton.

The annual dinner of the Peterborough Branch of the Operative Bricklayers' Society was held at the Bell and Oak on Tuesday week, Mr. J. W. Walshaw, borough surveyor, being asked to preside. Among those present were Mr. W. Hill, president, and Mr. R. Lusford, secretary.

A memorial bust of the late Sir Jerom Murch, seven times mayor of Bath, was unveiled on Tuesday week by the Mayor of Bath. The bust, which is a replica of that now in the Royal Literary and Scientific Institution, has been placed at the north end of the principal corridor leading from the old to the new council chamber in the Municipal Buildings.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Birmingham Architectural Association.—The second meeting for the current session was held at the Exchange Buildings on Friday evening, the President, Mr. William Henman, in the chair. A lecture, illustrated by 120 lantern views, upon "Robert Adam and His Style," was given by Percy Fitzgerald, M.A., F.S.A. Robert Adam was, he said, one of the great architectural reformers, and about the middle of last century succeeded in completely displacing the old conventional style which had been in fashion "since the days of Bramante," the style of Colin Campbell, Kent, and others, and in exhibiting his own. He became almost sole architect, and engrossed all the business. At this hour every quarter of London is full of his work. No architect ever built so much. Adam was more an artist than an architect. No one can compare with him in the brilliancy and versatility of his gifts. He excelled in all departments. He built noblemen's palaces, mansions, churches, theatres, squares, streets, all in profusion. His decoration was of the most brilliant kind—always architecture in relief—it belonged to the structural forms of his building. His ceilings are marvels of fanciful grace, with groups of figures, elegant patterns, festoons, vases, &c. He designed hundreds of marble chimneypieces, executed by first-rate sculptors. His ironwork is to be seen everywhere in London, in balconies, railings, fanlights, and especially his noble staircases in mansions of degree. In furniture of all kinds his patterns are exquisite, some his cabinets rivalling work of Reisner. This department alone would have engrossed the time of another man. In Mr. Heaton's sumptuous volumes Adam's few specimens excel all the others in the grace and tone of "distinction." His ornaments in the precious metals and in gilt brass, his door furniture, walking-cane tops, cruets, cups, &c., all show the same grace. He, in short, recalls one of the old Italian artists, who were architects, painters, goldsmiths all in one. The principles of Adam's style seem to be these:—1st. His elevations are pictorial in character and fall into pictorial lines. 2nd. He always sought "movement" in his front—that is, he strove to excite speculation and set the mind of a spectator in motion. 3rd. He put emphasis and feeling into solitary architectural elements—such as a column, a patera, an arch. He thought the regular column too gross for his purpose, so he reshaped it, tapering the shaft and reducing the size of his capital. This accounts for the curious, unusual look of the Adam porches, &c. 4th. He discovered a new material, the famous Adam's stucco, which had extraordinary endurance, and seemed to grow sharper and more bleached and harder with every year. He required this material for his extensive decorative operations, and it harmonised better with common "stock bricks" than stone would. He used it profusely for his outside ornamentations, his theory being that ornamental carvings in the open air should be as refined and delicate as that on one of his chimneypieces. The gate at Sion House is as finely wrought with flowers and garlands as though it were under cover. His theory was that the spectator would be attracted and come up close to examine it. It was his fashion to use a delicately-wrought oval or patera or tablet on a waste of wall, to the same end. The stucco lent itself to all these designs, being flexible as well as durable. 5th. Fine workmanship, spacious and dignified treatment, wide halls, broad windows, characterised all his work. These qualities are all displayed in his palaces built for the nobility. They are all, without exception, beautiful and original, and most interesting to the architect. Such are Osterley at Brentford, Sion House at Isleworth (restored and remodelled), Lansdowne House, Kenwood, Luton, Keddlestone, and many more in Scotland. In St. James's and Portman Squares there are many magnificent interiors, the spacious chambers arranged in original unexpected fashion, though outside it seems an ordinary "three-windowed house." All his rooms are charming, and he delighted in contriving little chambers, octagon and circular, with a domed room. His ceilings are covered and broken up with intersecting arches and cornices; he separated rooms by open colonnades, or he would curve his dividing wall, placing a straight cornice in front supported by a couple of columns. His system of decoration was quite unique and original, and a mansion set off with his rich ceilings, decorated walls, and sculptured chimneypieces is a thing to see. This decoration, which was of the most elaborate and florid kind, was really pictorial, and was no more than Arabesque or Grotesque, as he styled them, designs put in relief. Adam was really responsible for all these, though he was assisted by Pergolesi, an artist of note, who has published his own designs, which are far inferior to those of Adam. His staircases were very stately and beautiful, of the "flying" order mounting, a lantern in the roof. In the Duke of Leeds's house in St. James's-square—now a Government office—there is really a lovely stair, a broad oval in shape and mounting with oval galleries. Here, and in the galleries that it led up to, he displayed his choicest ironwork, interlaced lyres and urns. In these things there was the most abundant fancy and no repetition of subjects. It cannot be repeated too often that this fancy seemed inexhaustible in its resources, and was displayed in elegant forms. The marvel is that such a man should be so persistently overlooked, and with so many of his great works amongst us. He, as he had said, designed everything himself, and he was assured by the owner of the Watkyn Wynn Mansion, in St. James's-square, he literally designed everything in the house down to the cruet-stands. A walk through London will reveal innumerable "knockers," all conceived in the most elegant and airy manner; a handle on the writer's door is simply perfect as a bit of design and proportion. He was certainly a remarkable man—a great artist; as the grotesque George Robins used to say of every bit of property he put up, "Gentlemen, here tact and propriety preside!"

Manchester Society of Architects.—The members of this society held their annual *conversazione* on Friday evening at the City Art Gallery, Mosley-street. After a reception by the President (Mr. John Holden), the guests proceeded through the various galleries, and had an opportunity of seeing the autumn exhibition of pictures, the permanent collection, and a number of architectural drawings and trades exhibits. The architectural drawings were shown in the lower galleries. They were the contribution chiefly of members of the society and other architects in Manchester and the district. The trade exhibits comprised contributions by Mr. William Morris (London) and others.

Sanitary Inspectors'. Association. — The first monthly meeting of the members of this association was held on Saturday evening in the Carpenters' Hall, the president, Sir B. W. Richardson, occupying the chair. Mr. Henry Thomas, chief sanitary inspector of Bermondsey, delivered the annual address, in which he dealt with a variety of sanitary questions relative to the best means of effecting a permanent improvement in the general public health. Having urged the necessity of better sanitary measures for the protection of barge and canal boatmen, whose living and sleeping accommodation, he contended, should be above deck, Mr. Thomas adverted to the question of providing more and better markets in the Metropolis. He considered it highly desirable that municipal markets should be established in every Metropolitan district, where the country's produce could be sent to a responsible appointed official for distribution to the public, which would be a guarantee that the producer would have fair value for his produce, and the consumers would get fair value for their money. This officer should be an independent official under the control of the County Council. Mr. Thomas further advocated better provision for the lodgment and sanitary care of the thousands of poor people who annually left London for the hop-picking season. The president, in moving a vote of thanks to Mr. Thomas, characterised the paper as a highly practical one, replete with suggestions that were not only worthy of careful consideration by all who were engaged in the work of endeavouring to improve the public health by the institution of a better system of sanitation, but which, he hoped and believed, would ere long be adopted by the sanitary authorities of the country.

◆

The Leeds Corporation will consider to-morrow (Saturday) a recommendation from the tramways sub-committee to request Dr. Hopkinson, of Westminster, to prepare a report upon the proposed experiment in electrical traction in the city. The idea of the committee is to try the overhead system of electrical traction from the Canal Gardens, Roundhay, to the junction of Boar-lane and Briggate, the conduit electrical system along Boar-lane as far as the Queen's Hotel, and the overhead system along Wellington-road on to Kirkstall.

COMPETITIONS.

Belfast.—It seems, from accounts which have reached us concerning this much-talked-of Irish cathedral competition, that, owing to difficulties in connection with the project, the committee will intrust the work to an architect to be chosen without any competition whatever. Particulars are promised for publication after Friday in next week, the 15th inst. At present it is not exactly stated what the hindrances to the original intention actually are.

CHIPS.

The Marquis of Londonderry recently visited New Seaham, county Durham, for the purpose of opening new club premises for members of the local Conservative Working Men's Association. The club, which is faced with brick with stone dressings, has been erected from designs by Mr. Robert Currie, chief engineer at New Seaham Colliery, who also superintended the masonry and joinery. It has been built and furnished by the Marquis at a cost of about £1,200. Two similar institutions have been built by Lord Londonderry—one at Seaham Harbour, and the other at Silksworth, whilst a fourth is being erected at Rainton. The total cost of these buildings is nearly £6,000.

The report on the Manchester Ship Canal has just been issued by the corporation engineer, Mr. G. H. Hill. He estimates that there is a balance of available capital of £239,000; but the whole of this will be immediately required. The progress of the works in hand has been satisfactory. The new warehouses and hydraulic and electric-light installations should be completed by the end of the year. Nearly all the roads round the docks have been paved, and additional sidings and railways laid down. The dredging difficulty is still most serious, and he recommends that all savings should be applied to that object. The increasing traffic will also require further expenditure on equipment.

If the amount of building in a city is an evidence of prosperity, and no doubt it is, Chicago must be enjoying a return of good times. During May, June, July, and August permits were issued for the erection of 3,495 buildings, with a frontage of over 17 miles. The cost will reach £4,000,000 sterling. In 1894 permits were issued for the same four months to the amount of £2,380,000 and in 1893 for £1,530,000. The Windy City seems to be growing.

The annual meeting of the Scottish Building Trades Federation has been held in the Building Trades Exchange, Gordon-street, Glasgow. There was a large attendance of representatives from various parts of Scotland, the following places being represented:—Aberdeen, Alloa, Dumfries, Dundee, Edinburgh, Falkirk, Glasgow, Kilmarnock, Motherwell, Perth, Arbroath, &c. Mr. David Heron, builder, Edinburgh, president, occupied the chair. The secretary read a report by the executive on the progress made in promoting the federation throughout the country, and afterwards read a paper on "Federation: its Objects and Advantages." It was resolved that the next half-yearly meeting be held in Glasgow.

The directors of the Portsmouth, Meon Valley, and Alton Railway Extension Company have held a meeting, at which it was decided that the financial support already accorded to the project justified them in proceeding to allotment. The promotion of the Bill will be proceeded with in the next session of Parliament, and Sir James Szlumper and Mr. Gravell, the engineers for the line, have been instructed to proceed at once with the requisite Parliamentary plans and surveys.

St. John's Church, Redlands, Bristol, was reopened last week after having been restored at a cost of £680. The works include new pulpit and choir stalls, the panelling and decoration of the roof of nave, and frescoes on the walls, and a reredos will soon be added to the fittings. Mr. H. V. Gough, of Bristol, was the architect, and the carving has been executed by Mr. Margetson, of London, and the decorative works by Messrs. Joseph Bell and Sons, of Bristol.

New board schools in Manor-road, West Ham, were opened last week. They will accommodate 1,576 children. The design, although in the main on the lines of the schools most recently opened, marks a departure therefrom in the arrangements of the cloak and teachers' rooms, and of the entrances to the several departments. Passages are entirely absent, access to the three departments and to the classrooms therein being direct. A building, comprising laundry and cooking-room, has been provided adjoining the caretaker's residence, whilst provision is also made for manual instruction in a separate building in rear of the schools, this being the first building specially erected for this purpose by the Board. There are covered playgrounds for each department. The cost of the schools, including furniture and fittings, is £20,120. Messrs. Newman and Jaques were the architects.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to The Strand Newspaper Company, Limited.

TERMS OF SUBSCRIPTION.

One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India, £1 6s. 0d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front-page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No Front-page or Paragraph Advertisement inserted for less than 5s.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page Advertisements and alterations in serial advertisements must reach the office by Tuesday morning to secure insertion.

Situations.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., LI., LIII., LIV., LVIII., LIX., LX., LXI., LXII., LXIII., LXIV., and LXV. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Balabhaig, State Engineer, Gondal, India. (We have received the photograph of the Grassia School, with thanks; but it has been so damaged in transit as to be of no use whatever for illustration.)

Received.—E. Flaxman.—C. R. P.—C. W. (Bootle).—R. J. and Co.—Decorator.—A.R I.B.A.—G. P. and Co.

Correspondence.

THE HALL OF THE MERCHANT TAYLORS' COMPANY.

To the Editor of the Building News.

Sir,—The descriptive account of the Merchant Taylors' Company's premises in Threadneedle-street in your last issue fails to do justice to the memory of an eminent man, the late Mr. Edward I'Anson, for many years surveyor to the company, whose genius largely contributed to mould the company's hall and its surroundings into the form it now presents to the eye. One turns in vain to the bulky volume compiled by a late past master of the company, Mr. C. M. Clode, entitled "Memorials of the Merchant Taylors' Company," for any recognition of the hand by whose care the hall was for many years preserved and adorned, although every other officer connected with the hall, down to the beadle, are carefully noted, and their services to the company duly recorded. As an old pupil of Mr. I'Anson, and as having been closely associated with him in business for many years, I should like, with your permission, to supplement your account of the hall with a few facts, and recall the services to the company of a man who did little to advertise himself.

The ceiling of the hall shown in your illustration was designed by Mr. I'Anson, who at the same time designed a scheme of colour decoration for the walls and ceiling, which was carried out (I think) by the late Mr. Crace, and traces of which yet remain. When the company resolved to add this ceiling, which replaced a plain matchboarding ceiling painted drab, it was proposed to intrust the work to Mr. Philip Hardwick, who carried out the western corridor and the offices next Threadneedle-street, the surveyor to the company not being employed on architectural work; but Mr. I'Anson having appealed to Mr. Hardwick to be permitted to carry out the ceiling, Mr. Hardwick, in the handsomest manner, relinquished the commission into the hands of his younger *confrère*. In order to illustrate his design, Mr. I'Anson had a perspective drawing made of the interior of the hall by Mr. George Truefitt. This drawing was lithographed, and published by Messrs. Day and Son, and is reproduced in Mr. Clode's book at p. 39; but, of course, without acknowledgment.

The very graceful stone screen in the eastern corridor was designed by Mr. I'Anson, the carving by, I think, Mr. Earp, from drawings by the architect. In this work the designer is seen at his best, Mr. I'Anson, like his great co-temporary, Sir Charles Barry, being essentially a Classic architect.

The south corridor, with a series of stained-glass windows illustrating the memorable squabble and reconciliation between the Merchant Taylors and the Fruiterers, was also Mr. I'Anson's work, in which he was not so successful, the style being unfamiliar to him. He also designed the other additions in the great garden, which are not shown in the plan published in the Building News, which plan, if I am not mistaken, was prepared by Mr. I'Anson.

It may be noticed that the hall does not appear to have been destroyed in the Great Fire, although it was injured, and the company's plate melted. The hall was partially rebuilt by Jarman, the City Architect, who made use of the old walls, as is evident from the plan, which is entirely a Mediæval one, and the irregularity of the angles of the building, none of which are rectangular.—I am, &c., John Hebb.

MR. PENROSE ON COMPETITIONS.

Sir,—The observations of the worthy President of the Institute on Monday night must commend themselves to many a competing architect who, although he has tried and tried again, has not by any means so frequently succeeded. There is one point which seems worthy of mention about the West Ham competition to which Mr. Penrose did not refer in detail—viz., this: Seventy-five architects submitted designs, and only three received any reward for their trouble. Upon the preparation of their plans some spent two months, and some, no doubt, spent more. Taking, therefore, an average of two months for the 72 remaining competitions, the grand total of twelve years was actually consumed upon work which was absolutely of no use whatever to those who took part in the proceedings. And yet this is acknowledged to have been one of the most satisfactory competitions of recent years.—I am, &c.,

An Old Tee-Square.

HOW THEY DO IT IN THE NORTH OF ENGLAND.

Sir,—In a short time advertisements will doubtless again appear for tenders for a new convalescent home at Grange-over-Sands, and as advertisements for the same object so recently appeared over my signature, I trust you will allow me space to explain why that will not be the case this time. I was appointed by a committee of the North-Eastern Counties' Friendly Societies' Convalescent Home, Grange-over-Sands, architect for their proposed new building at a commission of 5 per cent. on the cost, including the time and expenses of six journeys from here to Grange for the purpose of inspection during the progress of the works. Although this is not actually according to the letter of the schedule of charges issued by the R.I.B.A., I think members of the Institute would be justified in making such an abatement, considering the benevolent purposes of the institution.

After inspecting and taking levels of the site—one by no means favourable to strictly economic building, being a very steep limestone hillside—I got out preliminary sketches, which, after being thoroughly examined by the president, the secretary, and one of the trustees of the body, were approved by them. They ordered me to prepare the working drawings, and to lay them before the building committee in the pencil stage. I did so. They also were thoroughly gone through, the committee expressed themselves well satisfied with them, and I was told to complete them, write specifications, and obtain tenders by public competition. Mr. Neilson, surveyor here, was commissioned to take out the quantities, and the tenders were opened at a meeting at West Hartlepool five weeks afterwards.

The building was designed to accommodate 34 patients, and the administrative block was large enough for the addition, at a future time, of a wing similar to that already provided, and making a total of 68 patients. The lowest estimates amounted to £4,055 in separate tenders, as is the general custom in the North. As the committee came to the conclusion that they were not justified in beginning with the money they had then in hand, an adjournment of five weeks was resolved on, during which the different lodges were to try to raise the balance of the amount by present loans of their lodge funds and by other means.

Between these two meetings the plans, which I had intrusted to the president at his request, were taken over to Grange by him. This is apparently a perfectly legitimate action, but it has an important bearing on the sequel. I attended the adjourned meeting with a scheme I had prepared for a deduction of £750 from an already cheap building (considering the site), one intended to be substantially, but very plainly, built of stone mainly from the site, and which comes out at 3½d. per cube foot. I consulted the president about my presence at the meeting, and he told me he would call me in if they wanted me. I never was invited in, and I learned only from a delegate whom I accompanied back to Darlington that, after a wild and heated discussion, my plans had been rejected, and nothing further had been decided. The only notification in black and white of this particular fact, so exceedingly important to me, that I have ever yet seen was in a paragraph in a local paper. I may say here that the committees are mainly composed of working-men, having only a slight mixture of other persons with broader ideas and a grasp of business matters.

A fortnight afterwards, on the invitation of one of the trustees, I attended another meeting, at which sundry questions were put to me. The first two or three referred to a proposed scheme for a home for 30 patients, with administrative accommodation for 60, to cost not more than £2,500, which I offered to do on the same terms as before, at the same time promising a subscription of £20 to the funds from benevolent motives, and in consideration of the failure of these many thousands of men to raise a few hundred pounds. The last question, being such a good one, I must give in the exact words before me, viz:—"In the event of the second plans being accepted does it clear us from any previous obligations?" Here, then, is a body of men who, in their corporate trade capacities, will paralyse a whole country side rather than take a reduction of wages, coolly asking an architect to sacrifice the whole of his wages for one job on condition that he gets another of an inferior character. Although I knew I was treading on soft places, as I had heard on good authority that an architect had offered, at the very outset, to do the work at 2½ per cent., I was determined to hold out for the custom of the profession, and I claimed 3 per cent. on the lowest tenders, as per rule 9 of the schedule. As a consequence of this I got a letter from the secretary, this time informing me that, "on the face of my reply to this question," my terms were not accepted.

I now hear that an architect, or at least a man who draws plans, from somewhere in the neighbourhood of Grange, has been commissioned to carry out the £2,500 scheme, including quantities, and also supervision at least once a week, for 4 per cent. on that sum. This action seems very inconsistent for a committee of men who mostly have such hostile feelings against those people whom they choose to dub "blacklegs." I took pains to impress upon them that in what I was doing I was endeavouring to act as nearly as possible up to the principles laid down by the heads of the profession. I hope it will turn out that the man who is now engaged is not a *bonâ fide* member of our craft, but is merely one of those persons who are able, in the present state of public opinion, without any real qualifications, to call themselves architects.

As the president, at the last meeting I mention, produced tracings showing the new scheme, I take it that the matter was arranged soon after the opening of the tenders, or about the time of the journey of the plans to Grange. In this way, then, another man was substituted for me without giving me the chance of explaining the deductions I could make, and of refuting some objections now made to a few of the minor details affecting the interior working, trifles which would have saved merely a few pounds, but which are analogous to the proverbial "ha'porth of tar."

I have confined myself mainly to a statement of facts; more will be known in the future about the underhand working, owing to the public nature of the job.

I am sorry to intrude my personality so much upon you; but as my position has been so lately publicly announced, I am bound for the sake of my reputation to let the public know the reason for so sudden a change. I look upon it also as a case interesting to architects generally, bearing, as it does, on the so often discussed question of their remuneration, and on the contemptible methods pursued by some to the pecuniary detriment of the remainder. These reasons must be my apology for asking you to be kind enough to insert so long a letter.—I am, &c.,

W. T. Aggutter.

7, Horsemarket, Darlington.

HOTEL COMPETITION, WEYMOUTH.

Sir,—Having replied to the advertisements in the professional papers for above-named competition, we received in compliance with our application a plan of the site and one sheet of conditions, the only information given with regard to the accommodation required being to the effect that "the building should contain, in addition to the usual rooms and offices of a first-class modern hotel, a hall or saloon capable of dining not less than 150 persons at one time."

We wrote to the town clerk asking for further information—i.e., what number of bedrooms would be required? What accommodation would be necessary for the staff and manager? Whether public bars and a buffet would be required? Whether it was intended to use electric light, and, if so, should a dynamo and engine-room be provided, and whether the stipulated cost of £17,000 should include the electric plant? Whether the buildings should be of fireproof construction? Whether stables should be provided, and, if so, what accommodation? We also asked for information with regard to the various levels of the site, the positions and levels of the sewers, and whether any ancient lights existed, which should be regarded in the preparation of the design.

In reply, we received a further site-plan, with the information we sought shown thereon, and the position of certain ancient lights to be considered were also roughly indicated. Surely such important information should have been issued with the conditions!

We were also informed that the whole accommodation would be left entirely for "the competitors to make the best arrangements possible with the money available."

As the whole design would depend upon the accommodation to be provided, and the building would vary in proportion according to the elaboration introduced, we fail to see how a scheme could possibly be prepared with any satisfaction to its author.

We presume that it will be necessary for the "professional referee who will advise the Council as to the relative merits of the designs, &c., admitted to the competition, and make a selection in accordance with the conditions," to know what accommodation will be required, otherwise we feel it would be impossible for a satisfactory selection to be made by the assessor, and surely under these circumstances it would have been right and proper to have acquainted all the competitors with the views of the Council, and have given similar information to that which the referee must necessarily acquire previous to his inspection of the designs and his award being made.

We very much regret that the conditions of this important competition should have been so unsatisfactorily prepared, and we feel sure that no architects who value their time will risk preparing a design from such ambiguous conditions, and no doubt the Council will find a lack of competitive designs both in number and quality.—We are, &c.,

Clark and Hutchinson.

28, John-street, Bedford-row, W.C.

PEMBROKE DOCK INTERMEDIATE SCHOOL COMPETITION.

Sir,—It may further interest "A Competitor" to know that the plans he refers to required no such modification as he seemed to imply; but were "far and away" nearer to the governor's views than those of himself. And, more, the Mr. ——— was a complete and perfect stranger to the governors and the clerk.—I am, &c.,

Verity.

GRAVEL ON ROADS.

Sir,—Through the medium of your journal I would suggest the following to the vestries and road surveyors of towns.

I believe if, in place of throwing down gravel, shingle, or grit, to prevent the slipping of horses, crushed limestone was tried, it might answer much better, and be an immense saving in wear and tear of the horses' feet and the roads.

The sawing and cutting of hard rock is performed by the aid of reciprocating toothless blades of iron fed with water and grit.

The gravel as now thrown down is brittle, and breaks up with glass-like edges, which, being pressed with the iron shoes and wheels, terribly cuts away the roads and horses' feet.

As chalk is usually used to prevent slipping, I would suggest that a trial be given to crushed hard mountain limestone, as produced by thousands of tons in Derbyshire for road metal.—I am, &c.,

W. Brindley, F.G.S.

THE "SCIENTIA" WATER-CLOSET APPARATUS.

Sir,—Referring to your illustrated article on the above in last week's Building News, can the patentee explain how it is proposed to treat the apparatus when there is a window in the wall directly behind the w.c., and also how the ventilating shafts are arranged when there is a series of closets vertically over each other?

As to the "economy of space," I take it that in London and in all large centres the battle is very much to him who can get the most accommodation in a given area, and this *multum in parvo* arrangement of an apparatus may point in the right direction for one department of our buildings.

Then as to ventilation, every observant man knows that when we open a w.c. window, the colder and heavier air of the outside rushes in, and at the least but dilutes the odours of the closet, driving them into our pantries, larders, and every nook and cranny of the house—not forgetting the lungs of the inmates—when they are ultimately persuaded by the fires to make their exit at the chimneys.

If you could give a section through the apparatus, it would make your interesting article still more explanatory and useful. Inclosing my card—I am, &c.,

Nov. 4. A London Architect.

◆

At a special meeting of the shareholders of the Lancashire, Derbyshire, and East Coast Railway Company, held in London on Monday, the chairman announced that early next year coal would be carried over a large portion of the system, and at the end of the year nearly the whole of the railway would be completed.

A new Wesleyan chapel is to be erected at Birkenhead, to take the place of Low-street Mission Room. The new building is to include accommodation for 300 people, with classroom, vestry, kitchen, &c. The walls are to be of grey local bricks, with pressed-brick dressings. The cost is estimated at £1,000, exclusive of furnishing. The work will be carried out from the designs of Mr. T. Taliesin Rees, A.R.I.B.A., Birkenhead.

At Harrogate, on Wednesday week, Mrs. Boyd Carpenter laid the foundation-stone of a church which is to take the place of a mission room in the Smithy Hill portion of the parish of Christ Church. The total cost of the building, without the tower, will be £8,000, and the amount subscribed is £4,025. The style will be the Later period of Decorated Gothic. The design consists of lofty nave, chancel, north and south aisles, south chapel, double transepts, organ-chamber on the north side of the chancel, and vestries for the choir and clergy. A tower and spire are designed for the west front, which is towards Walker-road; but only the lower stage will be built for the present, and this will form a baptistery. The church will accommodate 850 persons.

Trinity Church, Limerick, was reopened for Divine service on Sunday, October 20, after undergoing several extensive improvements, among which may be mentioned that the old gasfittings have all been removed, and beautiful specimens of art metalwork in iron and brass take their place. Suspended from the chancel arch hangs a brass corona with nearly forty lights. A brass lectern, presented by the widow and family of the late Mr. Charles Evans, bearing a suitable inscription, has a prominent position in front of the chancel. The above metalwork has been manufactured by the celebrated ecclesiastical furnishers, Messrs. Jones and Willis, of Birmingham, London, and Liverpool. The whole of the work was carried out from the designs and under the superintendence of Mr. Robert Fogerty, architect, Limerick.

Intercommunication.

◆◆◆

QUESTIONS.

[11444.]—**Moment of Resistance of Corrugated Steel Floors.**—Will any reader kindly give me particulars and formulæ for calculating the moment of resistance of corrugated steel floors, as used in railway bridges? 1. The span and loading being given, find the M of R of required floor? 2. The section of floor being given, find its M of R?—E. Bond.

[11445.]—**Ivy on Walls.**—Should be glad to know if any reader could tell me about the effects of ivy being allowed to grow on brick or stone walls. Have heard so many conflicting statements, some authorities saying that ivy tends to weaken or destroy the wall and mortar, and also helps to keep walls permanently damp; whilst others contend that it forms a protection to walls against rain, &c., and keeps the walls dry.—Oberon.

[11446.]—**Cement Castings.**—Can anyone kindly tell me of a cement that will set quick, suitable for casting, and will not expand?—Enquirer.

[11447.]—**Cleaning Carved Stonework.**—Will any reader inform me the best way to clean dirty carved stonework?—X. Y. Z.

REPLIES.

[11443.]—**Oil Gold.**—The specification should have been "the best oil gilding" that is gilded in oil-goldsize, distinguishing it from "water gilding," or gilding on water-size with vellum, which is the material used for burnish gilding.—Tho. Bottomley.

◆

CHIPS.

Major-General H. D. Crozier, R.E., held an inquiry at the Town Hall, Stoke-on-Trent, on Thursday in last week, with respect to an application by the town council to borrow £2,246 for purposes of street improvement and sewerage, including £486 for improvements to the Trent Bridge, £150 for sewering Lytton-street, £90 for a palisading by the canal in London-road, and £1,520 for a proposed new road to Basford.

It has been decided to enlarge the chapel at Llansaintffraid by extending it frontward, and erecting a new elevation of red pressed bricks. The work has been intrusted to Mr. T. Taliesin Rees, A.R.I.B.A., of Birkenhead.

A richly-stocked deposit of ancient manuscripts, preserved since 1677, has been discovered in the cellars of the Edinburgh City Chambers. Nearly all the papers are of the first importance, and they include 136 letters from the Duke of Montrose and other noblemen and gentlemen in relation to the rebellion of 1715.

The Metropolitan Asylums Board, on the recommendation of a special committee, have decided to appoint a surveyor at a salary of £400 a year. The duties of the new officer will be to prepare plans and specifications for, and to superintend the erection of, all painting and cleaning works, repairs, and alterations, and additions at the several institutions on land under the control of the Board. His professional advice and assistance are to be at the disposal of the clerk to the Board in all matters relating to the work of the Board, and he will be required to devote the whole of his time to the service of the managers.

St. John's Roman Catholic Church, Port Glasgow, was formally opened last week, after being partially rebuilt. The church is designed in the Early Decorated style, and consists of nave, chancel, transepts, side chapel, baptistery, sacristies, &c. The new altar, which is one of the finest in Scotland, cost £500, and the total cost of the reconstruction was £6,000.

The collection of portraits of celebrities at the Royal College of Surgeons will shortly be added to by a bronze bust of the late Sir Richard Owen, which is being executed by Mr. Alfred Gilbert; and a marble bust of the late Sir William Savory, the work of Mr. H. R. Hope Pinker.

The London and North-Western Railway Company have decided to erect a technical institute at Bangor, at a cost of £1,800, for the use of their employés in the Bangor district. The institute will include classes in various subjects, and will have a room for concerts, &c., to hold 400 people.

In the case of the application for discharge from bankruptcy made on behalf of William Parker, of Somerset-road, Brentford, builder and contractor, the discharge has been suspended for two years, ending October 4, 1897.

The free library which Mr. Andrew Carnegie has given Pittsburg was dedicated on Tuesday. The erection of the library buildings, with the music hall, museum, art galleries, and four branch libraries, has occupied three years, and cost 1,000,000dols—the sum for which Mr. Carnegie drew his cheque at the beginning.

Mr. Pittendrigh Magillivray, A.R.S.A., Murrayfield, Edinburgh, has completed his colossal statue of Burns for the town of Irvine. The work was inspected by the committee on Saturday last.

Legal.

IMPLIED WARRANTY.

A NEW and very important point indirectly arising out of the Employers' Liability Act arose and was decided for the first time, in the recent case of "Mowbray v. Merryweather" (*Times*, Oct. 30) by the Court of Appeal. It is of practical interest to builders and contractors in regard to their responsibility for defective plant, although this dispute itself was concerned with shipping. The plaintiffs were stevedores, and were employed by the defendant, the owner of a steamship, to discharge a cargo of deals in port, the bargain being that the defendant should supply all necessary tackle and gearing with which the work was to be done. While the plaintiffs' men were using a chain so supplied by the defendant, who, of course, knew what strain it would be required to stand, it broke, and one of them was injured. He accordingly brought an action for damages against his employers, the present plaintiffs, under the Act, basing his claim upon this defect in the plant, owing to the negligence of the plaintiffs, or their servants, in not having first examined the chain. The action was settled by payment of £125, which the plaintiffs now sought to recover from the defendant as damages for the breach of his implied warranty that the chain he had supplied them to use in discharging his cargo was fit for its known purpose, and they got judgment before Mr. Justice Charles.

Upon the appeal the Master of the Rolls confirmed this ruling, and laid down the law very clearly. He had no doubt whatever upon the point, although it was now determined for the first time. The defendant, when he supplied the chain, knew well what it would be used for, and so his breach of the implied warranty of fitness for its purpose was clear. But he must also be taken to have known that if the chain broke while being used by a workman in the plaintiffs' service he would be injured, and they would be made liable to pay compensation. It was true that in the workman's action the plaintiffs' negligence was alleged. But, on the other hand, the plaintiffs were entitled to rely upon the soundness of the chain warranted by defendant; so the Court of Appeal held that the plaintiffs could recover from the defendant, as damages for breach of his warranty, the amount they had had to pay their injured workmen, and so a point of much practical interest and importance was established.

Fred. Wetherfield, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

T. H. H.—Wall.—Buildings.—Rights.—This is far too complicated a question to be answered in this column, and you should consult a local solicitor with plans and documents. But I consider the owner of building B has acquired various rights in the wall originally erected by A, both as a party-wall and as giving an easement of support, which will have to be arranged between them.

East Suffolk.—Lease.—Tenantable Repair.—Liability.—The tenant seems to be liable to do the work specified, except that of cleaning the chimneys, which is not usually included in a general covenant of this description.

E. L. W.—House.—Compulsory Sale.—You should claim its full value and 10 per cent. extra. Consult a good auctioneer and house agent as to form and amount of claim.

Provincial Architect.—Shop.—Extension.—Rights.—The adjoining owner may have acquired an easement in regard to his bell-handle and pilaster if he has had them in this position for 30 years. Otherwise the building owner seems entitled to go to the extent of his own frontage and on his own land. It appears to be a case for a fair compromise by cutting a notch, as suggested.

C. T.—Building.—"Structural Repairs."—I do not consider that the landlord's agreement "to keep the structure in good repair" would make him liable to repair the bath and hot-water fittings. But if you have not agreed to do internal repairs, you are not compelled to do them either.

Mr. R. S. Donkin, M.P., has offered to complete the infirmary at Tynemouth, at an estimated cost of £2,000, by the addition of an east wing and a porter's lodge.

On All Saints' Eve, at St. Saviour's Church for the Deaf and Dumb, Oxford-street, W., a memorial font was dedicated. It was designed by Sir Arthur Blomfield, A.R.A., architect of the church, and executed in alabaster and marble by Messrs. Earp and Hobbs.

LEGAL INTELLIGENCE.

Thickness of Walls.—Ex parte Goodwin.—In the Appeal Court, on Monday, before the Lord Chief Justice and Mr. Justice Grantham, Mr. M'Morran moved for a rule *nisi* to quash a conviction by Justices at Rochester. The applicant had been convicted on October 8 of disobedience to rules made by the Gillingham District Council in respect to the thickness of walls of houses which he had built. The ground of the motion was the alleged improper interference of a Justice not qualified. The Justice in question was Mr. Tozer, the chairman of the Gillingham District Council. At the hearing Mr. Tozer was present in Court, but on objection being taken to his presence by the solicitor for the defendant, he withdrew from the bench. He, however, took his seat in front of the bench, and not far from it. During the progress of the hearing he handed up pencil notes to the Justices, which were believed to be notes on the case. He also spoke about the charge to a Justice who, though on the bench, was not engaged in the case. Mr. Tozer also made remarks on the evidence of a witness. The Court granted a rule, so that Mr. Tozer might give his explanation in reply to these allegations.

Ambiguities of the Public Health (London) Act.—At Lambeth, on Monday, Mr. Hopkins delivered judgment in a case in which the Vestry of St. Mary, Newington, were summoned by Harry Richardson for neglecting to repair and amend a certain sewer draining several houses in Gurney-street, Newington. The complainant is the leaseholder of the houses in question, which are drained by a combined system, several houses being served by the same pipe connection with the sewer in the roadway. It was contended on behalf of the complainant that, this being a combined drain—to the construction of which the consent of the local authority had never been given—the vestry were, under recent decisions, liable for its repair. These proceedings were taken under Section 12 of the Public Health (London) Act, 1891. On behalf of vestry Mr. Morton Smith contended that the onus of showing that the drain was constructed illegally—that was to say, without the consent of the local authority—was upon the complainant. He also submitted that the vestry could not be proceeded against under this section of the Act, and remarked that since the decision in the case of "Kershaw v. Taylor" owners of this class of property had been trying to take advantage of the decision by throwing upon the vestry the onus of putting their property into a proper state. Mr. Hopkins observed that the first question which arose in the case was whether or not this was a sewer, or whether it was only a drain. He came to the conclusion that this was a sewer common to all the houses. He thought the onus of proof of its character was upon the vestry. The Public Health Act, 1891, provided no machinery by which the sanitary authority could be compelled to keep their sewers in order. The whole of the statute, from beginning to end, looked upon the vestry as the complainants. There was no process short of indictment by which the vestry—upon whom the burden of keeping this pipe in repair fell—could be compelled to repair its sewers. He did not think he could make any order under this statute to compel the vestry to repair this pipe, and the summons would therefore be dismissed. His Worship declined to allow the vestry costs as against the complainant, remarking that, upon the facts, he was against them.

Arbitration at Bangor.—The arbitration between the Bangor Corporation and Mrs. Schwabe, of Glyngarth, who claims £7,000 as the value of the Gazelle Tavern and certain land to be acquired by the former, on the Anglesey side of the Menai Straits, in connection with the purchase of the ferry, has been held this week. Mr. A. Saville, London, is the umpire; Mr. Fenwick, Leeds, is the arbitrator for Mrs. Schwabe, and Mr. Jones (Tapp and Jones), Westminster, for the corporation. The valuers called for Mrs. Schwabe are Messrs. W. B. C. Jones, Criccieth; R. G. Thomas, Menai bridge; W. E. Jones, county surveyor of Anglesey; D. Gillart, Machynlleth; and Wainwright, Liverpool. Evidence for the corporation of Bangor has been given by Captain N. P. Stewart, the chief agent of the Vaynol Estate; Mr. W. A. Dew, Mr. John Pritchard, Bangor, and other professional witnesses.

Lawyers Dispute a Building Agreement.—Macrory v. Gibbon.—The plaintiff in this case, heard by Mr. Justice Wright on Friday, was Mr. Edmund Macrory, Q.C., the owner of a leasehold house, No. 2, Ilchester-gardens, W. The defendant was Mr. Henry Gibbon, a solicitor, the owner of a block of residential flats just completed building in Moscow-road, which adjoins Ilchester-gardens. The plaintiff purchased the house in Ilchester-gardens in 1872, and lived there until some four years ago, since which time it has been to let. Down to within the last year or two there were only small cottages in Moscow-road, which in no way affected the light of his back premises. The lease of the cottages having fallen in, the defendant purchased the land and commenced building the flats in question. The plaintiff and his neighbour, Mr. W. B. Heath, when they found that a part of the new buildings came so close up at the back as seriously to interfere with their light and air, commenced a correspondence with the defendant. As a compromise, an agreement was entered into between the three, dated September 12, 1894, defining, as it was thought, within what lines the new buildings should be confined. In this agreement Mr. Gibbon undertook not to build in "such a way as to prevent Mr. Macrory, if he thought proper, opening windows overlooking his (the defendant's) well." Mr. Macrory considered that this gave him a right to open a new window in his kitchen, which, however, was found could not now be done. For the defendant it was contended that, having regard to the height of the buildings at the time, such a construction could not be placed on the agreement. Mr. Justice Wright gave judgment for Mr. Macrory, holding that the true construction of the agreement was that contended for by the plaintiff's counsel, and directed that that part of the building in dispute should be pulled down within three months, unless an appeal were entered.

CHIPS.

Mr. Cecil Smith, of the British Museum, left London on Monday to take up his post as Director of the British School at Athens.

The memorial stone of the new public hall in course of erection at Strathaven was laid on Saturday with Masonic honours. The structure is Seventeenth-century Scottish Renaissance in style, and the building, which is to cost £2,000, is to accommodate 650. There is a wide frontage, with committee-rooms, &c., and also a small hall to hold 250. Mr. John Park is the builder.

The Gateshead Stained Glass Company have erected a memorial window in the Unitarian Church, Templepatrick, County Antrim.

A new drinking-fountain has been erected in Pennell-square, Pontypridd, from designs by Mr. Charles B. Fowler, of Cardiff. It is erected in Portland stone, and is treated with British ornament adapted from the ancient crosses of Glamorganshire. Messrs. Letheren, of Cheltenham, provided the copper work, and Messrs. Martyn, also of Cheltenham, were the sculptors.

The Hungarian Government have offered to M. Michael von Munkacsy, the celebrated Hungarian painter, now in Paris, the post of Inspector of Fine Arts for the Kingdom of Hungary, with a salary equal to that of a Cabinet Minister.

The new clock which has been placed in the Cathedral tower by the Newcastle corporation was formally inaugurated on Tuesday. The work has been carried out by Messrs. William Potts and Sons, of Leeds and Newcastle. The clock is made on Lord Grimthorpe's principles, with his double three-legged gravity escapement. The clock is constructed on a solid horizontal, planed, cast-iron bed-frame, about 12ft. 6in. long, 3ft. wide, and 18in. deep. This rests upon cast-iron brackets built into the walls of the tower and bolted to them. The time is shown upon two new dials of skeleton cast-iron to form the figures, circles, and minutes, which are glazed with white opal glass for illumination, 6ft. 6in. each in diameter.

A public meeting was held on Wednesday evening in the vestry-hall of St. Anne's, Soho, to promote the restoration of St. Anne's church. A resolution was unanimously passed pledging the meeting to assist the committee in raising the £3,180 required. The movement cannot be deemed premature, for the London County Council has issued a notice condemning the church as a "dangerous structure."

Some ancient municipal documents have just been found in the loft at the Rochester Guildhall. They consist of official deeds, documents, records, and books of the time of Queen Elizabeth, together with the ancient "whipping-post" and other objects.

At the meeting of the corporation of the city of Glasgow, on Monday, it was unanimously resolved to invite the British Institute of Public Health to hold its congress in the year 1896 in the city of Glasgow.

A meeting of the executive committee of the Siddons Memorial Fund took place at the Paddington Vestry-hall, Harrow-road, on Monday. Two designs were selected from among those selected in competition, one representing Messrs. Siddons as "The Grecian Daughter" (her favourite character), by Mr. W. Day Keyworth, jun., and the other, representing "The Tragic Muse," by Mr. Cowell. It was agreed that the opinion of Sir Frederic Leighton, or of some other eminent artist, should be taken before the final selection was made. The statue, which will be exhibited at the Royal Academy before it is erected on Paddington-green, will probably be unveiled by Sir Henry Irving about the end of July next.

WATER SUPPLY AND SANITARY MATTERS.

Buckingham.—An inquiry was held at the Buckingham Town Hall, by Colonel Luard, R.E., one of the Inspectors of the Local Government Board, into an application of the Buckingham Town Council for sanction to borrow £9,050 for works of sewerage and sewage disposal. The engineer to the scheme, Mr. H. Bertram Nichols, C.E., of Birmingham, explained the details and gave evidence in support of the application. After the inquiry, the inspector visited the pumping site and sewage disposal site; his report will be made in due course.

Chorley, Lancashire. — The Corporation of Chorley have just completed their new sewage purification works at Common Bank Farm, at a cost of £15,000. Alderman Hibbert, C.C., the chairman of the sewage committee, performed the opening ceremony on Monday, October 28. The works have been designed by the borough engineer, Mr. William Leigh, A.M.Inst.C.E., and the whole has been carried out under his direction. The "International" is the process adopted. Mr. Leigh has provided tanks of a total capacity of 1,120,000 gallons and polarite filters of a total area of about 1,500 square yards. The sludge pressing machinery has been supplied by Messrs. Goddard, Massey, and Warner. These new works have been rendered necessary by the fact that the Chorley sewage farm has failed in producing an effluent to satisfy the requirements of the river authorities. At the conclusion of the opening ceremony in the Town Hall, Mr. Brierley, C.E. (Messrs. Brierley and Holt, Blackburn), speaking in response to the toast "The Visitors," said that, as an engineer of 40 years' experience, and one who held a public office for many years, he thought he should not be doing an important duty to a professional brother if he did not say that there was no part of the work which was not of a sound and practical kind, and that the whole had been admirably conceived and executed.

Exeter.—An inquiry was held on Thursday, Friday, and Saturday in last week by Major-General C. Phipps Carey, R.E., Local Government Board Inspector, respecting an application by the Exeter County Council to the Local Government Board for permission to borrow £42,000 for purposes of sewage disposal, and for an order determining to what point the tidal waters of the Exe should be included within the term "stream" for the purposes of the Rivers Pollution Prevention Acts. It was explained that the scheme proposed, which has been prepared by Mr. Cameron, the city surveyor, to make a large intercepting sewer into which all the existing sewers should flow, to take that large intercepting sewer into another sewer which would be built for the purpose of taking the whole of the sewage down to tidal waters, and there allow it to escape. The point of the outfall would be about 300 yards below Countess Weir bridge, almost opposite another outlet, the Alphing Brook, which conveys the sewage of St. Thomas. The population of Exeter at the present time was 37,500, and the amount of sewage might be put at 1,250,000 gallons per day, and the council contended that that amount of sewage, when poured into the river, would only give one-forty-eighth of the amount of river water which was there. It was also proposed to pass the sewage over two or three tumblers and two siphons, so that when it was emptied through the outfall at Countess Weir there would be practically no solid matter, and that the water would not be deteriorated at all. Evidence in support of the proposal was given by Mr. Cameron, C.E.; and against it, on behalf of the Exmouth District Council, by Mr. W. H. Beswick, surveyor to the latter body; Mr. Newton, C.E., of Manchester; Mr. Cousens, consulting engineer to the Exmouth Council; and on behalf of the riparian owners by Mr. Chatterton, C.E.

Water Supply to Dwellings in London.—The Local Government Board inquiry, conducted by Colonel Ducat, R.E., into the question whether, at the instance of the County Council, the eight Metropolitan water companies should be required to make certain alterations in their arrangements for the supply of water to dwelling-houses, was continued on Friday. Mr. Freeman, on behalf of the County Council, called evidence in support of the main point in the Council's requirements—an increase in the quantity of water provided for flushing for sanitary purposes from two to three gallons. Among the witnesses called on behalf of the Council were Dr. Murphy, Medical Officer of Health for the Administrative County of London, who considered three gallons essential; Mr. Wm. Groom, sanitary inspector to the Camberwell Vestry, who thought two gallons insufficient, and said the defective supply had caused great inconvenience in his district; Mr. Charles Tagg, clerk to the Camberwell Vestry, who concurred, and stated that his vestry had passed a resolution in favour of increased supply; Mr. Thomas Blashill, superintending architect to the Council; Mr. Keith Young; Mr. J. W. Clark, Liveryman of the Company of Plumbers, and Member of the Sanitary Institute; and Mr. R. Field, Member of the Council of Civil Engineers and that of the Sanitary Institute, all of whom gave evidence in support of the proposed increase of water supply for sanitary purposes in private dwellings. Counsel for the water companies cross-examined the witnesses in support of their contention that the increased supply demanded by the County Council is unnecessary. The inquiry was further adjourned to Monday, when Mr. Freeman concluded his case for the County Council, and Mr. Pember opened the case for the eight Water Companies. Dr. Louis Parkes, medical officer of health for Chelsea, gave evidence as to the water supply in working-class houses. In cross examination, this witness admitted that, with one or two exceptions, throughout the country, in districts where there were regulations as to the supply of water for sanitary purposes, the two-gallon flush was the one adopted. Professor Henry Robinson, C.E., lecturer on civil engineering at King's College, said that a two-gallon cistern in actual practice did not give a sufficent flush. [Our own experience confirms Professor Robinson's view, in spite of the opinions given subsequently on behalf of the contrary contention at the instance of the water companies, none of which seem to us of any weight.] On Wednesday and Thursday numerous witnesses were heard on behalf of the Water Companies.

CHIPS.

At Arundel, on Monday, the Duke of Norfolk laid the foundation stone of the drainage works being carried out in connection with the borough at a cost of between £6,000 and £7,000. The contractor is Mr. Hill, of Peterborough, and it will be completed by June next year. The Duke of Norfolk, after recently giving the borough a full water supply, has also consented to bear two-fifths of the cost of the drainage work up to £6,000.

The London County Council decided on Tuesday to proceed next session with a Bill to raise the present limit of the East London Water Company to the top story of the highest houses within the limits of supply.

A deputation from Edinburgh Town Council visited Glasgow on Friday, and inspected the dwellings erected by the Corporation Improvement Trust for the accommodation of the poorer classes.

An inquiry was held at the public offices, Egremont, on Friday, by Mr. Rienzi Walton, Local Government Board inspector, with regard to the application of the Wallasey Urban District Council for powers to borrow £22 000 for the extension of the gasworks. Mr. V. J. H. Crowther, the gas engineer, explained the proposals.

The parish church of Kidderminster, which has been restored at the sole cost of Mr. John Brinton, was reopened on October 31st. The work done include the complete refacing of the stonework of the north and south clerestories, of the whole of the west end of the nave, including new parapets, and of the whole of the tower from top to bottom, with the reinstatement of the groining under the tower, which was taken down many years ago, possibly owing to the weakness of a buttress. Mr. J. A. Chatwin, of Birmingham, was the architect, and Messrs. Collins and Godfrey, of Tewkesbury, were the builders.

The ancient vicarage attached to Frensham church, near Farnham, was gutted on Friday by a fire, which proved fatal to a nursemaid.

A Local Government Board inquiry was held at Tickhill, near Leeds, as to an application for sanction to borrow £2,500, to carry out a scheme of drainage prepared by Mr. Aird Murray, C.E., of Sheffield.

At the Court of the Cordwainers' Company, on the 6th inst., Mr. Howard Chatfeild Clarke was appointed surveyor to the company, and at the quarterly meeting of the trustees of Dr. Daniel Williams's charity, held at their library on the 31st ult., Mr. Howard Chatfeild Clarke was unanimously appointed surveyor to the trust.

The apsidal chancel of St. Agnes Church, Liverpool, one of the buildings by Mr. John L. Pearson, R.A., has just been decorated from designs by the architect, carried out by Mr. Nathaniel Hitch, sculptor, of London. The general idea represents "Worship," the Eucharistic service below leading up to that of the Angelic ranks above, who surround "The Lamb as It had been Slain," with all the splendour of the heavenly ritual as typified by the musical instruments held by the angels in the middle portion of the sculpture, and by the censers waved upwards by those introduced in the spandrels of the arches. Figures of the Archangels Michael and Gabriel keep a guard over the whole, placed, as they are, on carved brackets and under canopies at the commencement of the apse, while a semicircle of single figures similarly treated, and standing between the lancet windows, are representatives of the seraphim and the higher orders of the celestial hierarchy.

Our Office Table.

Mr. C. R. Ashbee, architect, the chairman of the Committee for the Survey of the Old Memorials of Greater London, writes protesting against the proposed destruction of the buildings of the Trinity Corporation Almshouses at Mile-End Gate. They are, he remarks, in date 1695, and occupy two sides of a grass quadrangle laid out formally and planted with trim clipped trees. At the northern end is the chapel, containing much interesting stained glass, brought from the old Hall of the Trinity House at Deptford when it was destroyed in 1786. In the centre of the quadrangle is a contemporary statue of Captain Sandes, a former benefactor, and the gracefully designed boundary wall which shuts off the court from the Mile-End-road has handsome gateposts and railings, the gabled ends of the houses bearing upon them charmingly-wrought models of old warships of the period. There is a tradition that the work is from the design of Sir Christopher Wren, who was employed in surveying an estate in Mile-End and Stepney. The Elder Brethren of the Trinity House, in justification of their proposed scheme, have pleaded that the drainage of the almshouses is insanitary; but as the new requirements of the local sanitary authorities are very slight, and do not involve an expenditure of more than £150 or so, the plea cannot be admitted as sufficient to justify the demolition of these picturesque buildings.

The City School of Architecture and Applied Arts at University College, Liverpool, is rapidly progressing under the supervision of Professor Frederick M. Simpson. The students at work in the studios now number about 130, and several of these are registered for the complete curriculum. The students have done good work, a model head by Miss Griffiths having gained a place in the Autumn Exhibition. Mr. Allen's statue, "Love and the Mermaid," has been bought for the permanent collection of the Walker Art Gallery, and his services have been engaged for the completion of the decoration of St. George's Hall. The amalgamation of the Literary and Historical Society with the Fine Arts Society has been successfully inaugurated, Professor Simpson being now associated with Professors Raleigh and Mackay in the trinity of presidents.

The Guild and Technical School at the Central Art Department, Bolt-court, Fleet-street, was publicly opened on Monday night. The school is under the joint control of the Technical Education Board of the London County Council and the National Society of Litho Artists, and is specially intended for lithographers and engravers. Every branch of study connected with the lithographic and engraving professions will be included in the various classes, and a special feature will be the establishment of classes for photo-process work. It is intended to form an advisory board consisting of scientists in the optical, chemical, and photographic world to give assistance to the more advanced students and those who are engaged in research work. Arrangements have been made for the instruction of students in the artistic as well as in the technical section, in the preparation of colour blocks for photo-process work, and in half-tone photo-lithography. The life class, with which is connected study from the cast, is under the direction of Mr. Cecil Rea. Mr. G. Frampton, A.R.A., and Mr. W. R. Lethaby, the inspectors under the board, have pointed out that what is required is not a mere art school, but that the teaching should be directly applied to matters connected with the production and design of lithographic work. Ordinary life drawing should be supplemented by much practice from the draped model, rapid studies being made in black and while, and in brush work. Antique drawing may be largely, if not altogether, eliminated, and real objects and natural growths used instead. There should be demonstrations and practice in original lithography, and an endeavour made to get as much out of the materials as possible. Lectures will be given in the course of the session by Mr. T. Way on "Original Lithography," Mr. Gleeson White on "Posters," Mr. William Morris on "Early Woodcut Illustration," Mr. Walter Crane, Mr. Cobden Sanderson on "Bookbinding," Mr. E. Walker on "Typography," and Mr. W. T. Wilkinson on "Collotype."

The fine-art collection to be displayed in the Victoria Art Galleries, Dundee, this year will be opened by his Excellency the Hon. Thomas F.

Bayard, ambassador from the United States of America. This year the exhibition is a joint one, the council of the Royal Scottish Water-Colour Society, whose annual exhibitions have been confined hitherto to Edinburgh and Glasgow, having been induced to include Dundee in their circuit. The collection of water colours, which are the exclusive work of their own members, is an exceptionally fine one. The Great Gallery and Galleries III. and IV. are hung with pictures contributed to the regular Dundee Fine Art Exhibition. The exhibition in these galleries includes Whistler's famous portrait of Thomas Carlyle and Albert Moore's "An Idyll," the last work painted by that artist.

A CURIOUS action arising out of the proposal to raise Winsford Bridge, which had sunk below its proper level owing to the salt subsidences in the neighbourhood, was heard on October 20th, in the Queen's Bench Division, before Mr. Justice Day and a jury. A Mr. Thomas Atherton, whose house abutted on the bridge, sought to restrain the Cheshire County Council from carrying out the work, as, if it were done, it would block up his front door, and so render his house useless. The defence was that the county council only proposed to restore the bridge to the old level; indeed, it would still be 2ft. lower than in 1856, and Sir E. Leader Williams, engineer of the Manchester Ship Canal, and from 1856 till 1872 engineer to the River Weaver Trustees, was called to prove this. The jury found for the defendants, and judgment was given for them accordingly.

AT the Delabole quarry a tunnel is about to be made from the bottom of the workings, which are about 300ft. in depth, to Trebarwith Strand, about a mile and a half from it, and there the addle, as it is called, will be thrown down over the cliffs into the sea. In this way a considerable expense will be saved, as the addle at the present time is brought to surface, and interferes with the proper working of the quarry. It is expected that in making the tunnel sufficient slate will be found to go a good way towards the heavy expense. The vein of slate is making in that direction towards the sea, but the new workings would enter on other landowners' property. The tunnel will cost £30,000, most of which will be spent in labour. Delabole slate is greatly in demand, and sooner or later the directors will have to face the difficulty, and provide better machinery and facilities for getting the slate quicker to market.

THERE is now in course of erection in South Esk-road, on the rapidly-developing Plashet Estate, East Ham, a row of houses, which are an extension of an attempt to apply the principles of co-operation to the owning and letting of working men's dwellings. In 1888, an association called the Tenant Co-operators, Limited, was formed with a view to helping working men to become houseowners without incurring the liabilities and difficulties attaching to other forms of building speculation. Capital, bearing 4 per cent. interest only, is raised, houses or blocks are bought or built and let to tenants at the normal rental of the district. Each tenant must become a shareholder (£1), and the profits, after depreciation, interest, and expenses have been met, are credited to each tenant's capital account in proportion to the rental paid. Such capital is not withdrawable but transferable, and by rule can be drawn upon by the society to pay for arrears of rent and internal repairs if necessary. The estate in South Esk-road, consisting of 16 tenement houses, makes the fourth now in the society's possession in various suburbs of London.

MR. F. VERNON, the secretary to the London Building Trades Federation, has just had an interview with Mr. Akers-Douglas, the First Commissioner of Works, respecting the position of "foremen" on Government contract works. Mr. Verdon asked for an alteration of the terms of contract imposed on all builders carrying out Government work, and the First Commissioner, after consulting with departmental authorities, has agreed to the amendment of Government contracts in the sense desired. The result will be that subcontractors can no longer be employed under the name of "foremen." In future foremen in Government contracts must be employed and paid directly by the contractors, having nothing to do with the carrying out of works. They will be paid servants of the contractors, and will in no way share profits with their employers.

AN examination of master and operative plumbers applying for registration was held on Saturday at the Borough-road Polytechnic, London. The candidates were present from various parts of London and the provinces. The practical tests applied included lead-bossing, pipe-bending, and joint-making. The examination questions included the subject of roof-covering, contamination of drinking water by faulty connections; arrangement of bath, sink, and closet wastes; drainage of town houses and its connection with sewers. The examiners were Mr. Charles Hudson, chairman of the board of examiners; Messrs. J. Hume and S. Stalder, master plumbers; Messrs. D. Early, W. J. Jarvis, and T. Nicholson, representatives of the United Operative Plumbers' Association; and Mr. C. T. Millis, superintendent of the trade classes. Fourteen per cent. of the masters and 18 per cent. of the operatives succeeded in passing the examination in practical workmanship.

A syndicate has purchased the site of Her Majesty's Theatre in the Haymarket. A new opera-house will be erected on a part of the site, from plans prepared by Mr. Walter Emden, M.S.A., and the remainder of the ground will be utilised for shops, club chambers, a restaurant, and an arcade. The building operations will be pushed forward as soon as the Crown and County Council authorities have been satisfied.

A new board school in Spotland-road, Rochdale, was opened on Monday. It has been erected from plans by Mr. T. Townend, jun., of Rochdale, acting in conjunction with Mr. C. E. T. Laurence, of Queen Victoria-street, E.C. It has a central hall 85ft. by 40ft., and 40ft. in height, lighted by clerestory windows, and on either side are classrooms. The contractors for building and joinery were Messrs. J. and J. Coats, of Rochdale, and for masonry Messrs. Nichol and Son, of the same town. The cost has been £14,000.

The Sunday Society celebrated this week Museum Sunday for the fourth time. Sixty-two sermons were delivered, nine by Church of England clergymen, in London. In the evening a meeting of the members of the Sunday Society was held, when it was reported that the services had all been well attended. It was estimated that between 40,000 and 50,000 persons had visited the institutions open during the afternoon. The National Sunday League and eight other Sunday-opening societies had joined in the celebration.

On Friday a stained-glass window, erected in St. Peter's Collegiate Church, Wolverhampton, as a memorial to the late Rev. Prebendary Jeffcock, formerly rector, was dedicated. The window is the central one of the south aisle, and the figures represent the four Evangelists. The work was designed by Mr. Kempe, London. The old oak screen in the chancel has been restored by Mr. Bridgeman, of Lichfield. In addition, a jewelled processional cross has been presented to the church by the family of the late Prebendary Jeffcock.

At Rugeley, on Wednesday week, memorial stones were laid of the new Heron-court Congregational Schools. The schools are to cost £1,000. The builders are Messrs. Thomas Lowe and Sons, of Burton-on-Trent, and the architect is Mr. William Gamble, also of Burton. The building will be of brick, with stone dressings, with a large lecture-hall 44ft. by 28ft. Surrounding the hall are no less than seven classrooms, with a spacious entrance hall. On the second floor there will also be a smaller lecture hall, 18ft. by 26ft., with other rooms and conveniences.

Mr. Henry J. Jeffery, M.S.A., of Ashford, Kent, who is erecting a large board school in that town for the Ashford School Board on the central hall principle, has been appointed architect to the Marden School Board, and has been requested to report on the national schools of that parish as to the possibility of altering and enlarging them to meet the requirements of the Education Department.

The Prince Regent of Bavaria has conferred upon Mr. Hubert Herkomer, R.A., the Order of Maximilian for Art and Science.

A new board school, built on the site of Queen Anne's House at Barton Hill, Bristol, was opened on Friday. It has been designed by Mr. Bligh Bond, of Bristol, to take in a mixed school of 520. The walls are of brick, with freestone dressings. The centre of the block from the ground floor to the roof is occupied by an assembly hall, 70ft. long, 25ft. wide, and 27ft. high. Four classrooms open from it on the ground level, and four more on a first floor reached by broad staircases, which communicate with a gallery running round three sides of the hall. There are also teachers'-room, cloakrooms, and lavatories. A piece of the ceiling of the Queen Anne's House and two of the fireplaces have been introduced into the building, which occupies the land where it once stood. Mr. J. Perrott was the builder.

MEETINGS FOR THE ENSUING WEEK.

MONDAY.—Surveyors' Institution. Opening Address, by the President, Daniel Watney. 8 p.m.
Liverpool Architectural Society. "The Training of Workers in the Applied Arts," by R. Anning Bell, of University College. 6.30 p.m.
TUESDAY.—Sheffield Society of Architects and Surveyors. "The Brotherhood of Architects," by Paul Waterhouse, M.A., of London. 8 p.m.
WEDNESDAY.—Carpenters' Hall Lecture. "Sanitary Construction," by Professor Banister Fletcher, F.R.I.B.A. 8 p.m.
Institution of Civil Engineers. Presidential Address, by Sir Benjamin Baker, K.C.M.G. 8 p.m.
A. A. Camera Club. "Canterbury Cathedral," by C. H. Freeman. Illustrated by lantern views. 56, Great Marlborough-street, W. 8 p.m.
Northern Architectural Association. Opening Address, by the President, Jos. Oswald, F.R.I.B.A. Newcastle-on-Tyne Art Gallery. 7.30 p.m.

CHIPS.

The Master Plumbers' Association of Edinburgh and Leith held its annual general meeting on Wednesday week in 5, St. Andrew-square. Mr. Patrick Knox, the president, occupied the chair. The ordinary business was transacted, and office-bearers were appointed for the ensuing year.

The London and South-Western Railway Company have decided to further extend their Cornish system by the construction of a new line to Bude, which is now nine miles from the nearest railway station at Holsworthy.

Westminster Hospital was formally reopened on Friday by the president, the Duke of Westminster, after having been closed for some time and undergone various improvements at a cost of £5,000. The chief improvements, during the execution of which the place has been closed from the 1st of July to the 1st of October, consist in redraining and overhauling the interior. Important improvements have been made in the operating theatre, and the fittings required for carrying out the system of modern surgery have been supplied.

New schools are being erected at East Dereham, and special consideration has been given to the ventilation, which will be carried out on the Boyle system.

The personal memorial to Dr. Jowett, Master of Balliol, will take the form of a tablet set in the wall of the college chapel, and containing a bust portrait by Mr. R. H. Hope Pinker.

Trinity Church, Limerick, has been reopened after restoration from plans under the superintendence of Mr. Robert Fogarty, of that city.

The district council of Castleton, Lancs, have instructed Mr. J. Diggle, C.E., to prepare plans and estimates for the completion of the sewerage scheme.

The county council of Cornwall have adopted plans by Mr. W. J. Jenkins for alterations and additions to the county lunatic asylum at Bodmin, estimated to cost about £5,000.

A new altar of English oak has been placed in Christ Church, Worthing. It is Early English in style, 7ft. long, 3ft. wide, and 3ft. in height. Mr. R. Singer Hyde, of Worthing, was the architect, and the work has been executed by Messrs. Harry Hems and Sons, of Exeter.

The annual exhibition of the Art Club of Glasgow was opened on Monday. It includes 276 works by over 90 artists, and is above the average in quality, the portraits being especially strong.

Centenary services were commenced at All Saints' Church, Southampton, on Friday. The church was consecrated on November 12th, 1795. It was built from the designs of Mr. John Reveley, a pupil of Sir William Chambers, the designer of Somerset House. The front was copied from the Temple of Minerva, and the ceiling was in imitation of the Arch of Titus at Rome. One of the tablets in the chancel, in memory of the Hon. Henrietta Dillon, is by Flaxman.

The new elementary schools for the Havant School Board are being warmed and ventilated throughout by mean of Shorland's patent Manchester grates, patent exhaust roof ventilators, and inlet tubes, the same being supplied by Messrs. E. H. Shorland and Brother, of Manchester.

The ancient parish church of All Saints, Bubwith, near Selby, was reopened by the Archbishop of York on Thursday in last week, after having been restored from plans by Mr. G. Hodgson Fowler, F.S.A., of Durham. The outlay has been £2,000. The Archbishop unveiled a stained-glass window of one light in the south side of the chancel, representing the figure of St. John. It has been inserted by Sir Henry Vavasour, whose father and mother, and other ancestors, were interred in the chancel of the church.

A Roman Catholic school-chapel is about to be built at Woodhall Spa, from plans by Mr. R. Caine, of Woodhall and London.

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXIX.—No. 2132.

FRIDAY, NOVEMBER 15, 1895.

SOME POINTS FROM MR. PENROSE.

THE last address of the President of the Institute will also be the last, he tells us, in the sense of being his final one in that capacity. All the more attention, therefore, is due to the remarks and suggestions it contains. The most important, perhaps, of the latter is one relating to the admission of distinguished architects as Fellows. During the last two years it seems only four Fellows have been elected who were not previously Associates, and within a twelvemonth the total number of Fellows has decreased by 23. We do not know that this, in the abstract, is altogether a matter for regret. Of course, there are profuse lamentations in certain quarters over the loss of subscriptions which this diminution implies. There is a small party who seem prepared to make Fellows of anybody and everybody who is willing to pay his four guineas a year. "It is sad, it is inexplicable," they say, "that more men do not come forward and do it." We think, on the contrary that it is neither sad nor strange. Architects, like other people, expect value for their money. If the affix of "F." to their names really implied, as it should do, more ability, or even more experience than the affix of "A.," they would be ready enough, when they had earned it, to subscribe more for it. But, as we all know, this has not hitherto been the case. In practice, the difference between Fellows and Associates has been imperceptible, and while it remains so, one can hardly expect reasonable beings to pay double fees for a distinction without a difference.

The title of Fellow ought to imply—and a movement is going on in the Institute to make it imply—that its possessor has really produced some satisfactory architectural work. The higher the standard of this work is kept, the more valued will the title be, and the fewer, down to a certain point, the names that bear it. If, for instance, they were limited by statute to 100, almost every architect would covet the honour of being included amongst them, and the Institute, if it selected them wisely, would rise enormously in public repute. Sooner or later this would "pay," even in the lowest and most sordid sense. The men who are ready to sacrifice the reputation of the Institute in order to increase its income may see at this moment that even its income cannot be increased in this degrading way. Telling all the world that you will admit them as Fellows is the last thing that will make all the world anxious to join. The fact is, that candidates do not care to apply, because entrance has become too easy. And yet there are exceptional cases in which we agree with Mr. Penrose that Fellowships might well be conferred by a vote of the council, without the necessity for an election by the members in general. Certain of the very ablest of our living architects are outside the Institute altogether. They have no private ends to gain by entering it, and it may very well be that they do not care to submit themselves to be voted for or against by a mixed body, with many of whom they have very little in common. Yet to aid in promoting the objects on which all true architects are agreed, they, or some of them, might be willing to join the Institute if, in their special case, the formality of an election could be waived. The experiment is worth trying, and the President has done well in suggesting it. The more select the class of Fellows becomes, the more likely it will be to receive, in this way, the ablest of outsiders, and the more distinguished, in consequence, will be the Institute as a whole.

"One of the greatest satisfactions an architect can feel," says Mr. Penrose, "is when the ultimate cost of a building is kept very closely to the first estimates." The great reason why this does not happen oftener is, that so many clients make their own estimates, and force them on their professional advisers. They have no special knowledge of building; but they do not hesitate for a moment to demand a very large amount of accommodation for a very small sum of money. They induce their architect, or some architect, to promise that they shall have it: for if the first architect does not say so, they try another and another, till they find one who does. Perhaps, by cutting everything down, he gets a contract signed for the stipulated amount. But to do this he has had to keep the details plain and cheap. It was the only honest way of solving the problem which his client set him; but the client likes it none the better for that. So he orders extras here and there and everywhere, and then, when the accounts come in, he turns round and abuses his architect because the work has not been done at contract price. He forgets that he made his own estimate, an ignorant and probably a greedy one. He is simply paying the penalty for his own foolish and grasping conduct.

On the subject of competitions, Mr. Penrose takes the side of "the architects who have arrived." They have emerged from the crowd—by the help, in most cases, of the competition system which they now condemn; and it is natural enough that they should be ready to abjure competitions henceforth and for ever. To them, more competitions will only mean, in all probability, more successful aspirants to honour, more rivals to divide with them the rewards of their early struggles. How much pleasanter for them and their co-equals to take share and share about in such good things as are going; how much nicer to substitute for a competition a choice between names, known and unknown! But what one does not see, on such a system, is how the owners of unknown names are ever likely to get an important commission. They must be content to live and die in obscurity unless they can work themselves into position by such arts as dunces glory in and men of parts despise. The competition system does offer to talent some sort of a career, though a very hard and rough one: the name-selecting system would take even this away. As Mr. Aston Webb pertinently remarked, a committee can no more be relied on to select the best name than the best design. The majority of committees would pitch upon some mediocrity, a respected "townsman," who looms larger in their eyes than the ablest man at a distance. The only thing that saves them from doing this—when they are saved—is to see the mediocrity visibly beaten as to his design; and before they can see this they must have a competition.

Mr. Penrose thinks that an architect's best work cannot be brought out by competition, and that even when the cleverest competitor is selected, he would have produced a much better building if he had been appointed in some other way. These things have often been said before; they have passed too long for unquestionable truths. Is it really the case that the competitive works of any noted architect are greatly inferior to his ordinary ones? Are the Houses of Parliament so far below Sir C. Barry's usual level? Is the Manchester Town Hall a discredit to Mr. Waterhouse, or the Imperial Institute to Mr. Collcutt, or are the Birmingham Law Courts so to their joint designers? Yet all these, and many more about which we might ask the same question, were competitive designs, and if we are assured that their authors would have done better still supposing that they had been appointed with no preliminary contest we reply first that this is a mere assumption, and secondly, that without a contest those authors would almost certainly never have been appointed at all. If, for instance, there had been no competition for the Houses of Parliament, they would not have been put into Barry's hands unconditionally, which is what Mr. Penrose's hypothesis suggests. No; they would have gone, almost certainly, to somebody with "influence"—somebody unknown to fame, whom we never have heard of, and never shall hear of; somebody with no architectural power, but with plenty of talent in making his way amongst the committee, and "their sisters, and their couisns, and their aunts." This is what it will come to in most cases if competitions are abolished, and till a substitute is discovered, they may be too bad for blessing, but they will remain too good for banning.

Mr. Penrose takes it for granted that we all believe in professional assessors. He assumes that "no response ought to be made to an invitation for any competition" unless one of these indispensable gentlemen is appointed. But the assessor question has not turned out to be so simple as it looked when a certain competitions memorial was sent round for signature ten or fifteen years ago. Then, confiding competitors thought that if they once got their assessor, all would be well. Now, the assessor often turns out a failure in more ways than one. Sometimes the committee keeps him dark, and only announces that "an architect of repute will be appointed to advise." This commonly means that he is the local surveyor, or some other official well under the thumb of the promoters, and that he will select the design sent in by their favourite. At other times the poor man does his best, but is hopelessly unfit for the position he has been hoisted into. Thus it was announced in a certain competition, a few years since, that "an eminent church-architect will act as adjudicator"; but when his name was announced, it appeared that he had never built a church in his life. More commonly the assessor's eminence is a titular one. He is not a great man, but a little man on a high pedestal. Committees, seeing him there, think he understands all mysteries, and can decide on any subject, from a board-school to a cathedral. He gives his decision, and exposes his ignorance. They know little of architecture, but they have sense enough to see, perhaps, that the design he has selected will not work. They pay its author the first premium, and pick out another set of plans for execution. This is hard on competitors, and they blame the committee. But the real blame should rest on the assessor, and on the crude, hastily-concocted system which made such an assessor possible. If this system is not to go on from failure to failure, assessors must be selected according to their special knowledge and qualifications —one for a church, another for a town hall, another for a theatre, another for a school, and so on. The mere "man of high standing" is played out, for a man may stand very high, and yet know very little about the classes of work with which he has not been specially concerned.

EMPLOYMENT OF ARCHITECTS.

THE impression that an architect's services may be dispensed with, or that it is possible to obtain all that is necessary without his intercession or help, is very common among people who believe that all advice can be had on the cheap. A large number of people think that a great deal may be had for the simple asking. We find such people asking an editor all kinds of silly questions, which could be more directly answered if they went to the proper sources for information, by writing to secretaries of societies or companies, by making inquiries at the works, or of specialists, by obtaining handbooks of the subject in question, and in other ways. We very often receive a question of this kind :—"I want to build a house, to cost not more than ——, to contain a certain number of rooms. Can you tell me what the sizes of the rooms should be, or tell me where I can get a plan?" Another will ask how he can make his basement dry or prevent the water coming in; a third, whether a certain invention he has made has been patented, and so on—questions that imply the inquirer will not take the trouble to go to the proper authorities, or wishes to save himself the cost of obtaining a professional opinion. If they can get the advice in this way, without trouble to themselves or expense, they believe they have all they want, not suspecting that cheap advice may be, after all, worthless, or what is worse, misleading. Still, there are hundreds of folk who prefer to go about their business in this way, even at the risk of losing hundreds of pounds. They are the same sort of people who continually go to quacks for advice at the risk of their lives, or who prefer to obtain through unreliable newspapers advice as to their ailments. It is the quack who thrives on these simple-minded folk. Like the qualified medical practitioner, the architect is shunned by people of this class. A friend who knows little or nothing of building, and has tinkered at it as an amateur, or the small builder, is appealed to in preference to the architect, and with a smattering of knowledge picked up in various ways, the self-reliant Philistine begins to build. Before the work is half finished he finds the mistake he has made of not consulting a professional man; the saved commission is dearly bought. Defects appear in the arrangement and the materials, to rectify which would cost a great deal more than the architect's commission. As it is with people of this sort so it is with many building committees. They imagine if they can obtain an idea of what they want gratis or on the cheap, or some practical information, they can dispense with an architect; so they advertise for designs, offering a small, often an insulting, premium, and at the same time insert the proviso that "they do not bind themselves to employ the author of the successful design, or to carry it out." What does this mean, but that they only advertise for suggestions, reserving to themselves the power to employ their own official to superintend the work? They get instead of one scheme, perhaps 50 or more designs to choose from for a paltry premium that would hardly suffice to pay the architect's commission of 2½ per cent. Take, for example, a competition for a building to cost £30,000. The fee of a professional man for a design, with the necessary plans for a work of this cost, would be £750 at 2½ per cent. Now what is the proportion of this sum usually paid to the successful competitor by way of premium? Often barely a seventh! A premium of £100 is offered in many cases for a greater amount of skill and labour than would be given by an architect who was privately commissioned to make a design, and for which he could charge the usual 2½ percentage. Mr. Penrose, in his presidential address at the Institute, referred to the West Ham Competition, which is a case in point, where he showed that 72 of the competitors out of 75 lost all the time and money spent. At the ordinary 1 per cent, the professional charge for sketches only, each competitor should have received £400, the cost being £40,000.

It seems astonishing to us that architects do not look at this question of competition in a true light. They are willing to sacrifice their time and labour for a remuneration they would scorn if offered in the usual way. Of course, we are now speaking of competitions in which the proviso is attached of not guaranteeing the architect's employment in carrying out the building. It is astonishing, we say, to find such a bait draws. It may be said, "Yes; but is there not the chance of winning the work as well as the premium?" There is a bare possibility of such a thing happening; but the odds are all the other way. The same architect would laugh at the idea of preparing a design for a building of this cost at a commission so far below the usual one, with the chance of being engaged. Why, then, does he throw away his labour in competing under such a condition? We know of one or two corporations who are at this moment contemplating the erection of municipal buildings. Southampton is one of them—and we do not blame the local authorities, if they can discover their requirements and the cost of such a building, by inviting architects to send in designs as a preliminary step. A competition of this kind would be fair and above board if the town council offered a generous reward for a set of sketch designs, and afterwards invited a smaller and selected number to enter for the final competition. But it is quite another matter to put a number of the profession to the cost and labour of sending in plans, telling them at the same time that they (the committee) do not bind themselves to select any design or employ its author. Speaking of competitions, the other day the President of the Manchester Society of Architects (Mr. Holden) spoke of this as one of the improper conditions imposed by committees, and said it was a matter of surprise that architects will compete when the conditions state "that the committee does not bind itself to employ any of the competing architects to carry out the work; that the whole of the drawings shall become the absolute property of the committee." It is as much as saying "We want ideas; we are willing to pay for the one we like the best, but we will not employ you to carry out the work." So long as the profession respond to these offers, they cannot expect the public to hold very highly the attainments of the architect. If promoters can obtain ideas and suggestions cheaply, they will prefer to go to the cheapest market for the superintendence.

Then is it not too true that there is a great deal of waste or red-tapeism about building operations that serve to frighten people from employing architects? A man wants a building to suit him or his business; he does not want drawings and documents, quantity surveyor, tenders, contractor, and goodness knows what beside—all necessary preliminaries, no doubt, but things which do not appeal to Mr. Smith or Mr. Brown. With it all there is too much separation between the actual building and the workman who does the work and the architect's function, as now exercised. The ordinary employer does not care a fig about architectural education, academic or technical classes, if he can get some one to carry out what he wants as inexpensively as possible. The profession may lay to heart these questions. As Mr. W. R. Lethaby well put it in his recent lecture on the "Designing of Modern Buildings," for the Technical Education Board of the L.C.C., design must be thought about as the natural outcome of the work, not as something added to it—a principle we have preached over and over again, but still not understood. It is a more direct way, after all, than making design a distinct business apart from workmanship, as something learned at schools of art and technical colleges, by a separate class of men who are supposed to be superior to those who use tools, and who are paid to make drawings. And the mischief comes from the notion that art is something that can be added to the real thing. Modern architecture of the professional specialism order encourages this idea by the attitude of many in the profession, in their delegation of certain branches of their work to others, in allowing the cost to exceed the amount originally intended, thereby giving people the impression that the architect's work is expensive and additional to the necessary requirements, and in adding unnecessarily to the elaboration and ornamentation of the building. Too much importance is attached by the profession to draughtsmanship as apart from the real design of the building. The result is that competition committees often make it a condition that the whole of the drawings are to become their property, as if the architect's services were mainly in the supply of the drawings, instead of in the whole conception and design of the building. This separation of the instruments from the actual building superintendence is one that has been fostered by the profession themselves in submitting to it. It is a virtual admission that their art is contained in the documents, and that these can be used by another party. Thus we often find that an inadequate premium is paid for the design shown in the drawings, and that the real work is given to someone else, who may be only a building surveyor. Need we say anything of the result of this commercial transaction, or the consequences to the building? Can we be astonished if the artistic merit of the design is lost in meagre details? The same thing occurs when an employer engages the architect to draw him a plan and elevation, which is then put into a builder's hands to carry out—buying, in fact, a design, to be mutilated or spoiled at the owner's will. All these anomalies are of modern growth, and indicate a wrong notion altogether of what an architect's work consists of. The legal disputes as to ownership of drawings, and the conditions as to employment sometimes entered into between the architect and his employers, confirm the views we have expressed—viz., that the public regard the architect too much as an unnecessary luxury that may be dispensed with for all ordinary building operations, and that for large and more important works his services can be partially purchased at a lower rate than the customary remuneration.

* * *

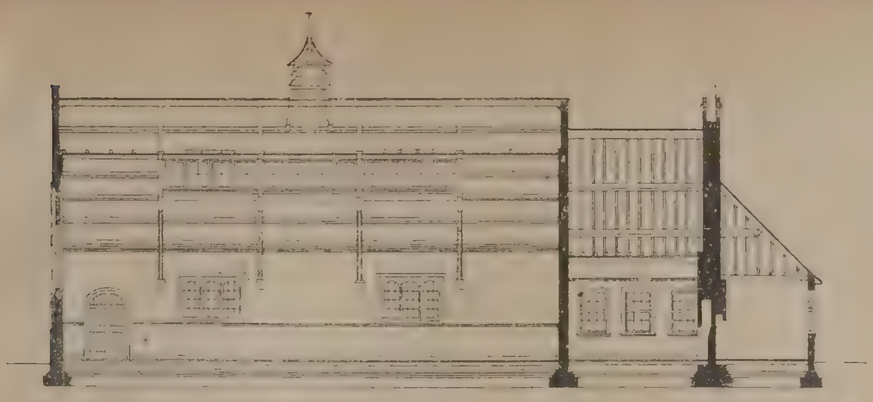
CONCERT HALLS AND ASSEMBLY ROOMS.—IV.

By Ernest A. E. Woodrow, A.R.I.B.A.

THOSE who attend the annual licensing sessions of the London County Council will be familiar with the term "for parochial purposes only." The number of licenses granted annually upon this condition increases yearly, though what the terms of the condition quite mean, and what are the restrictions they place upon the use of the license for music and dancing, is somewhat hard to define. Concerts, it is to be presumed, will be given on the premises so licensed, dances will be held, both entertainments being of a public character; otherwise no license would be required.

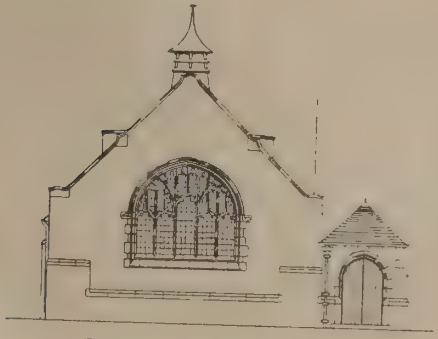
All will acknowledge that entertainments given to the public in connection with parish work, even if of a semi-public character, should only be given in premises suitable for the purpose. Therefore it is a matter of great satisfaction to find that an increased number of licenses are granted yearly to places in which entertainments of this class are given. This number is not only on the increase in London, but also in outlying counties. In Middlesex it is well known that the Middlesex County Council invite all owners of parish rooms to apply for a license, and to place themselves under the rules of the authorities. The restriction given with the license by the Middlesex Council is usually as to limiting the number of people to be admitted at one time; this avoids overcrowding, and does away with one of the greatest dangers from panic. The rules of the Middlesex County Council as to building so as to avoid fire are not so stringent as those of the London County Council, but no limit is placed by this latter licensing body upon the numbers to be admitted at one time.

It appears to many in London a great dis-



SECTION

advantage that the L C.C. does not follow the example of the Middlesex Council, and relax some of their structural conditions to places of this kind, and create the safety of the public, which it is their duty to do, by imposing the restriction as to the limit of the numbers admitted. By this means hundreds of places, now illegally being used for public music and dancing, and entertainments of the like kind, would come for a license, place themselves under the supervision of the authorities, and, in their minor details, be more fit for the reception of the public. To make myself more clear, let me take a case of a room which does not comply with the L C.C. rule as to half the boundary of the site being upon a public thoroughfare, but which does comply as to the number of exits required by the regulations for the number of people to be admitted. Under the present rules, the Council would refuse to approve the plans of such a room. If, however, they made a rule like the Middlesex County Council, to consult their architect if, in his opinion, the building would be safe for a limited number of people, there can be no doubt that many more places would be under their care than at present. Now, it is well known that the minor details which are observed in places of public resort which have received a license are of great importance; that they will be strictly observed in licensed premises; that the exits will be free, the doors will open outward, the fastenings will give way upon the doors being simply pushed; that if the gas goes out, there will be a second system of lighting; that there will be hydrants and fire-buckets to extinguish fires at their outbreak; and that many other details of importance will be observed for the protection of the public. In unlicensed buildings where entertainments are given these details are totally ignored, and where they are ignored there is great danger to the public, even though the building be upon a site complying with the regulations.

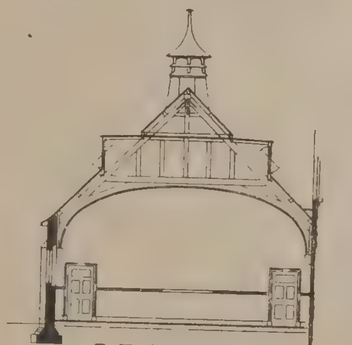


ELEVATION

If the doors open inwards or are locked, an isolated site would be of little avail if the building were overcrowded by admitting more than it was built to accommodate; and if the staircase became blocked, an isolated site would not help the struggling masses to escape. Do not let it be imagined that I am arguing against the advantages of the great question as to site. What I am endeavouring to point out is the very great desirability of placing all places of entertainment under the licensing authorities, so as to better the internal arrangements, and, where necessary, to limit the number admitted.

It must not be thought that, in discussing the policy of licensing questions, I am departing from the object of these papers in writing for the architect. This is a question that greatly interests the architect in many ways, as I shall endeavour in the course of these articles to show.

Now, to evade the licensing laws, many people think they are safe by refusing to take money at the doors. This is the greatest error that could possibly be made. A concert is no less public because the people buy tickets at a neighbouring shop instead of on the premises. The whole of the licensing question turns upon the word "public," the promiscuous admission of the public—that is, the admission of anyone of orderly character who may desire to be admitted, whether with or without payment, with or without ticket matters not. If the public are admitted, then the place must be licensed. I do not hesitate to say that there are hundreds of places in London which hold no license where the public are admitted, and many of these are quite unsafe for the purpose of the assemblage of people in large numbers, but would be comparatively secure with a limited audience, and the observance of the minor details enforced by the authorities in licensed buildings.



SECTION

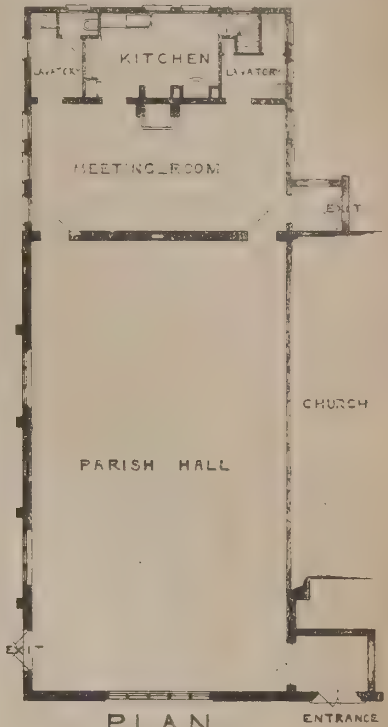
The whole of the foregoing remarks apply more to the use of the parish-room than to any other class of building used for public entertainment. In pointing out the necessity of obtaining a license for such places, I am warning the architect that the time may come when in London, as in Middlesex, his clients may be forced to take out a license, and even should he do so with the result that it be granted to him on the condition of "parochial purposes only," still he must remember that he is erecting a public building for the reception of the people. What are the many usages to which a parish-room will probably be put, I detailed in full in the second chapter of this series.

All these usages may, one would think, be styled "for parochial purposes"—that is, in connection in one way or another with some society or club in connection with the parish; but by holding a license, even with this condition attached, there is greater freedom of action, and no risk of a public or other informer.

When a complaint reaches the Council that an unlicensed building is being used for public entertainment, then frequently it is taken before the police magistrate, and in many cases fines have been imposed. The architect may avoid such a procedure being taken against his clients by making his building safe, and obtaining the certificate of the Council that it complies with the regulations.

In the diagrams given with this chapter are illustrated a small parish room attached to a suburban church, and designed by Mr. H. Saul. Here the rules of the authorities have been studied, so that should the clergyman desire, or be compelled, to apply for a license, he will not have to incur a heavy expenditure on structural alterations.

The room is intended for all classes of parochial assemblies. It has separate entrances and exits, a committee or tea-room in the rear, with kitchens, lavatories, &c., provided. It is a type of a small parish-room of which hundreds exist; but, unlike the majority, it has been planned with a view for its use by the public for entertainments and assemblages for other purposes. I have already remarked on the special danger in this class of building, which arises from the audience being so frequently composed of children. Not long since, a lecturer advocated the teaching of children in the Board Schools the art of leaving a room in an orderly "follow-my-leader" fashion. There was much practical common sense in this idea—one which the ratepayers would not cry out against so loudly as they do against so many of the extravagant notions of our School Board.



PLAN

The plan before us lends itself to such an orderly egress of children, one half leaving on the right, while the others leave by the exit on the left. Perhaps a worse crowd than that of children, which the architect has to remember will at one time or another occupy this class of room, is the crowd which collects at political meetings; here excitement is often carried so far that half the audience lose their heads, and a panic with such a highly-wrought assemblage would be most serious.

◆

ARCHITECTURAL ASSOCIATION.

THE second fortnightly meeting of the session was held on Friday evening, the President, Mr. W. D. Caröe, F.S.A., in the chair. The following 41 new members were elected: Messrs. H. Cresswell, F. W. Platt, A. Paull, A. S. Flower, M.A., L. G. Bird, G. C. Carter, P. M. Dawson, C. R. Dibdin, T. T. G. Donaldson-Selby, R. C. Hall, J. C. Hawes, C. Mossi, R. J. W. Newman, W. C. Oman, S. B. Pritlove, J. Bevir, H. W. Ford, J. E. Franck, H L. Goldsmith, C. E. W. Hope, L. C. Gregory, S. H. Hamp, C. H. Isaacs, W. G. Largen, A. C. Little, W. G. Milburn, R T. Miller, F. G. Newton, B. T. Rodd, E. Rowlandson, H. C. Scotto, W. J. Steel, F. C. Wheeler, L. K. Hall, F. N. Reckitt, C. L. Varndall, H A. Veale, W. S. Weatherly, H. White, W. H. Romaine-Walker, and J. Armitage, jun.

The President mentioned that the committee regretted the small response made this session to the classes in Modelling, a subject not within the scope of the Institute examinations, but one of the first of the handicrafts.

POMPEII.

An address on the architecture and decorations of Pompeii, illustrated by a large number of lime-light lantern views from photographs, was delivered by Mr. Talfourd Ely, M.A., F.S.A. The lecturer pointed out that Pompeii was an insignificant country town—one of a hundred little centres of life and trade once dotting the rich surface of sunny Campania. The oblivion that had obscured so many of her quondam rivals might well have extended to Pompeii herself had her fall been left to the ordinary agencies of time and the barbarian invader. But, paradoxically enough, Pompeii had been preserved by destruction, and the swift annihilation that swept her from the Roman world had enabled the 19th century to behold her face to face, presenting a strange and vivid picture of the life that was lived in Southern Italy well-nigh two thousand years ago. Pompeii had been called the Brighton of antiquity; Herne Bay or Clacton-on-Sea might have been nearer the mark. Yet the stately fanes of Athens, the mighty arches of Imperial Rome, could not mirror to us the everyday life of an ancient community as did this petty municipality with the sorry stock-in-trade of her little shops, and the *sgraffiti* on her walls, apparently fresh scribbled by a passing hand. That Pompeii once contained a considerable Hellenic population may be guessed from the remains of the Grecian temple, but it was not a Greek colony as its neighbour Neapolis was. In the Social War Pompeii took an active part, and was besieged by the great Sulla himself, and at a later date it became a favourite resort of the Roman nobility. In A.D. 63 the city suffered great damage from an earthquake, from which it had not recovered when, in A.D. 79, it was overwhelmed, together with Herculaneum, by an eruption of Vesuvius, an eruption described by the younger Pliny, though without special mention of the towns in question. The rare occurrence of the precious metals in the *débris* suggested that the ruins were searched shortly after the catastrophe. On the other hand, the diversion of the river's course and the extension of the shore between the sea and the walls long hindered the identification of the site in modern times. In 1748, however, the city was discovered; and in 1755 excavation began, in a somewhat haphazard fashion. The plan of the city, Mr. Ely continued, is roughly an oval, with a circumference of about two miles. The walls, strengthened with rampart and towers, still gird every side except that towards the sea. Mr. FitzGerald Marriott's work, "Facts about Pompeii," which will be found teeming with interesting results of personal investigation, shows that "the towers are not all built on the same plan." No attempt has been made to excavate either these towers or the walls, which date from long before the Roman occupation, though the towers date from the time that the walls were restrengthened and patched. As a rule, the streets are straight, and at right-angles to each other. A notable exception is the chief street, leading to the Forum from the north, which is very crooked, and only 14ft. wide, including the footpaths. Other streets are wider, but none exceed 30ft. The pavement is of lava. At Pompeii, the roads leading from the gates to the country were lined with tombs. The road leading to Herculaneum is noteworthy, the monuments being still in good condition, though the stucco-reliefs on some have perished. The public buildings already brought to light include the Forum, an amphitheatre, two theatres, arches, three sets of baths, a basilica, the edifice of Eumachia, and several temples, though not all that are mentioned in inscriptions. Nearly the whole of these had been overthrown, or at least damaged by the earthquake, and their restoration was not completed when the eruption of Vesuvius took place. The Forum was paved with a white limestone, brilliant as marble, surrounded on three sides by a Doric portico, and adorned with statues, the marble pedestals of which still remain. The names of most of the buildings in the neighbourhood of the Forum are very doubtful. The largest building is the Basilica, 220ft. in length by 80ft. in breadth, on the western side of the Forum, with which it is connected by five doorways. Its roof was supported by Ionic columns of brick coated with stucco. Though called a basilica, it lacks the usual apse. It possesses, however, a raised tribunal. An inscription proves that it was erected before B.C. 78. One only of the temples is purely Greek in style. Its scanty remnants show that it resembled the great Doric temple of Poseidon at Pæstum, built about 500 B.C. The paucity of remains suggests that this Greek temple was not restored after the earthquake. All other temples yet discovered at Pompeii stand raised on the Roman podium. The flutings of columns are generally filled up with stucco for one-third of their height, and this part is painted with red or yellow ochre. It appears that there was no good building-stone at hand, and marble was scarce. Tufa seems to have been used throughout the existence of the city. Limestone was used for private houses of early date, but not exclusively, the upper part of the building being of framework. The material of the peripteral Greek temple was tufa, with limestone capitals, the difference between these and the tufa shafts being concealed by a thin coating of stucco. In the basilica both limestone and tufa were employed, and later repairs were executed in brickwork. It is, however, in her private houses that the unique interest of Pompeii is centred. The earliest Italian houses were huts—originally circular, then oval, finally rectangular; with high-pitched roof, from which the water flowed outwards as in our buildings. Such houses are hardly to be found in Pompeii, where the atrium in which the rain is led inwards is the characteristic type. The compluvium admitted light and air, windows being scarce, for glass was not commonly used for such purposes in Pompeii, though frequently found in the later houses of Roman Britain. The oldest existing Pompeian houses, those of the 4th century B.C., were built of limestone, without mortar, the joints being filled with clay. The "Casa del Chirurgo" is an example. They were in their original state of only one story, and had no columns. In the next period the building material was tufa, which better admitted of ornament, as in the columns, which were now introduced under Greek influence. Limestone, however, was still employed for door-posts and for the main beams of the roof. The introduction of columns to support the roof encouraged the striving after additional space that seems to have characterised this tufa period, when houses were extended towards the back, colonnades being built round the garden to form the private part of the dwelling. In the early days of Pompeian excavation less attention was paid to the houses than to their contents. Fiorelli, however, saw that the buildings themselves should be preserved. He put in new woodwork, supported walls, and, in the "Casa del Balcone Pensile," succeeded in rescuing from destruction an actual instance of a projecting upper story. That upper stories existed throughout the city is proved, indeed, by the constant occurrence of stairs; and Dr. Middleton, in the "Dictionary of Antiquities," goes so far as to assert that "one-storied buildings were practically unknown in Pompeii." Buildings depicted on some of the walls have attics besides ground and first floors. Five-storied houses, placed against the southern cliff of the platform on which Pompeii stands, have lately been excavated. As the citizens lived much in the open air, the closed rooms are small, the kitchens especially. Of cellars there are few. Flooring, except upstairs, was seldom of wood, often some species of mosaic pavement, as the *opus Signinum*, which consisted of small pieces of tile (for which Signia was famous) and stucco well-rammed. Occasionally, the finest examples of mosaic decoration are found in these floors, as the celebrated representation of Alexander and Dareios, undoubtedly copied from a Greek painting of high rank, probably Helena's picture of the battle of Issos. Far more important are the walls of Pompeian houses, or rather the paintings with which they are decorated; for, apart from their value as reflecting the lost paintings of the Greeks, they enable us to trace with considerable accuracy their own history and that of the buildings in which they are found. Diverse as are these paintings in subject and execution, there are certain principles common to all. The walls are covered with stucco, and on this are painted the various pictures and ornaments. The painted wall-surface is horizontally divided into three parts. There are also perpendicular divisions, of which the central one is marked out as the principal field for pictorial display. A certain similarity of decoration is accounted for by the fact that the great majority of the paintings belong to the period subsequent to the earthquake of A.D. 63. As to the chronological sequence of these paintings, the reseaches of August Mau have enabled us to distinguish four epochs. At Pompeii, in the second century B.C. and the beginning of the first, this "Incrustation style" was imitated more economically in coloured stucco. This style, with its protruding blocks, was not adapted for paintings, so pictorial decoration was confined to mosaics on the floor. Such projecting blocks made rooms actually smaller. In the succeeding "architectural style" they were apparently increased in size, several planes being represented by the help of perspective, and the projecting parts being expressed by shading. The imitation of an easel-picture on the wall became now the dominant centre to which the painted blocks and the architectural forms of the earlier style simply served as a frame. Thus, from the time of Sulla to the Christian era, the older elements of decoration remained indeed, but were relegated to a subordinate position. For the succeeding half-century the "Candelabra style" prevailed, in which slender candelabra form a characteristic means of dividing the main fields of the design. In this Early Empire style all suggestion of squared stone blocks has disappeared. The plinth no longer appears to project beyond the middle surface, and the strongly-marked cornice above this middle portion of the wall is replaced by a small ornamental band. Whereas the centre of the wall in the second style was represented as a sort of pillared hall, in the background of which the picture was introduced, now, in this third style, the building is set aside, and the columns with the epistyle form only a frame. The plinth and the main field of the wall surface have their cornices replaced by a narrow band of bright colour, decked out with dainty ornaments. Above the main field is a frieze, generally black, on which are painted little objects of endless variety. The third or uppermost division of the wall contains slight ornamental architecture in dull colours. Much naturalistic foliage is employed. As to colour, many shades of red are employed. The plinth and the frieze are generally black—as are often the small panels. The colours of the upper portions are lighter. The chief characteristics, however, are the white or whitish pillars and candelabra. But the careful execution and sobriety of tone in this ornamental system did not satisfy the Post-Augustan Age, an age that demanded warmth of colour and startling effect. The wall was now apparently broken through, numberless fantastic and impossible buildings were depicted, through which one looks out into the open air. In these airy buildings are figures. Slender reeds do duty for columns, fanciful oddities crowd the wall—creatures that never existed, nor could exist. The old painted cornice is now replaced by a plastic one of stucco. Figures are larger than before; and a broad lattice or trellis ornament is a staple characteristic of the fourth and last style, which prevails above all others in Pompeii. Such are the four epochs of Pompeian wall-painting. As to the technical process of their execution, most may be content to follow Donner. For my own part I incline to the views of Mr. Cecil Harcourt Smith, whose article "Pictura" in the new edition of the "Dictionary of Antiquities," based on the researches of Blümner, gives a clear and reasonable account of the methods probably employed. The ancients used for their fresco-painting much thicker and more carefully-prepared layers of mortar than the moderns, and were, therefore, less trammelled by rapid drying. Some colours, however, required a medium such as milk or gum to fix them. On the difficult question of encaustic painting, much light has recently been thrown by the discovery in Egypt of several mummy portraits executed by this process. That in producing these portraits melted wax was laid on with a brush has been clearly shown by Prof. Flinders Petrie. A further and a far more interesting question remains to be considered—the subjects of the important pictures, and the source of their inspiration. Greek painting, from its perishable nature, has been little more to us than a tradition. With the sister art of sculpture time has dealt less harshly. The great painters of Hellas, on the other hand, are little more to us than the echo of a mighty name. As to Timanthes and Nikias, Aëtion and Theon, and Timomachos, much light has come to us, however, in these latter days from an unsuspected source. The critical acumen and patient labour of the great archæologist, Helbig, have established the intimate dependence of the best Campanian paintings on the works of artists famous in the Hellenistic age, and the close parallelism of both with the idyllic poetry of that prolific period. The copyists vary, of course, in fidelity to their originals. Naturally, there is but a limited number of cases in which such relationship can be definitely asserted. On this subject, however, I may, perhaps, be allowed to quote what I have written elsewhere.[*] "For the various pictures the student should take Helbig for his guide, who has enumerated nearly two thousand in his catalogue, a number now increased by some hundreds They do not reflect to us the art of periods earlier than Alexander, an art that introduced men only as occasion required, and did not favour *genre* representations. They rather reflect the art of Hellenistic times with its fondness for actual life, children sporting, &c. The art of Pompeii possesses little of the dramatic. It is rather idyllic, and smacks strongly of the Alexandrine poetry. In the whole number of pictures there are only two that can be called historical—the death of Sophonisba, with its portrait of Scipio, and a rough sketch of the fracas in the amphitheatre between the Pompeians and the men of Nuceria. Of the few that can reasonably be traced back to great originals, perhaps the most interesting is the Medea, that may well be descended from the masterpiece of Timomachos. The bulk of the representations are mythological; not dealing with the greater gods, except Apollo, Aphrodite, and Dionysos, but with Eros, Nike, Nereids, the attendants of Dionysos, and some of the heroes, as, notably, Herakles. The rare occurrence of Italian myths is accounted for by the lack of established types to copy. The failure of pictorial power, attested both by Pliny and Petronius, must, however, refer to conception rather than execution, which was still good, as we see by the wall-paintings, though these can give only an approximate idea of the contemporary easel-painting. These mythological pictures, with their tendency to the beautiful, together with some general types of mankind and scenes from comedy, which are rather characteristic than beautiful, form one of Helbig's two great divisions—the ideal, in which there are many replicas; and the realistic, in which there is only one example of each composition. These realistic pictures were less carefully executed than the ideal, and occupied inferior places. The best belong to the amphitheatre, and represent gladiators and wild beasts, Of ideal representations few are derived from epic poetry, which required a larger field, with many figures. Most are quiet or sentimental subjects, akin to those of idyllic poetry. In landscape we find oftenest a smiling Nature covered with the works of man, in which we may sometimes recognise the west coast of Italy, between Ostia and Salerno, and an illustration of Pliny's description of his villas. The important position of landscape in modern art, however, was never reached in antiquity. Ancient art was essentially plastic, and knew little or nothing of atmospheric effects. In delicate grace and lightness of pose, the decorative figures hovering on the Pompeian walls have never been surpassed. For purposes of decoration, the wall was divided into separate fields, the centre of each field being formed by a picture bounded by a painted frame. This was an imitation of the separate pictures on panel, and in some cases the picture was actually painted on a separate piece of stucco. Another clue to the great paintings of the 4th century has been found in mosaics. The mosaics of Pompeii are chiefly decorative; one, however, undoubtedly is copied from a Greek painting of a high rank—the mosaic of Alexander and Dareios. The moment chosen is one of intense interest. Alexander, charging the Persian bodyguard, transfixes with his lance the Persian noble who has thrown himself before his king. Dareios stands helplessly in the chariot, which the driver vainly seeks to disentangle from the *mêlée*. In the horse brought up for the king's escape we see the boldest foreshortening, and the face of the Persian reflected in a shield is another instance of technical skill. So excellent a copy implies a great original, and we can hardly be wrong in seeking that original in the famous picture of the battle of Issos, by Helena, daughter of Timon." Not to her pictorial treasures alone, however, does Pompeii owe her pre-eminence among the deserted cities of the ancient world. Her bronzes and other ornaments are of the greatest variety and beauty; but it is rather the abundant traces of human activity and traffic seemingly but this moment stopped that raise such vivid emotions in the traveller's breast. To the ordinary man with ordinary sympathy for his fellow man, the human interest of Pompeii will appeal with the greatest force.

At the close of the lecture a vote of thanks was accorded to the lecturer on the motion of Mr. A. Beresford Pite—who suggested that the Association might consider the possibility of an excursion to Pompeii next spring—seconded by Mr. G. H. Fellowes Prynne, and supported by Mr. FitzGerald Marriott.

THE SOCIETY OF ARCHITECTS.

THE annual report of the council for the year ending October 31st, 1895, is again of a satisfactory character. Sixty-four applicants have offered themselves as candidates, and of these forty, who, by the works they have carried out, proved themselves in every case to be competent architects, have been elected during the year to the membership of the society; and three gentlemen of distinction have been added to the list of honorary members—viz., the Rt. Rev. G. F. Browne, D.C.L., F.S.A., Lord Bishop of Stepney, the Very Rev. Frederic William Farrar, D.D., F.R.S., Dean of Canterbury, and Mr. John Ruskin, M.A. Against this two members have died, five have retired, and twelve members have been removed under Article 44; thus leaving a net total of 519 upon the roll of the society. The members' annual dinner was held at the St. James' Restaurant, on February 19th. At the ordinary meetings held during the session an address was delivered by the President, Mr. Edwin J. Hamilton, and papers (all of which were reported in these columns) were read by the Rev. J. Cave-Browne, M.A., and Messrs. Ellis Marsland, Herbert Batsford, F. Aumonier, R. Barry Parker, Henry Lovegrove, A.R.I.B.A., H. G. Quartermain, Geo. Payne, F.S.A., and J. Arthur Reeve. The ordinary meetings held on June 15th and July 13th took place in the field at the Roman Villa, Darenth, and Waltham Abbey respectively, and this new departure was a great success. At the various meetings of the council and the committees on finance, literary matters, and practice important questions affecting the society, and the individual as well as the general interests of members, have been repeatedly raised and settled, and the council hope that members will continue to avail themselves of the advice and experience offered them through the special standing committees. During the past year a register of students has been opened, and already fifteen students have been enrolled. During the year the meeting-room of the society has been furnished as a reading-room, and opened to the members for daily use from 10 a.m. to 6 p.m. It has proved of special value to country members for appointments, letter writing, &c., when in London. With reference to the examination for membership which comes into operation on November 1st, 1896, the council have already formulated and published a scheme of examination, together with the first list of qualifying examinations which will be accepted in lieu, or partly in lieu, of the society's own examination.

THE SURVEYORS' INSTITUTION.

THE twenty-eighth session of this institution was opened at the meeting of Monday evening last with an address by Mr. Daniel Watney, the president. There was a very full attendance, and the address was received with the cordiality and approval which its very practical character claimed from an audience of surveyors.

Mr. Watney began by disclaiming the right or the ability to lay down any new laws or to open up any new sources of knowledge. Knowledge, he said, was now open to all; and even omniscient presidents of the British Association had to content themselves with a sort of inventory of the scientific labours of the year—a mere counting of the new-grown leaves on the tree of knowledge. Where such authorities had to limit the scope of their pronouncements, it was hardly to he expected that he should go beyond the bounds within which practical knowledge was now confined. Beginning with agriculture, as befitted the president of an institution comprising so many members interested in the future prospects and in the present difficulties of the land question, Mr. Watney confessed himself unable to sound even one note of hope. Foreign competition and, what was more serious, foreign organisation were killing British corn-growing, and it was by opposing organisation to organisation that the British farmer could alone expect to establish any future prosperity. The British farmer did not lack in skill, in energy, or in natural advantages. It was, he believed, in the defective and obsolete methods of his marketing and transport arrangements that he lost the advantage, which his foreign rivals were so ready to seize. Despite all this, Mr. Watney did not take so gloomy a view of the future of British land as did some other speakers on the subject; but he warned those interested in it that improvement in its prospects must be the result of working from within rather than dependence on outside aid. He alluded to the spirited efforts now being made by the Hon. Horace Plunkett in Ireland, and Lord Winchilsea in England, to improve the small farmer's position. They worked, it is true, on different lines; but the idea of co-operation among the farmers seemed to lie at the bottom of both their schemes, which already showed some prospect of success. Mr. Plunkett's scheme especially gave promise for the Irish farmer, and there was no reason why it should not equally apply to the English difficulty. It consisted briefly of (1) improvement of methods; (2) simplification of relations between producer and consumer; (3) co-operation in the purchase of machinery, manures, and other necessaries; and (4) co-operative credit. So far as the plan had been worked, it had, as he had said, and as he further showed by figures, attained much success, and promised more. The question of foreign meat imports next engaged the speaker's attention; but, as he said, this was not so much a matter of competition in "market overt" as one of (too frequently) misrepresentation of origin. Land transfer and its simplification were next dealt with; but Mr. Watney seemed little hopeful that the lawyers would look favourably on any system which would take the details of these transactions out of their hands. He, indeed, quoted from speeches of past and present presidents of the Incorporated Law Society opinions greatly adverse to any alteration of the existing system. Mr. Watney next spoke, as an expert, on the subject of the neglected state of the science of forestry in our country. He foresaw the time when much of the land on which it had paid to grow corn must go out of cultivation, and he could not help thinking that much of the land might be devoted to timber-growing, not only with profit to the landowner, but with real and permanent benefit to the community at large. Those who, with perfectly good motives, had in past years disafforested large tracts of country for the purpose of laying them down to agriculture, would, he believed, be the first now to acknowledge that their policy had been a short-sighted one. Dealing with the subject of land, he mentioned that the transactions in landed property, as evidenced by the sales at the London Auction Mart, had, during the last 19 years, sunk from about 96,000 acres per annum, at a price of nearly five million pounds, to 11,500 acres per annum, at a price of not over a quarter of a million pounds, the average price per acre falling from £52 in 1875 to £24 10s. in 1894, or about 53 per cent. The question of local taxation was next dealt with. Since 1870 the rateable value of all property assessed had increased by 53 per cent.; but, while land in 1870 represented 40 millions, or one-third of the whole, it was now valued at only one-fifth. The increase was made up of nine millions added to the rateable value of railways, 47 millions on houses, and six millions on other rateable hereditaments. The whole 15 per cent. fall in the value of agricultural land was confined to the last fourteen years. The president spoke favourably, but guardedly, respecting the latest scheme for the oft-mentioned "Strand Improvement" of the London County Council. He regretted that some such a plan had not been adopted as that advocated by one of his predecessors, by which a low-level street running under the Strand would conduct the traffic into its obvious channel, the Victoria Embankment, instead of pouring it into the already overcrowded Strand and Wellington-street. He thought that the bold principle of "betterment" had been usefully modified in the case of the Tower Bridge (Southern Approaches) Bill, by the introduction of the apparently inseparable principle of "worse-ment," and by the provision that a dissatisfied owner might compel the authorities to buy his property at their own valuation. The president then dealt at some length, and with a minute criticism of details, with the question of "betterment" as it now appeared actually on the Statute Book, and concluded his address by a statement of the financial, numerical, and general progress of the Institution. It now, as he said, embraced, as its charter designed it to do, the whole of the United Kingdom. Nearly 200 members, composing the Irish Land Agents' Association, had become Fellows of the Institution. There was an entry of over 250 names for the next professional examinations, and the class of Colonial Fellows was steadily increasing. He made the important and interesting announcement that within the last few days the council of the Institution had brought to a conclusion the negotiations for a 999 years' lease of their premises and the four houses adjoining, and that early in the summer of 1896 they hoped to proceed with the demolition of the present very insufficient premises, and with the building of a new institution sufficient to answer all requirements for some years to come. This, he said, would, of course, involve a very large outlay; but he could congratulate the members on the fact that the Institution was the happy possessor of more than enough invested funds to meet the purpose.

---

[*] "Manual of Archæology," pp. 218-221.

A cordial vote of thanks to the President for his address was proposed by Mr. Squarey (past-president), and seconded by Mr. F. K. Munton (Associate), and passed by acclamation. The meeting then adjourned.

INSTITUTION OF CIVIL ENGINEERS.

THE first meeting of the session 1895-96 was held on Tuesday, when a portion of Mr. Charles Barry's new building, the theatre and approaches, with tea-room, &c., was made available for the purposes of the evening. Sir Benjamin Baker, K.C.M.G., LL.D., F.R.S., the new President, delivered his inaugural address. After some preliminary observations referring to the position of the Institution in the domain of engineering, and the necessity of British engineers acting together in a true spirit of comradeship throughout the world, the President proceeded to discuss the question why engineering, unlike other liberal arts, was an essentially modern profession. It had been frequently assumed that everyone acknowledged the benefits conferred upon humanity by engineers in facilitating communication, cheapening production, and raising the condition of the toiler; but the late Professor Froude had publicly stated that he failed to see much evidence of progress in the nature of men, and that "even in the outward essentials of food and clothing and housing it is not certain that the mass of mankind in the present generation are better off than their forefathers." The President was not prepared to accept this dictum, and maintained, on the contrary, that the mass of mankind were much better off than their forefathers in these respects. Further, that the independence of the labourer and mechanic had been greatly advanced in consequence of the vastly increased demand upon their services due to engineering work. In support of this view, it was stated that as recently as four years after the opening of the Liverpool and Manchester Railway, certain Dorsetshire labourers ventured to erect themselves into an elementary form of trade union, and were sentenced to seven years' penal servitude for their pains. At the present time many municipal contracts provided for payment of wages at trade-union rates, whereas a couple of centuries ago the magistrates fixed the rate at Quarter Sessions, according to the price of food and clothing, the average being about 1s. a day for carpenters and masons, and 8d. for labourers. The hours of labour for all classes were then from 5 a.m. till 8 p.m., with $2\frac{1}{2}$ hours' interval for meals and rest. The penalty for an employer who departed from these regulations was ten days' imprisonment and £5 fine, and for a workman twenty-one days' imprisonment. No man in search of work could beg without a license, the statutory penalty for a first offence being whipping at a cart's tail; while the second offence meant the loss of an ear and two days' scourging, and the third hanging. On the whole, the study of the past was conclusive as to the material and moral progress which had accompanied the development of engineering works. The President next dwelt upon the work done by physicists in the borderland of engineering, and expressed the opinion that, long before the coal-fields were exhausted, some way would have been discovered of tapping the inconceivably great reservoirs of force in Nature still untouched. In conclusion, the President sounded a note of warning against the growing disposition to overrate technical education.

NEW ENGLISH ART-CLUB.

THE pictures on the walls of the Dudley Gallery, Piccadilly, are in many senses "modern"; they represent a series of experiments in colour of the younger members of the English art or "Progressist" school, many of them crude and tentative, but a few representative of the higher aims of the Naturalistic school. The committee comprise such well-known names as Francis Bate, P. W. Steer, Edward Stott, Moffat P. Lindner, Walter Sickert, Alfred Lys Baldry, and Prof. Brown, and upon them the duty of selection has fallen. Entering the gallery, a number of white-framed water-colour studies attract the visitor, many of them subtle impressions of colour and atmosphere. Of these, H. H. Brabazon, W. Sickert, Moffat Lindner, James L Henry, and Miss Lucy Halkett may be mentioned as chief contributors. Miss Mary Hogarth's stalls and people in "A Breton Market" is an effective piece of colour; H. H. Brabazon's drawings of mountain scenery—"Vesuvius" and "Val d'Aosta"—are strong and vigorous sketches, full of subtle harmonies. These are landscape notes in which simple colour washes are used. Miss Malcolm has a full-length portrait of a young girl in white and satin shoes, rather too formal in pose. "Misty Evening, Boulogne" (18), by James L. Henry, is a pleasing atmospheric blending of tone, and A. M. Swan's "Sunshine" may be noticed also as an impression of sunlight in an ordinary atmosphere. Moffat Lindner's view, "Pasajés—Winter" (26), is a charming colour study, in which the blue sea is intensified by the bright red tile roofs of the houses skirting the bay. His expanse of blue sea, with reflection of light, "The Needles" (44), is subtle in harmony. One or two figure subjects by Edward Stott (29) and by Gilbert James (30)—the latter a pleasant piece of colour—and Fred Yates's "Old Man and Child" (38) are clever. A study of a girl in black, standing before a fire, by Walter Russell (40), is an effective arrangement in black and brown. A vigorous seascape by C. E. Holloway, "Lowestoft Harbour," exhibits some skill in the technique, the "loading" of the pigments, and the light on the rippled sea. B. Sickert has a sunny sketch, "Dover." Mark Fisher sends two characteristic effects: "Moonlight," a clever piece of sky painting (49), and "Summer Evening," a study of cattle and meadow, bright and fresh in colour and handling. Bertram Priestman has a broadly-painted landscape in greyish tone, and his "Inflowing Tide" (80) is of merit. A bold sketch is sent by Martin Bruce, "On the Ramparts, Bruges," and a portrait of "Robt. O. Sickert" by Geo. Thomson. Except as a study of colour and tone, P. Wilson Steer's large idealised figure subject, suggested by a verse from Wordsworth (79), of a seated girl before the glow of a fire, is not very satisfactory in conception or drawing. "Over the Whispering Wheat," by Francis Bate, a cornfield with blue distance, is broad and natural in treatment (83); and we must give praise to W. J. Yule's portrait, a study of a girl in scarlet cloak and hat, and the reflection of light on the face (85). Many other subjects on this wall are destitute of motive and crude in execution. L. Blatherwick's "Tulips," in glass, is a pleasing harmony of red and yellow. C. W. Furze's portrait of Hon. and Rev. A. T. Lyttelton, late Master of Selwin College, Cambridge, is a clever portrait of an intellectual face; and we notice a pleasing study of mist and sunlight by Stephen P. Mallet (64), and a well-drawn study of cows in field by Arthur Tomson. Few works of a decorative character are to be seen. Walter F. Cadby's "Dead Thistle" is one of the few symbolic subjects cleverly wrought out in a harmony of amber and green, and his frame of sketches, chiefly heads in chalk, are worth notice. We cannot find much charm of colour or composition in such efforts as that given us by Gilbert James in his "Three Chairs," a little girl seated by the side of her two dolls, except that it is a simple and direct mode of representing a fact, quite Japanese in motive, though hardly inventive enough in conception. It is rather a drollery. A similar composition is W. Sickert's curious work, "The Boy I Love is up in the Gallery" (73), in which the painter represents the gallery of a music-hall, with a group of boys looking down on the stage; but the drawing and colour are of the crudest, with apparently very little sentiment. If these and like studies are to be accepted as exponents of the methods of the modern school, we can hardly anticipate much from it; they are certainly without the quaintness or romance which is seen in the pre-Raphaelite pictures of some well-known painters, whose aim is to convey a definite sentiment. There is nothing either quaint, or romantic, or poetic in this sort of impressionism, which reminds one of Degas. C. Conder's Watteau-like composition, "L'Oiseau Bleu," is on white silk, and extremely delicate in its harmonies, and we have already mentioned the water-colour impressions, the portraits especially of Mr. Furze and Mr. Yule; but beyond these and a few others there is evidence of carelessness, or a desire to startle by introducing methods which the earlier impressionists avoided.

MARYLEBONE NEW PUBLIC BATHS AND WASHHOUSE.

[WITH PHOTO-LITHOGRAPHIC ILLUSTRATIONS.]

THIS building comprises four swimming-baths, including Pompeian bath, 110 warm baths, public washhouse and laundry with 80 washing compartments, towel laundry, superintendent's apartments, and board-rooms. The present Pompeian swimming-bath will be lengthened to 100ft., so as to make it a good racing bath. The present entrance and pay-office will be disused in the future, and the space occupied by the pay-office will be converted into a club-room. The old entrance will be used for the public on the occasion of public entertainments. The new entrance will be at the west end of the bath, access being obtained to it from the Marylebone-road by means of a wide corridor. The ladies' swimming-bath is placed across the site immediately behind the front or administrative building. It is to be 60ft. in length by 24ft. wide, and has 35 dressing-boxes. A gallery runs round the bath on the top of the boxes, access to which is obtained from the bathroom by two circular iron staircases. The bath will be lined with white glazed tiles, relieved with painted tiles, after the design of the Pompeian bath. It will be surrounded by a marble curb, and the footways will be tiled. The room generally is to be finished as elaborately as the Pompeian bath, with tile panelled pilasters, surmounted by pairs of engaged columns with moulded caps supporting a moulded cornice and cove. The room is lighted by a large ornamented lantern light. The second and third-class baths are placed in front of the administrative building and in the basement, as were the old baths; but at right angles to the line of the old baths. They will be finished plainly, but well, with glazed-brick walls all round, tiled footways and slate curb round the baths. The baths will be lined all round with white glazed tiles, and the bottoms with white glazed bricks, relieved with blue patterns. Both are well lighted with large lantern lights. The second-class baths will have 54 boxes, and the third-class 48. All the baths will be ventilated by electric fans, and a soap and spray bath is provided for each department. The warm baths are all contained on the first floor of the building, which arrangement was one of the leading features of the design. There will be baths for 10 first-class women, 19 second class, 26 first-class men, and 55 second class. A number of specially fitted shower and spray baths are provided. Each bath compartment—both first and second class—is to be fitted in the most perfect manner, and they will be exceptionally large. The walls are 7ft. high, and of highly-finished enamelled slate. The baths will be of porcelain, enamelled inside, and with teak tops and enamelled slate risers. The walls of the rooms will be lined with glazed bricks, and the passage floors paved with bright tiles. All parts are lighted and ventilated by glazed lantern lights in the roofs. The arrangement of the washhouse and laundry is another special feature of the design. The washhouse is arranged with six rooms of washing compartments, the tubs in all of which are so placed that the women would all face one way—i.e., looking towards the drying-horses, which are all placed in one row in full view from the washhouse, and separated from same only by a glazed screen, so that each woman washing can keep an eye on her particular drying-horse. The ironing and mangling-room is on the other side of, and in full view also, from the laundry, so that altogether supervision should be an easy matter. Each woman would have two tubs with hot and cold water and steam supplies. Four large and powerful steam-driven wringing machines are placed in the centre under the control of a responsible officer; three other hand-power machines are also provided. The entrance for women will be, as before, from Seymour-street; but a large, well-lighted waiting-room and waiting-passage is provided. The washhouse is to be lighted by a very large lantern, and ventilated by a steam-driven fan. The boiler-house, engine-room, coal-stores, &c., are placed beneath the washhouse, laundry, &c. There will be three huge Galloway boilers to supply steam and hot-water all over the buildings, and it is intended that the engineering works generally shall be of the most perfect and substantial character. The various machines will be driven from a powerful engine. Space is provided in the engine-room for an electric-lighting plant if required in the future. The engineer's shop will be fitted up with a most complete repairing apparatus. The towel laundry, where so much of the work of the establishment is done, is particularly large, and well-lighted and ventilated. It will be fitted with twelve drying-horses and two washing-machines, besides wringers, washing-tubs, and steam-ironers, &c. The drying-horses for the public washhouse will be heated by large coke furnaces, fed and attended to from the basement. Storage room is provided for sixty tons of steam coal, ten tons of house coal, and nearly as much coke. Subways are formed under the footways of all the baths, so that the engineers can repair the main pipes, &c., without going into the various parts of the building. Commodious waiting halls and rooms are provided for each of the classes of warm baths. The front administrative building contains on the ground floor a double entrance for men in the centre, a separate entrance for ladies, and another for the commissioners' and superintendent's apartments. Between the entrances are two large and lofty waiting halls, respectively for first-class men and women. The main entrances lead into a large and lofty hall with a central pay-office, and staircases giving access to the second and third-class swimming baths and the second-class warm baths (men). On the first floor there are the board room, superintendent's office and lavatory, a ladies' waiting and toilet-room, and the second floor is devoted entirely to the superintendent's apartments. Externally the building will be faced with Portland stone up to the first floor level, and above that with red Fareham bricks, relieved with Portland stone dressings, cornices, strings, &c. The courtyard in front will be paved over—except where the skylights are over the swimming baths—and have broad pathways up to the entrances paved with mosaic. The front boundary fence will be faced with red bricks, relieved with moulded stone caps, copings, &c., and surmounted with an ornamental wrought iron railing, and copper lamps. The builder is Mr. Charles Wall, of Lots-road, Chelsea, and the architect Mr. Alfred Saxon Snell, F.R.I.B.A. The quantities of the building were taken out by Messrs. Northcroft, Son, and Neighbour, of 57, Charing Cross, S.W.

A CYCLING TOUR THROUGH NORMANDY.

[WITH ILLUSTRATIONS.]

A BICYCLE may be inartistic in itself, but it is incontestably the best means of viewing the art of a country. Travelling by rail entails the loss of roadside interest; walking involves the gain of roadside tedium. But on a cycle, travelling three times as fast as you would afoot, you enjoy the thoroughness of a walking tour while avoiding its delay. This may seem trite; but it is often the obvious which lies unnoticed. Normandy is an ideal country for such a tour. Food and lodging are cheap, the roads excellent, the people delightful.

Caen is too well known to need comment. Scarce a street in it but seems built for the pencil. It was there—near the Tours des Gensdarmes, I think—that we saw a scene forcibly suggestive of Mediæval building. The architect sits on a block of stone, with his drawing-board on his knees, and near him a couple of men are trimming stone with hatchets, at each stroke leaving a mark identical with those on the eastern transept walls of Canterbury Cathedral. We entered Chartres from Dreux. The Orléannais being on the central plain of France, lacks the variety of Norman scenery, but has a charm of its own. The white road strikes straight across the hills, which as you speed on seem to swell and rise behind you as the wave astern of a ship. Here and there amongst the trees springs a broach, such at Boullay Mivoye, or a saddle-back tower. Suddenly, as you climb a higher ridge, two pinnacles rise beyond a further hill, purple with the distance. They are the spires of Chartres.

The day of our arrival was a saint's day, and the day of the annual horse-fair, so that the city was gay. Of course, the traveller's first excursion is to the great church. But when there he feels but too keenly the hopelessness of seeing anything of it in a couple of days. We made the tour of the clerestory, our guide impressing on us that it was not usual, but done solely "pour obliger messieurs." One would fain linger by the windows, but time will not wait for us. In the belfry a vague want strikes the Englishman. The bells have no wheels. There is no rope for the ringer, but he stands above the bell and presses a lever with his foot. One man suffices for the smaller bells, four for the bourdon. The amount of carving on the northern spire is amazing, but the spire itself is more beautiful in detail than as a whole. The southern spire is grander, but appears too large for the tower below it. Looking from the parapet at the town below, the traveller realises most forcibly the French genius for roofs. Ridges, peaks, gables, dormers, extinguishers piled one above and behind another—they might have been thrown on. How different from the painful symmetry of a modern town! Nor when you descend into the town itself are you disappointed. St. Pierre is well-nigh fine enough for a cathedral; but it is a pity the spire was never completed. It was formerly a collegiate church; but the deliberate walk and pensive hum of the monk have given place to the quick step of the soldier, for the barracks now stand immediately south of the church. Leaving St. Pierre, and passing out through the Port Guillaume and then along the fossé, one reaches St. André. This was also a monastic church; the spring of the bridge which connected it with the other buildings is yet visible. At this day it is used as a store! Crossing the fossé, and climbing the hill by a narrow lane shut in by old-style windowless houses, you will come to St. Aignan. The Renaissance has left its mark; but the northern tower is attractive. The profuse internal decoration somewhat overpowers a sober Briton.

At Alençon we found ourselves in a very different country. Steeper and steeper rise the hills, their tops breaking with rock and heather, while tiles give way to slates. Domfront is not a town to be ridden through blindfold. The town is set on a hill. Round the steep slope, rising one above the other, run terraces formed by the ancient walls. Here stand quaint-roofed houses side by side with massive, machicolated towers. They are the jewels of the town's girdle, and fifteen yet remain out of the original twenty-four. Here are old-world gardens, mystic with odd nooks and buttresses and stairs. Above all towers a fragment of the old castle looking down on the mill-stemmed bareness below. Next we came to Mortain, a town of granite. The severity of the church tower is admirably in keeping with the material of which it is built; but the elaborate Norman mouldings carved on the south porch are surely a mistake. The view from the hill-top is magnificent, and defies description. Thence we caught a distant glimpse of the archangel's rock city which we were afterwards to visit.

Vire is a double Janus. It has four faces, each as unlike as could be. As for the town itself, the old clock tower alone is worth a long pilgrimage. It is surely a charm of French towns that every man carries on his own trade in his own house. Passing the open window of a turner's shop, I was struck by the peculiar chip, chip of his tools, and, turning back, I saw a bow lathe merrily working. "Wot a pore country!" the English mechanic would exclaim. But in England it is not every joiner who will press you to enter his garden, and bring out a chair that you may sketch his house—as occurred to us in Vire.

Chateau Grateau lies some six miles from Coutances. Our landlady told us there was nothing to see there. It was almost a ruin! A place habited by "cultivateurs," as another informant remarked, scornfully. However, we were pigheaded, and went. The chateau is a fine old house; but though the owner is wealthy, she suffers the family mansion to fall into decay. This is surely a pity, however sweet may be the autumnal fragrance attaching to a ruin. The "dame" who showed us over, told us that a fairy dwelt in the tower, and pointed to mystic signs carved by its hand on the overmantel of the uppermost chamber. Of course we believed; it would have been unromantic to remark their resemblance to heraldry.

Cerences we passed on our way from Coutances to Pontorson. The church is not remarkable, but the sinking of the octagon into the square in the tower seemed worth notice. Our tour ended in Brittany, and it was with regret and pleasure that we pondered how much can be seen and left behind in half a moon. E. B. Hawes.

BUILDERS' BENEVOLENT INSTITUTION.

THE annual dinner of the supporters of the Builders' Benevolent Institution took place on Thursday, Nov. 7, in the hall of the Carpenters' Company, London Wall. Mr. John Mowlem Burt, J.P., D.L. (president), occupied the chair, supported by the Master of the Carpenters' Company, Mr. J. C. Preston, clerk to the company, Major Isaacs, Messrs. T. F. Rider, J. Randall, L. J. Maton, C. B. Trollope, H. Northcroft, G. Burt, C. Bird, T. Hall, C. Bussell, J. W. Duffield, J. Pearson, T. Stirling, W. Higgs, J. T. Bolding, Henslow, and other friends of the charity, the company numbering about 160.

The President, in proposing the toast of the evening, "Success to the Builders' Benevolent Institution," said it was not very often that they "brother chips" met round the festive board and enjoyed one another's company as they were doing that evening. They occasionally ran a little counter to one another's wishes, but they could only have one feeling in regard to this charity. It was usual on such occasions to submit a long string of facts and figures. He, however, would not trouble them with these, but would content himself with asking them to open their hearts and purses, and do all they could for an institution which was doing its level best to provide for those who had seen brighter days, and to aid in bridging over the period between their active life and the time when they would be no more. He believed he had circulated more than 3,000 appeals from the institution, and if these brought in only a pound apiece it would largely benefit the charity. He would, however, leave it to the good sense and generosity of his hearers to do the very best they could, and he would couple the toast with the name of Mr. George Plucknett, the hon. treasurer, who had done such good work for the institution, but whose health, he regretted, would not permit him to be present.

The toast was drunk with enthusiasm.

Mr. Maton gave "The Worshipful Company of Carpenters." The company had not only given the use of their magnificent hall, but were generous supporters of the charity. He believed, too, that none of the City Companies had done more to further the particular trades with which it was connected than the Carpenters' Company.

Mr. E. Smith (Master of the Carpenters' Company) replied. He said that the bond of union between carpenters and builders was a close one, and it was most fitting that these banquets should be held in that hall.

Mr. T. F. Rider, in an amusing speech, gave the toast of "The President." The head of an institution such as this should, he considered, possess three qualities. He should be a good-looking man, a good-tempered man, and a good-hearted man. He should, further, be well known and respected, and no man better fulfilled all these essentials than their President that evening. The toast was well received, and the President briefly replied.

The President next gave "The Architects and Surveyors," adding that not a few of the names in the contribution lists belonged to these bodies.

Major Isaacs replied for the architectural profession, and spoke of the friendly feeling that should always exist between its members and the builders. He added that in some cases the builder had come forward and shown practical difficulties, thus saving the architect from a fiasco.

Mr. C. B. Trollope replied for the surveyors. For many years he had had a large practice, and he had the deepest gratitude for the builders, from whom he had received every support.

The president proposed the toast of "The Visitors."

Mr. White, L.C.C., in replying, said that his sympathies were entirely with the builders, knowing as he did the hardships and difficulties they had to contend with. The ratepayers were paying much more than the value of the large works now being carried out by the London County Council, and he was doing all that he could to alter the conditions imposed upon builders.

Mr. C. Preston (Warden of the Carpenters' Company), gave "The Vice-Presidents, Committee, and Stewards," to which Mr. Alexander Ritchie and Mr. Lough responded.

In the course of the evening donations were announced amounting to £1,064, of which the large sum of £897 appeared in the president's list.

CONSTRUCTION OF TARRED FOOTWAYS.

IT is a very common mistake to include in one and the same category all descriptions of footways and roadways into the composition of which there enters tar, pitch, bitumen, or asphalte. As a matter of fact, all these ingredients do form the components of thoroughfares intended for both vehicular and pedestrian traffic. But they are seldom, or rarely—except in small quantities, as a kind of leaven—employed together. Experience unquestionably tends to demonstrate that, all circumstances taken into consideration, the asphaltic or bituminous pavement can hold its own with its old rivals, whether they be macadam, solid stone, or wooden setts. We are not at present concerned with roadways; but on the strength of the Euclidian axiom that the whole includes its part, it is quite safe for us to state that what is true of the roadway is true of the footway. Indeed, we might go a little further, and, borrowing another phrase of the old father of geometry, assert that our argument holds *a fortiori*. In a hygienic point of view, the testimony of the scientists, engineers, and members of the medical faculty throughout Europe and America is unanimous respecting the merits of this description of the surface-laying of thoroughfares. That it has some disadvantages no one will deny; but what other description of roadway or footway has not? There is not a single instance of construction, from the Forth Bridge down to the smallest example of building, engineering, or mechanical skill, in which the balance of merit is all on the one side. If we put the merits to be represented by the plus sign and the demerits by the minus sign, we shall always have the balance, whichever way it may incline, equal to the algebraical sum of the two quantities.

However well asphaltic footpaths answer their purpose in our Metropolis and other large cities, it is obvious that in suburban districts, provincial towns, and country places the great expense attending their laying down could not be justifiably undertaken by the local authorities. It may be said that the absolute weight of the pedestrian traffic on footpaths is literally nothing compared with that on roadways; but it must not be forgotten that, light as it undoubtedly is, there is a great deal of it, and in London pedestrian traffic continues in full force long after the heavy road traffic has ceased. While desirous of adopting for footpaths in the country towns some description of surface analogous to that which has proved so successful in large cities, the local authorities, as the cost of asphaltic footway was out of the question, were obliged to seek for a substitute. This substitute was found in gas tar, an artificial instead of a natural substance, such as asphalte is. When properly laid it has several of the advantages possessed by its city rival, and no doubt it would have been employed on a far larger scale had more attention been given to its preparation and the best manner of laying it down. These essential conditions have recently been very effectively carried out, and they are deserving of notice. The principal advantage claimed for tarred footpaths is cleanliness, not only in appearance, but in the facility with which they are cleansed or cleaned after the passage of traffic, simplicity in construction. They are, besides, easily repaired, and fairly exempt from climatic influences. As every superstructure must have an infrastructure or foundation, tarred footpaths, notwithstanding the comparatively extreme thinness of the upper or surface layer, are no exception to the general rule.

Before the permanent way can be laid on a railway the whole of the line must be levelled up to "formation level" or cut down, accordingly as the longitudinal section shows embankments or cuttings. So also for roadways and footpaths. They must all be brought to a hard, dry, and compact formation level of their own before the actual surface layer or—in the case of footways—"topping" can be added. Any good, hard, dry, clean materials will answer for the artificial substratum or "bottoming," as it is usually termed. It sometimes unfortunately happens that materials of this description are not to be had in the vicinity of the thoroughfares where they are required. Tarred footways, as already mentioned, must be made cheaply or not at all, and their estimate will not stand a heavy item for transport and cartage. It is not, therefore, an unusual occurrence for inferior materials to be used in the foundation or "bottoming," which is very detrimental, and even fatal, to the whole work. The very *raison d'être* of all compositions in which tar, pitch, or asphalte enters is that they should be impervious to water. When improper materials are employed in the construction of footways, they are no longer impervious to damp, and if wet weather should set in, the rain will soak through into the heart of the mixture, and the whole mass will become saturated with water, and gradually become converted into a soft, spongy, and sodden consistency. There is very little doubt that the use of bad and inferior materials in ordinary tarred footpaths very materially impeded their more general adoption, and, in ordinary parlance, gave them a bad name. One of the principal objections raised against tarred footpaths is that they cannot withstand the effects of a hot sun, and this objection has undoubtedly considerable weight in hot countries. But the reason is due, or rather was due, to the cause to which we have already alluded, to which may be added a defective and ill-arranged method of preparation. Considerable improvements have been made in the preparation and mixing of the different ingredients, and although it is very doubtful whether a tarred footpath will ever be endowed with the comparatively hard and unyielding surface of one of asphalte, yet there will be no fear of the wayfarer either sinking in it or sticking to it.

In preparing the mixture for the bottoming of tarred footpaths, the ingredients, such as slag, the refuse of iron furnaces, clinkers, broken stone, or clean hard gravel, washed, dried, and screened, should be mixed with the hot tar two or three months before it is to be placed *in situ*. This period is sufficient to enable the ingredients to become so thoroughly well incorporated with the tar, so as to obviate all chance of it subsequently becoming detached from them, or peeling off. The ingredients themselves must be heated to a certain temperature, as well as the tar, or they will absorb little or none of it. A very slight inspection will serve to ascertain this all-important point. If the materials have not absorbed at least a certain proportion of the tar, they can be washed quite clean again; but if the incorporation has been thoroughly well effected, it is impossible to remove all traces of the action of the tar. A little pitch is usually added to the tar, and the composition, which is boiled in a cauldron, or boiler, frequently contains a proportion of resin, cement, and other substances. The formation level of the pathway having been brought to the proper gradient and contour, and having been well rolled, is ready for the bottoming or concrete mixture, for such it really is. Two inches is sufficient for the thickness of the bottoming; but where crossings occur for the passage of vehicles it is advisable to add at least another inch. After the bottoming has been completed and well rolled, the top layer or surface topping may be put on. Some surveyors submit the bottoming to a week or two of traffic before overlaying it, but it is not always convenient to allow of this delay. The surface topping differs from the bottoming only in the smallest and finer quality of the ingredients, and in its thickness, which seldom exceeds 1in. or $1\frac{1}{4}$in. After being well rolled, with both light and heavy rollers—for, as a rule, it is almost impossible to roll a path of this description too much—the surface is flooded with the boiling solution, and then blinded while wet and sticky with clear white sand or granite dust. A tarred footway well made and well laid will last a very long while without requiring any repairs worth mentioning, if it be well attended to, and inequalities and abrasions made good as soon as they occur. The old adage, "A stitch in time saves nine," is peculiarly and forcibly applicable to these footpaths. After every two or three years, according to the nature of the traffic, it is a good plan to top dress the whole surface with the boiling solution and blind it again. Any spots which evince decided evidence of wear and tear should be cut clean out—not tinkered up—and fresh material well rammed in.

Dry weather—if it can be got—is the best time for executing all repairs, large and small, to tarred footways, but they will last from six to seven years without requiring the surface to be absolutely relaid. T. C.

TESTS OF CEMENT MORTAR.

UNDER this title Mr. A. G. Cooper, U.S. assistant engineer, gives a series of experiments undertaken to discover the value of various kinds of sands in cement mortar. These tests were carefully conducted to eliminate as far as possible all error, and the results are given in several tables in the *Journal* of the Franklin Institute for November, in which journal Mr. Cooper's article appears. He describes the method used in grading the sand. It was first graded by means of 13 sieves, ranging from 8 to 140 wires to the lineal inch. Thus the grade 8-12 means that the sand in this grade passed a sieve with eight wires to the inch, and was held by one with 12 wires. The mortar was mixed rather dry, though some cements and sands required more water than others to yield a mortar of the same consistency. Fine sand requires more water than coarse, and natural cements more than Portland. The briquettes were moulded in brass moulds, and the method of Professor Jameson used of putting the mortar into them at a uniform pressure of 200lb. The sands used are various, and are illustrated by a series of photos of the natural size of the grains of each sand. These sorts include river sand from the bed of the Savannah River, sharp and round grains mixed, beach sands, whiter and clearer and quite sharp; Tybee Bar sand, Cumberland quicksand, Augusta sand, red sandstone, pulverised sandstone, brown sandstone, Florida rock, trap rock, and granite sands, and these are illustrated by three grades of each. The results are given as follows:—Generally the coarser the sand the stronger the mortar made from it. There seemed to be a tendency towards increased strength with grades below 100—120, and an unmistakable indication of weakness in the upper grades 8—12. The Florida rock, which broke up into the sharpest sand of all, was not so good as some of the natural sands, probably owing to extremely smooth surfaces. Trap rock was not so sharp as Florida, but gave better results on account of the rougher surface. The granite was about the same as trap rock. As to beach and river sands, the latter is found the better for cement mortar by from 2 to 10 per cent. We have no space to examine the various tables of results, but we quote the conclusion given in Mr. Cooper's paper: "(1) Other things being equal, coarse sands are better than fine sands for cement mortar up to the grade 12—16, or about $\frac{1}{12}$in. diameter. (2) below the grade 40—50, or about $\frac{1}{50}$in. diameter, there is no practical difference in the value of the different sands, as far as the size is concerned. (3) The shape and condition of the surface of the grains of different sands has as much to do with their value for cement mortar as the size." The paper which we have summarised is worth attention by all users of cement mortars.

CAST IRON IN BUILDER'S AND CONTRACTOR'S WORK.—VIII.

By Joseph Horner.

DRAWS in a casting must not be confounded with blow-holes, or with general honeycombing. Draws like these are, of course, sources of weakness; but they differ from blow-holes and sponginess, in cause and in characteristics. They are not due to the presence of air or dirt, and they are not, as a rule, visible on the surface. The better—that is, the stronger—the metal is, the more liable is it to draw. And the draws occur in the heart of the thickest parts of the casting. They are due to unequal rates of cooling, and to crystallisation; the outside of the casting sets firmly while the interior is still molten, or, at least, viscous. As the interior shrinks, the set outside will not yield, and so the interior metal shrinks on itself, becoming drawn towards the outside metal. Then one of two things, or both, must happen: the crystallisation will be large, coarse, "open grained," and proportionately weak, or a cavity will be left about the centre. Given a tough, strong iron, and great disparity in thickness of metal, favourable to the more rapid cooling of some sections than others, and the metal is certain to become drawn. Hence, what some people think must be a good strong casting is a weak and uncertain one. Often, though the draw itself is not visible, its presence is indicated by a surface depression, with perhaps a very minute hole on the outside of the locality adjacent. As a blow-hole and a draw are due to entirely different causes, so their appearances are quite different and quite unmistakable. A blow-hole is bounded by smooth concave faces or edges. A hole caused by a draw always has sharp, jagged boundaries, generally of very irregular outline. As there are great differences in the dimensions of blow-holes, so there are in the dimensions of holes caused by drawing. Blow-holes merge into mere sponginess; draws diminish down to mere openness or extreme coarseness of crystallisation. Some holes due to drawing are so large that two or three fingers may easily be inserted in them; others will barely admit a pin between the coarse crystals. Draws, like many blow-holes, are generally concealed until the casting fractures; but their presence is often indicated by a slight depression of the surface adjacent, or by the presence of a small hole leading from the surface adjacent into them. Blow-holes generally occur on or near the upper surfaces of castings; draws may occur anywhere, in the bottom as well as in the top of the mould; in fact, they are often more likely to occur in the bottom. Thus, if a mould is of no very great depth, and it is fed during the period while the casting is setting with fresh supplies of molten metal over the parts where the metal is thickest, drawing will be prevented. But if there is thick metal in the bottom, the chances are that drawing will take place there. On the other hand, in a deep casting not fed, heavy metal in the bottom will not be likely to draw, because the superincumbent liquid mass will feed it; but the top metal will be likely to draw. The subject is too wide for adequate treatment here, even if it were quite germane to the subject. The fact which concerns us is that all draws are preventible by some method or another, either by alteration of design, or by the adoption of certain precautions on the part of the moulder. Engine cylinders are capital object-lessons in the drawing of castings. They are always made of tough, stiff metal, and invariably in localities where there is much excess of metal some sponginess may be confidently looked for. So, too, are large weights, such as are often cast for test loads and for foundry use. In such weights there is always a depression on the top face, due to the internal shrinkage, and if such weights are broken, there is always a central cavity also, or else very open crystallisation. Thus, supposing a girder made like Fig. 24, and the light and heavy flanges tied with ends or with cross ribs, the probability is that in the vicinity of the union of the ribs with the thick flange there would be a draw, as at *a*, and depressions at *b*, *c*, *c*. In the case of this girder, having a very heavy bottom flange, and pockets, A, for trimmer girders cast on one side, and brackets, B, on the other, there is every chance of a draw occurring in the thickest part. Or if an actual open space does not occur, the crystallisation will be very open, as shown at *a*. The obvious alternative is to lessen the mass of the bottom flange and to put smaller radii in the angles. In the case of the column head, Fig. 25, putting a straight core through side, A, masses too much metal at that locality, and there will be a draw at *a*, with probably a very slight circular depression of metal on the outside or inside, and the column will not be any stronger—probably weaker—than as if it were cored out to an equal thickness, as shown at B.

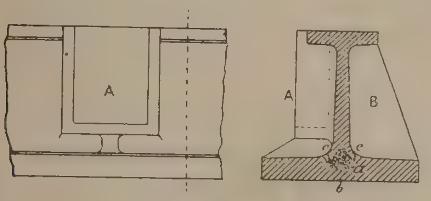


Fig. 24.

Fig. 26, side A, shows the effect of a heavy belt and thick bracket in continuation, in producing a draw. At side B, with the belt shown and bracket made no thicker than the thickness of the metal in the body of the column, no draw will occur.

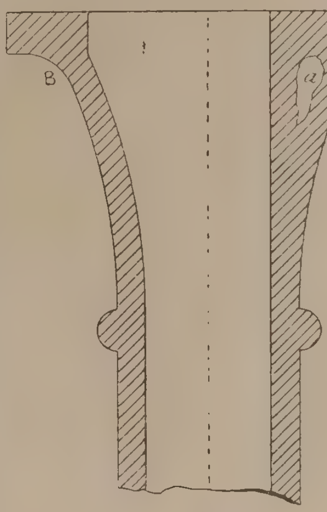


Fig. 25.

In these instances (Figs. 25 and 26) there would not be any appreciable risk of fracture, because the top flange is free to shrink inwards; but in some cases the risk of fracture becomes serious. It is serious when thick and thin adjacent parts are so tied that they are not left free to shrink. Heavy mouldings on columns ought, therefore, always to be cored out, to leave approximately the same section everywhere. Founders like to lump the metal in if they are paid by weight. In some cases it would pay to have an inspector frequently in the foundry to see cores put in the mould. It is much more easy to note thickness of metal in that way than in the casting.

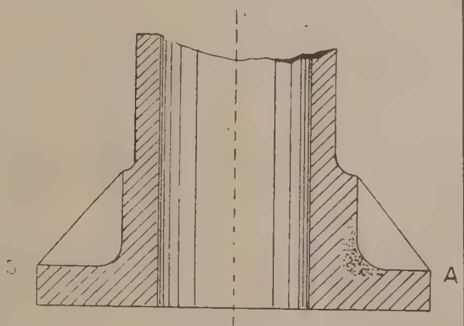


Fig. 26.

It follows that very large radii, if not lightened out by coring, are not so strong as smaller radii reinforced with brackets.

Obviously, too, the way to prevent draws, and to obtain the strongest, soundest castings from a given mass of metal, is to maintain adjacent thicknesses as nearly uniform as possible, so that there shall be uniformity in shrinkage; or if not uniform, then there must be no such pieces as brackets or ribs, which would act as ties or bars in the prevention of shrinkage. The shrinkage of metal will not cause draws or fracture as long as it is free to shrink; but when it is tied, then it will produce one or both results.

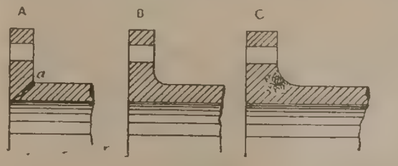


Fig. 27.

The tendency to draw is lessened, and the strength of castings increased, by abolishing all keen internal angles. This rule is of universal application. The evil of sharp angles is seen chiefly in flanges which have to take the pull of screw-bolts. In Fig. 27, the flange A would be certain to fracture in the direction shown at *a*, when under moderate stress only. The flange B would possess the maximum of strength. In the flange C the radius would be rather overdone, and the flange too thick. The two extremes—a very thick flange and a very large radius—would probably cause the draw shown, and produce fracture under less strain than that which would be required to fracture B. There is no advantage in a very large radius. A small radius, even less than that shown at B, adds immensely to the strength. The mere strength is not chiefly due to the increase of metal, but indirectly to the regular or symmetrical arrangement of crystals when cooling, which occurs when there are no abrupt re-entering angles. When such sharp angles do occur, there is an abrupt break in the arrangement of the crystals, and it is along that line of abrupt break that fracture will occur. Hence it is a rule that no iron castings to stand stresses should ever be made with keen internal angles. They should be fitted up and obliterated with radii, hollows, or fillets, as they are often called in the shops. In some positions the omission of these is not of much importance; but in other positions their omission will certainly insure fracture.

It is rather fortunate that the moulder's instinct prompts him to insert those radii in moulds when they are not put on the pattern; but as he will not incur too much responsibility, he generally "breaks the edge" with a hollow sleeker, which is much better than nothing at all. And many a flanged casting would be broken in the mould before ever it saw the light of day but for the precaution the moulder takes of digging away sand from between adjacent flanges or ribs, and from between flanges and box-bars, and so permits free shrinkage to take place. Without this precaution, the hard sand in the mould would prevent full shrinkage from taking place, and the tension put on the casting by shrinkage stresses would be greater than the tenacity of the red-hot or black-hot casting.

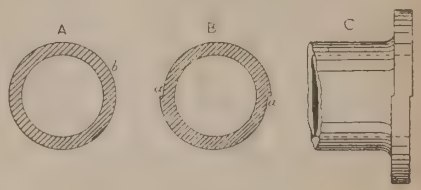


Fig. 28.

A column which has been chipped heavily along the flask joints should be carefully examined, because that is due to the shifting of the flasks on one another, or to the bad mending of a broken mould. It means that the metal will be thinned along the joints by the amount of overlap which has been chipped off. Lapping-joints like those shown in Fig. 28 are unsightly, besides detracting from the strength of the casting. The strength being measured by the diminished section at *a*, instead of at *b*, lapping to the extent shown in the figure ought to condemn a casting, even though a sound one. In Fig. 28 A is a section through a true column, and B a section through one which has overlapped. Some very slight amount of overlay is almost unavoidable in jobbing work, for which special flasks and patterns are not made. But it should never exceed, say, $\frac{1}{16}$in., or $\frac{1}{16}$in., full, at *a*. When it becomes $\frac{1}{8}$in. or $\frac{3}{16}$in., it is too much to be passed. If, in addition to the overlapping, the core happens to be out of centre sideways, then the thickness of metal will be still further diminished. Sometimes the flanges overlap, as shown at C. Then, if the flanges are faced, their thickness is reduced by the amount of overlap. If they bed on stone without facing them, they look unsightly. I should not pass a column with more than about $\frac{1}{16}$in. overlap of flanges.

* * *

In the case of Wallace Bruce Cox and Arthur Wesley Cox (trading as W. and A. Cox), Luton, builders, the order for discharge from bankruptcy has been suspended for two years, ending Jan. 1, 1898; and in that of Michael Henry Ryan Grant King's Norton, builder and contractor, the discharge has been suspended for four years, ending Oct. 17, 1899.

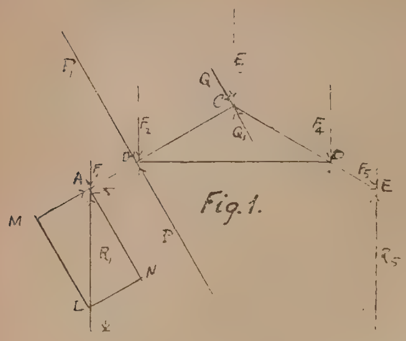


Fig. 1.

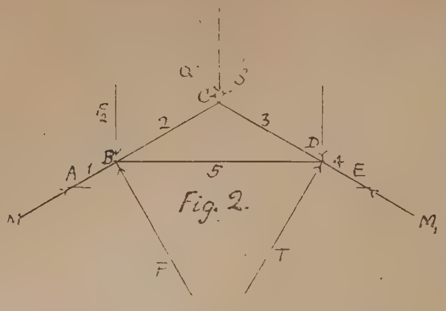


Fig. 2.

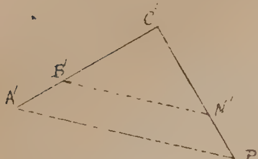


Fig. 1a.

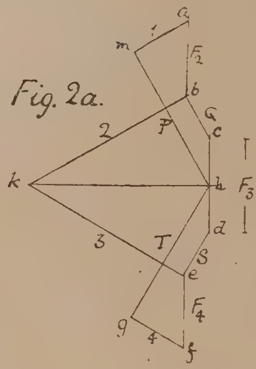


Fig. 2a.

GRAPHICAL DETERMINATION OF THE STRESSES IN THE MEMBERS OF A COLLAR-BEAM ROOF-TRUSS.

As far as the writer is aware, there has not, up to the present, been published a method of dealing satisfactorily with the problem of determining the stresses in the members of a collar-beam roof-truss. The problem is not without interest from an educational point of view, even if it be regarded as in itself of little practical importance. In dealing with any such truss, we have to separate those external forces which produce *direct* stresses in the members from those which produce bending stress; and in the diagram of forces, all those forces which produce bending stress must be omitted, care being taken that the equilibrium of the remaining system of forces is still preserved. The principles which enable us so to separate the two sets of forces are the following. The first (*a*) is self-evident, and the second (*b*) may be readily deduced from the first.

(*a*) If a structure be maintained in equilibrium under the action of a system of forces, and two additional equal and opposite forces be applied at any point, the equilibrium of the structure will not be affected, nor the stresses in any of its members altered. (It is almost needless to say that two equal and opposite forces which act at any point may be *omitted* without affecting the equilibrium.)

(*b*) If a system of forces be in equilibrium, and any system of forces in equilibrium be added to or removed from the system, the resulting system will be in equilibrium, and the effects of the two sets of forces may be separately determined.

Let A, B, C, D, E represent a collar-beam roof-truss, loaded at the points A, B, C, D, E with the weights F_1, F_2, F_3, F_4, F_5 respectively; and first let us suppose the loading to be symmetrical, and therefore the resistances R_1 R_5 at A E to be vertical, and each equal to half the sum of the weights. Now the resultant, L A, of the forces R_1 F_1, which act at the point A, being resolved along the rafter, and at right-angles to it, will give us two forces M A, N A; where the force M A produces compression along the rafter, and the other force N A tends to *bend* the rafter, the bending moment evidently being force N A by length A B. The force N A evidently plays no part in producing *direct* stress in the rafter A, B, C.

We must now find what forces parallel to the force N A must act on the rafter at the points B C, so that under the action of these three forces the rafter may be in equilibrium, and subjected by them to cross-strain only. The rafter may be considered as a lever with the fulcrum at the point B, so we see that the forces at A and C will be *like* forces, and will be inversely proportional to the distances A B, B C.

The construction for the forces required at C B is shown at Fig. 1A. (Here A′ B′ = A B; B′ C′ = B C; N′ C′ = N A; and A′ P′ is parallel to B′ N′.) This gives P′ N′ for the force required at C, and C′ P′ for that required at B, in order for these forces and the force N A to keep the rafter in equilibrium.

Imagine now that at the point B two opposite forces, P, P_1, are applied at right angles to the rafter, and each equal to C′ P′; and two others, Q, Q_1, applied in the same manner at C, each of these being equal to P′ N′. By our principle (*a*) these will not affect the equilibrium, nor the stresses in any member of the truss; and by principle (*b*) the three forces N A, P_1, Q_1, and the force exerted by the rafter in opposition to their bending action, may be removed from the system of forces acting on and in the truss without affecting either the equilibrium of the whole system, or the *direct* stresses in any member of the truss.

The other rafter, E D C, must now be treated similarly, and we shall then have Fig. 2 for the frame diagram, showing only those external forces which go to produce direct stresses, and which must therefore appear in the stress diagram. Each bar in Fig. 2 is distinguished by a number, and in Fig. 2A the stress in any bar is represented by the line which has the corresponding number attached to it.

Fig. 2 *a* is the stress diagram, and is obtained by drawing *m a b c d e f g h m*, the polygon of the external forces with which we are now dealing, and then completing the polygon of forces for each of the joints of the truss, thus getting the stresses in the various members. The polygon of forces for A is *m a m*, giving compressive stress *m a* in A B. The polygon of forces for B is *h m a b k h*, and is obtained by drawing *b k* parallel to C B, and *k h* parallel to B D, thus giving compressive stress *b k* in B C, and tensile stress *k h* in B D. The polygon for C is *k b c d e k*, and is got by drawing *e k*, which must be parallel to D C, giving compressive stress *e k* in D C. The polygon for D is *g h k e f g*, giving compressive stress *f g* in E D. The polygon for E is *f g f*, giving compressive stress *g f* in D E. The student is advised to work thus fully until every step is clear to him. He can then safely omit what is not absolutely necessary.

J. C. Palmer.

* * *

BOOKS RECEIVED.

Plane Geometrical Drawings, by Robert Harris, Art Master at St. Paul's School, &c., new edition, enlarged (London: George Bell and Sons), is a new and revised edition of a useful note-book on practical geometry, written principally to meet the requirements of students preparing for the entrance examination of the Royal Military Academy, Woolwich, and the Military College at Sandhurst, and also candidates for the Engineering College, Science and Art Department, &c. Of course, there is nothing new, the problems are those which are found in all textbooks on practical geometry, and the solutions are clearly stated with the aid of good diagrams. A useful part of the book is that on construction of scales, in which plain scales, diagonal scales, comparative scales, Marquois scales, verniers, &c., are described, and their use explained. Another useful addition to books of this kind are the chapters on graphic arithmetic and graphic statics, which are of value to architectural and engineering students. The student of geometrical drawing and all architectural pupils will find something to learn.—— *Three Months in the Forests of France*, by Margaret Stokes, Hon. Mem. of the Royal Irish Academy, &c. (London: George Bell and Sons), is a series of letters commenced in 1892, relating to the early missions of the Irish Church in the 6th and 7th centuries, describing a pilgrimage in search of vestiges of the Irish Saints in France. The volume on our desk is handsomely bound and illustrated by several engravings and process-blocks. We have no space to enter into the subject of the various letters. The learned authoress of these letters has had in view the discovery of the "origins of Irish art and the reason for the development of certain styles in Ireland." She has given us her discoveries and researches in those parts of France most frequented by Irish travellers and settlers; localities about the middle of France and the bed of the Rhone. Miss Stokes appears to favour the view that the art of enamelling was largely practised in Ireland, as is proved by the fine examples in the museums of that country. She traces many points of resemblance between the incidents of Dante's Hell and those of earlier visions of the Irish seers. The legend of St. Fursa, whose mission from Ireland followed that of Columban, is dealt with, and his visions play an important part in those early conceptions of heaven and hell. St. Fursa (French, Furcy) is the patron saint of Lagny. Miss Stokes throws her heart and soul into the task of tracing the unity to be found in the arts and customs of Great Britain and Ireland. From the evidences shown in these works of a literary and artistic kind clearly a unity of aim prevailed in Ireland, Scotland, and England in the 7th century. In the forests of Luxeuil and Ardennes the authoress proceeds to gather up the threads of her story. The life of St. Columban in France, *circa* 574-595, is the first chapter; this is illustrated by traces of the great missionary found in Gaul, as they are also found in Italy. Many engravings enrich this chapter, also the letters from Luxeuil. Photo-engravings are given of the abbey and its architectural details, which are partly of Romanesque character; the manuscripts, font of St. Sauveur, &c. Part II. deals with the legend of St. Fursa (600-650), his death, his visions from "Acta Sanctorum Hiberniæ," edited by the Marquis of Bute. The letters from Lagny and Laon are of interest, and are illustrated by views of the church of St. Fursa, cathedral of Laon, &c. The appendices contain Gallo-Roman inscriptions found at Luxeuil; ancient MSS. belonging to the library; Early Irish MSS. in France; western chambers in primitive churches, &c. Those interested in legendary history, iconographists, archæologists, and others will find Miss Stokes's volume exceedingly interesting and instructive, as proving the constant intercourse that must have been kept up in these early times between Ireland and Gaul. Similar customs and arts in both countries, the anchorite life of the early bishops, the caves and subterranean chapels in the rocks support the intimate connection between the two countries.—— *Circular Sewer Discharges*, by a Municipal Engineer (London: The St. Bride's Press, Limited, Bride-lane, E.C.), is a very useful little book that can be carried in the waistcoat pocket, giving the discharges from circular sewers running full in cubic feet per minute. These tables are reprinted from the *Surveyor and Municipal and County Engineer*. The author uses Weisbach's formula, one of the most accurate. A distinct coefficient for friction for every change of velocity is given. From these tables the engineer will see at a glance the least fall which can be given for a certain sized sewer to maintain a self-cleansing flow. The municipal engineer, whose duties are onerous and constant, will find this little book most valuable in saving time and laborious calculation.

* * *

Mr. C. G. Coslett has been appointed architect to the Dudley board of guardians.

CONTENTS.

Some Points from Mr. Penrose ... 691
Employment of Architects ... 691
Concert Halls and Assembly Rooms.—IV. ... 692
Architectural Association ... 693
The Society of Architects ... 695
The Surveyors' Institution ... 695
Institution of Civil Engineers ... 696
New English Art Club ... 696
Marylebone New Public Baths and Washhouse ... 696
A Cyling Tour through Normandy ... 697
Builders' Benevolent Institution ... 697
Construction of Tarred Footways ... 698
Tests of Cement Mortar ... 698
Cast Iron in Builder's and Contractor's Works.—VIII. 698
Graphical Determination of the Stresses in the Members of a Collar-Beam Roof-Truss ... 700
Books Received ... 700
The Building News Directory ... xi.
Our Illustrations ... 701
Building Intelligence ... 720
Obituary ... 721
Competitions ... 721
Architectural and Archæological Societies ... 722
Correspondence ... 722
Intercommunication ... 723
Legal ... 724
Legal Intelligence ... 724
Water Supply and Sanitary Matters ... 725
Stained Glass ... 726
Statues, Memorials, &c. ... 726
Our Office Table ... 726
Meetings for the Ensuing Week ... 727
Tenders ... 728

ILLUSTRATIONS.

"THE TEMPTATION OF EVE," BY WM. BELL SCOTT.—SOANE MEDALLION DESIGN FOR A PICTURE AND SCULPTURE GALLERY.—BOARD SCHOOL, TODD'S NOOK, NEWCASTLE-ON-TYNE.—MARYLEBONE BATHS.—HOUSE AT CAMBERLEY.—SKETCHES IN CHARTRES AND NORMANDY ON A BICYCLE TOUR.

Our Illustrations.

"THE TEMPTATION OF EVE," BY WILLIAM BELL SCOTT.

This picture, specially photographed for our pages by Messrs. Dixon, of Albany-street, forms one of the small collection of typical works by members of the Pre-Raphaelite Brotherhood, housed in the picture galleries of the South Kensington Museum. William Bell Scott, the friend of Dante Gabriel Rossetti, like his companion, was frequently engaged in enterprises of a literary character, obtaining some little distinction as a poet, a biographer, and art essayist, besides being recognised for a good many years as an authority on industrial art and decorative painting. His ability in this latter direction was originally brought into prominence by the design which he submitted in the great public competition organised by the English Government, for the encouragement of design in historical painting, when the cartoons were exhibited in Westminster Hall. Bell Scott was not successful in obtaining either of the prizes on that occasion, but soon afterwards, in consequence of the credit which the ability of his composition secured, he was appointed to a position of some importance in connection with the Newcastle-on-Tyne School of Art. The late Sir Walter Trevelyan employed him in 1857-8 to execute a series of decorative paintings at Wallington Hall, a Northumbrian manor, which in the Survey of 1542 was described as "a strong toure and a stone house in good raparacions," and Leyland calls the mansion "the chefist house of the Fenwicks." The place, as it now stands, was rebuilt by the Blacketts early in the last century. Formerly the house inclosed a small courtyard, but this was roofed in, and forms the cortile round the walls of which "Scott of Newcastle," as he was called, painted his large panels representing the principal events of Northumbrian history. The subjects are arranged in the following order: 1. "The Death of Bede in his Cell at Jarrow." Several weeping monks are supporting the great ecclesiastic, while others anxiously peep with curious inquiry along the cloisters. The wind with a draughty gust has just blown out the candle, and pigeons, types of dissolution, are shown flying through the open window. One of the brethren has just inscribed the concluding verse of St. John, at the dying Bede's dictation. 2. "The Danes Invading Tynemouth" on a misty morning. In the foreground the men of the place are making haste to prepare their defence against the quaint, beak-headed vessels nearing the shore, while the female population seek refuge on the cliffs, with their children and household goods. The priory of Tynemouth is seen in the background in outline against a red sky. 3. Has a scene pitched on the desolate Farne Islands. King Egfrid, accompanied by Bishop Trumwine, is urging St. Cuthbert to accept the bishopric of Hexham. The hermit, leaning on his spade, forms a striking figure, his hermit dress contrasting strongly with the rich costumes of his petitioners. 4. Shows the building of the Roman Wall, with Craig Lough in the distance. 5. The border chieftain in the Castle of Newcastle realises the need of harry and foray by the empty state of his larder, the spur on the dish being brought in the place of dinner. 6. Bernard Gilpin prevents a border feud (1570) by taking down the challenge glove in Rothbury Church. Several of the figures are portraits of the Armstrongs, fine specimens of the Northumbrian race still conspicuous in the county. The monument in front of the picture is that of the Nevilles at Brancepeth; the stained-glass windows are from Ryton. 7. "The Wreck of the *Forfarshire*," lost on the Farne Islands, Sept. 7, 1838. The survivors, midst the pitiless storm, are watching the rescue boat as it approaches under the piloting of Grace Darling and her father. 8. "Newcastle in the 19th Century," showing the High Level Bridge and the different manufactures of the town, with powerful portraits introduced among the figures of men employed at Crawshay's and Stephenson's works. Enhanced interest is obtained in all these works by the representation of relics still existing in Northumbrian houses, and the characters are all portraits of well-known local men. Another series of mural paintings by Scott decorates the staircase walls of Penkill Castle, Girvan, the home of his friend, Miss Alice Boyd, in illustration of "The King's Quhair." This same lady presented to the nation the one sample of his skill to be found in the National Gallery (No. 1322). It is entitled, "The Eve of the Deluge," and the work is thus described: "On the terrace or upper story of an antediluvian palace, overlooking a plain, an Eastern prince sits, caressed by his wife, and surrounded by his retinue, on a raised platform bordered with flowering plants. At his feet tiger-cubs gambol. The empty goblet in his hand, and a rudely-fashioned harp held by a female slave on the left of the picture, suggests a recent banquet. Two of the male attendants, bending over the balcony, on which a jar of incense is burning, watch with expressions of amusement and curiosity the family of Noah, who are entering the Ark, which lies below the middle distance. From the horizon, a dark and ominous cloud is seen rising into the sky." The contour of the Ark and other points of detail are cleverly suggested, but the imaginative spirit of the picture is in no way impaired by an undue attention to accessories; indeed, some of them, in the matter of drawing, lack correctness and are wanting in truth to nature, as, for instance, in the cheetah, or leopard, and her cubs. There is not much to add about the "Temptation of Eve," which we illustrate to-day, from South Kensington. The conception is worthy of its author, who has treated a familiar subject with some degree of freshness, without any seeming effort after mere novelty or unduly constrained conventionality. The picture tells its tale simply, and, with unhesitating directness, embodies the artist's ideas of the baneful incident as recorded by Moses. William Bell Scott was born at Edinburgh in 1811; he died at Penkill on 22nd November, 1890. His father was well known as a Scottish engraver, and from him, as well as his elder brother, David, who also was a painter, young William derived an elementary instruction in his art, which he supplemented by studies at the "Trustees' Academy." At the age of twenty we hear of him drawing from "the antique" at the British Museum, though it was not till 1840 that he exhibited in any London public gallery. His first works shown were seen at the Suffolk-street Galleries—viz., "The Jester," "The Wild Huntsman," and "King Alfred Disguised as a Harper." Some years subsequently he exhibited at the Royal Academy and the British Institution, where his pictures figured at intervals up to 1869.

SOANE MEDALLION COMPETITION DESIGN FOR AN ART GALLERY: MEDAL OF MERIT AWARDED.

The subject set for this competition was a gallery for the exhibition of sculpture and painting. The site was a little larger than the gallery of the Royal Institute of Painters in Water Colours in Piccadilly, and open on all sides, the building to be two stories high. The problem was to amply light the ground floor without producing an appearance of weakness, the first floor being necessarily top-lighted, and the site too small to get a good court inside. In this design the galleries make a circuit of the site; they are 30ft. wide and 25ft. high. The windows on the ground floor are 5ft. wide and 14ft. high, the heads coming just below the ceiling level; the frames are in gunmetal. It was thought that the large entrance-hall below, and what is called the reception-room above, with the single flight of stairs 12ft. wide, would give an importance to the building, and the whole space might yet be used for the exhibition of objects of art. The reception-room is lighted by a range of windows whose sills are 14ft. from the floor level, and it is also top-lighted. The hall and staircase was to be finished in Cipolina marble, the columns having gunmetal caps and bases, a few panels of mosaic, and ornamental plaster ceilings and frieze. The reception-room was to be finished in walnut and tapestry, the remaining galleries being perfectly plain. Three offices are provided, the rooms for employés to be in basement. Externally the building to be in a warm freestone, the birds surmounting the angle piers to be of beaten copper, which, when weathered, would harmonise well with the stonework. The sculptured panels below the windows would represent the various arts, with portrait groups of the masters; the cutting of these might extend over a number of years. With the exception of the roof over the reception-room, which is of timber, all other roofs and floors to be of iron fireproof construction. The cost of the building was not asked for. A medal of merit was awarded to this design by the Royal Institute of British Architects to Mr. Harry Jefferis, of Haverstock Hill, who has since gone to Australia.

TODD'S NOOK SCHOOLS, NEWCASTLE-ON-TYNE.

These schools are built to designs prepared by Messrs. Dunn, Hansom, and Dunn, Newcastle, by Messrs. T. and R. Lamb, builders, Gateshead, and under the supervision of Mr. W. Walker, the clerk of works. The buildings, the cost of which is £11,000, will accommodate about 1,280 children, and are the largest Board school in Newcastle. On the ground floor is the infant school, in which there are five classrooms separated by glass screens; teachers' rooms, committee-rooms, lavatories, and covered-in playgrounds. Two spacious staircases with solid oak treads, the ends of which are built into the walls, lead to the first floor, on which there is a large schoolroom, measuring 84ft. by 34ft., and ten classrooms of dimensions varying from 25ft. by 20ft. to 34ft. by 30ft. The boys enter by the east wing, and the girls by the west, and there is a separate entrance for each sex from the playgrounds. The playgrounds are laid in cement, and the flooring throughout the building is composed of wood blocks. Glazed-brick dadoes run round the entire place. The material of the structure is stone from the Eaton quarries, and the windows are Miller's patent reversible frames. Messrs. H. Walker and Sons, of Newcastle, have attended to the heating and ventilation. The buildings were completed some little time since.

MARYLEBONE NEW PUBLIC BATHS AND WASHHOUSE.

(For description, see p. 696.)

HOUSE AT CAMBERLEY, SURREY.

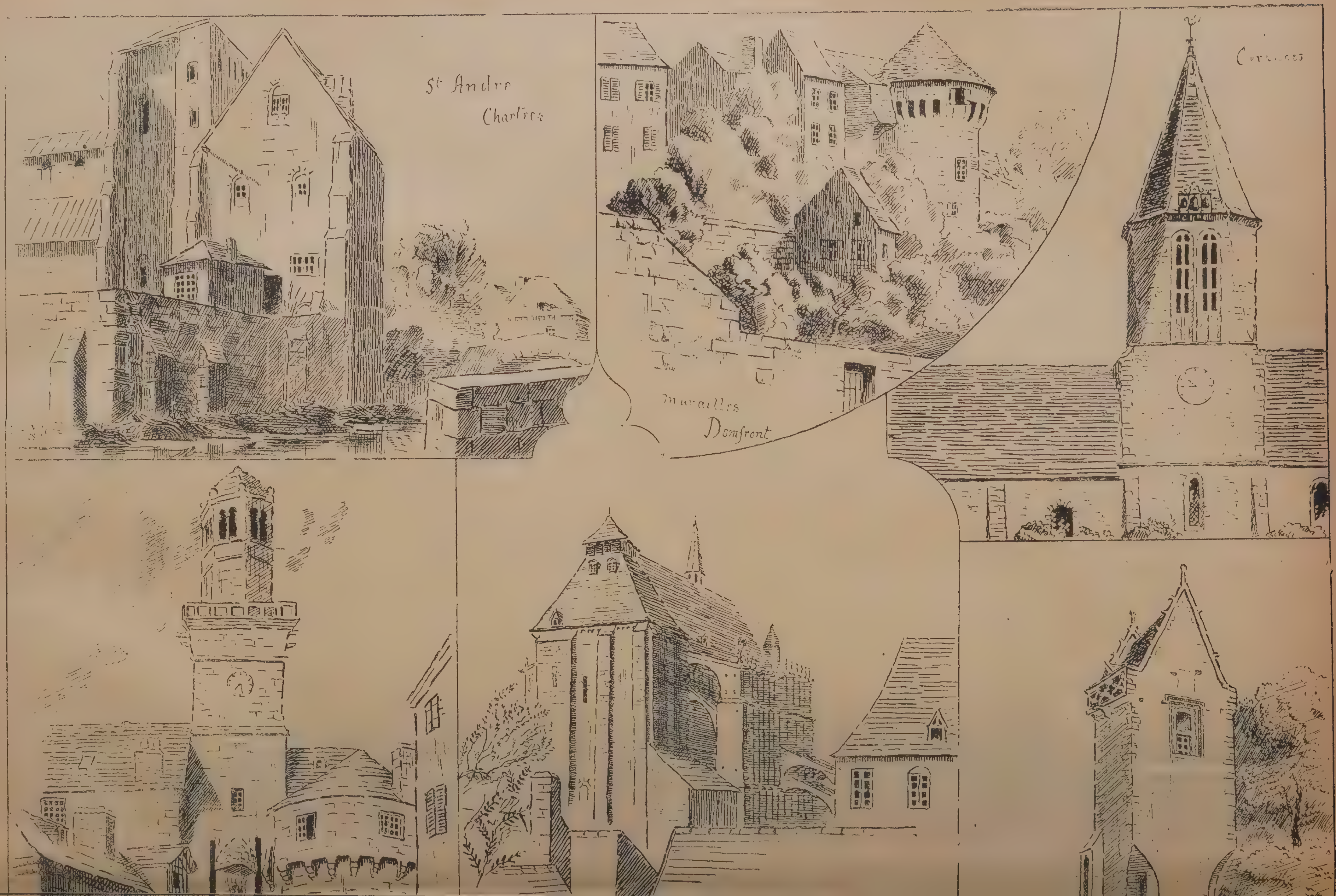
This house has been built during the past twelve months upon a small building estate ten minutes' walk from Camberley station, and near the Royal Staff College, in a pine-wood district. The cost of the residence, including two acres of ground and all fees, was about two thousand pounds. Bracknell bricks were used, and the walls were built solid. The roof was covered with stained tiles from a Caversham firm at Reading. The interior walls were finished with "Duresco." A good supply of water was obtained at a depth of 18ft. The balcony over porch commands an extensive view towards Farnborough and Aldershot. Mr. G. Murrell, Blackwater, was the contractor. Mr. A. E. Sidford is the architect. The plans and elevations which accompany the view fully illustrate the arrangements.

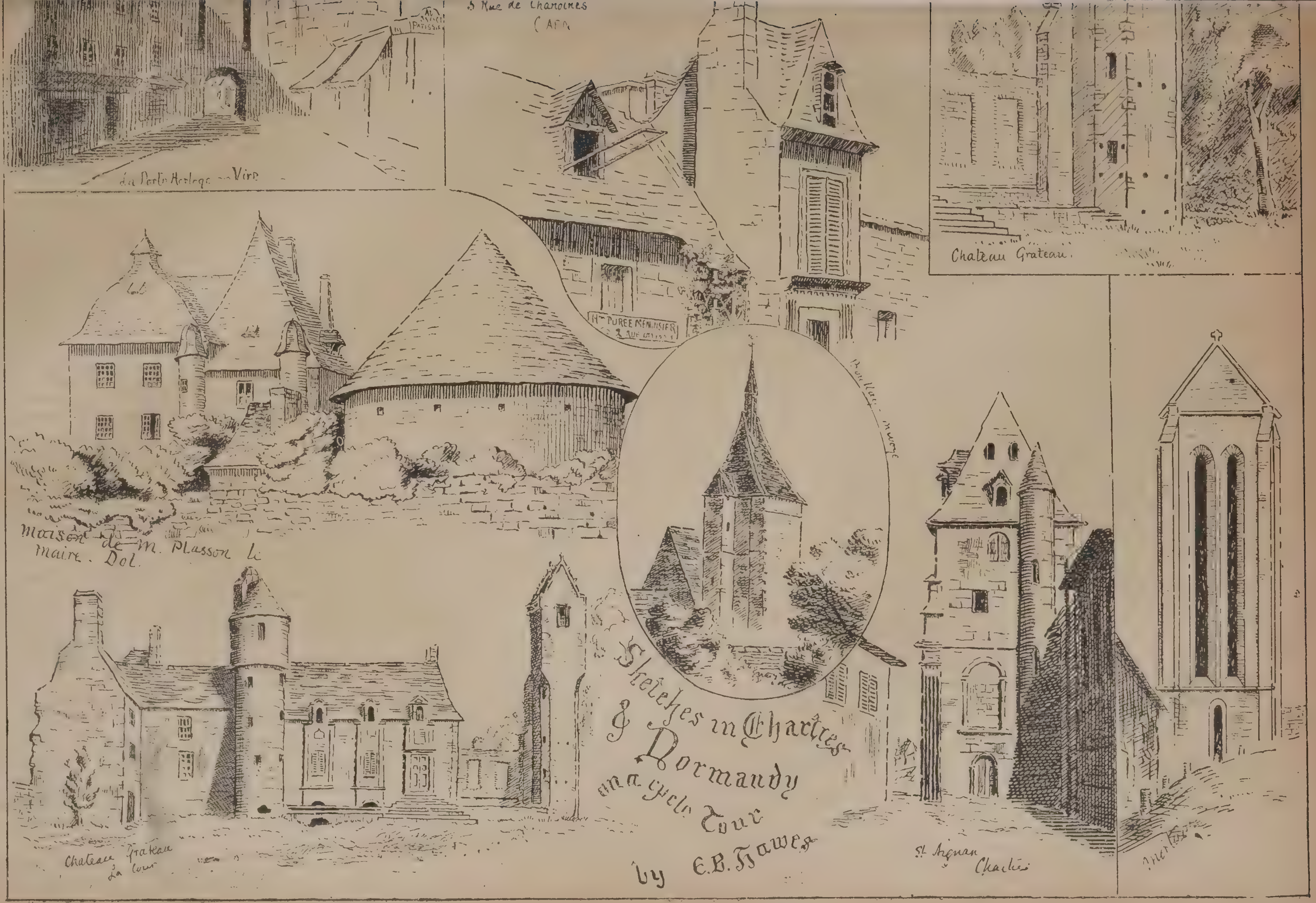
A CYCLING TOUR THROUGH NORMANDY.

(See descriptive article on p. 697.)

◆

The town council of Cbard decided on Monday to adopt the Tooches scheme of drainage, and instructed Mr. Walrond, C.E., to prepare plans and specifications for carrying the same into effect.


St Andre
Chartres
Muraillles
Domfront


Sketches in Chartres
& Normandy
on a cycle Tour
by E.B. Hawes
La Porte Horloge – Vire
5 Rue de Chanoines
CAEN
AU
PATISSIER
PUREE MENUISIER
Chateau Grateau.
Maison de M. Plasson le
maire . Dol.
Boullay – Mivoye
Chateau Grateau
La Cour
St Aignan
Chartres
Mer

Building Intelligence.

BIRMINGHAM.—The new church of St. Patrick in Dudley-road, Birmingham, was formally opened on Tuesday, the 29th ult. The extreme length of the building is 100ft., and the width 50ft. The clear width of the nave and chancel 23ft. 6in., and of the aisles and chapels 11ft. The west front consists of a deeply-recessed entrance with gable over the same, surmounted by a niche containing a statue of St. Patrick, between two large two-light windows with six-foil opening, the whole being surmounted by a steep gable terminating with a cross. On the south side is a small tower containing the Angelus bell, the gift of Admiral Tinklar. On the north is the baptistery, treated with an apsidal end, and in which is an alabaster font. The nave is divided into five bays, arcades of low arches separating the nave from the aisles. Four four-light clerestory windows are grouped over their respective bays. To the north of the chancel is the Lady-chapel, and on the other side that of St. Joseph. There are three confessionals and also sacristies. The roof is of trussed rafters and moulded pitch-pine ribs, and the aisle roofs are carried on internal flying buttresses in place of principals. In the centre is a turret containing a ventilator, and rising to a height of 88ft. above the street. The materials used are red bricks with red stone dressings, and tile roofs; and internally, red stone arches and columns with plaster walls. The style is French Gothic of the 12th century. The cost is about £5,000, and the architects are Messrs. Dempster and Heaton, of Birmingham, Mr. John Bowen, of Birmingham, having been the contractor. The wrought-iron gasfittings and communion-rails are by Messrs. Hardman, Powell, and Co. The heating, which is by radiators, is by Mr. Henry Hope, the other wrought-iron work being by Messrs. F. T. and A. Barratt and Co. and Messrs. Thomas Brown and Co.

BOSCOMBE, BOURNEMOUTH.—The new church of St. John the Evangelist, at Boscombe, was consecrated on Tuesday week. It will accommodate 1,000 worshippers, and consists of a nave, with north and south aisles, as well as an outer aisle on the south side, and chancel also flanked by aisles, that on the south being extended so as to provide an organ chamber. Beyond these are the vestries for the clergy and choir, with a porch and convenient lavatory. A tower and spire will eventually be added. The building has flint-faced wallings on the exterior, with stone dressings, the chequered work giving it a distinctive character. The interior is wholly of Bath stone, with blue stone bands. The columns of the arcades are of alternate Dumfries and blue lias stone. The roof is open-timbered of pitch-pine, covered with Broseley tiles. The style selected is the Middle Decorated. The fittings of the church are all of oak, and were made in Bournemouth by Messrs. Jenkins and Son, of Wolverton Works, the general contractors. The base of the pulpit and its approaches are of Painswick stone, and the body, which is twelve-sided on plan, is of wainscot oak; it has been made from the architects' designs by Messrs. Harry Hems and Sons, of Longbrook-street, Exeter. Messrs. Hems and Sons have also carried out the stalls and their platforms, which are in Riga oak. The panelling below the east window is by Mr. W. Brindley, of London, who has also provided the pavement and steps in the chancel, and the whole of the stone carving. The architects are Messrs. J. Oldrid Scott, F.S.A., of London, and C. T. Miles, of Bournemouth. The tile flooring is by Messrs. Godwin and Hewitt, of Hereford, and the wood flooring by the Wood Block Flooring Company. The contract price was £13,846.

BRISTOL.—Considerable additions and alterations are being made to a house in Clifton, Bristol, the property of Mr. Lionel A. Olive, of Ventnor. The premises are in a row of old-fashioned houses, and the additions consist mainly in carrying up a low wing containing a ballroom, with two floors of bedrooms over, surmounted by a flat roof railed in to form a promenade. The roof was first constructed on the raised portions of the existing side walls. The first and second floors were next inserted, the main front and back walls following. In the ball-room there are two fireplaces, one in connection with a large bay window forming an ingle nook, over which (and approached by the main staircase) is a minstrels' gallery. A billiard-room is placed on the first-floor level carried by steel girders. The table has been supplied by Messrs. Burroughs and Watts. The new apartments, like those in the existing house, will be lighted by the electric light, and the sanitary, hot water, and heating and ventilating arrangements have received care. Mr. William Veals is the builder, and the architect is Mr. E. Henry Edwards, of Bristol.

CHEDDLETON.—The foundation-stone of the asylum which is being erected between Leek and Cheddleton by the Staffordshire County Council, for the accommodation of lunatics in North Staffordshire, was laid a few days since by Lord Wrottesley. The asylum site altogether covers 175 acres, and comprises two farms near the Wall Grange Junction on the North Staffordshire Railway, and 2½ miles from Leek. It will be arranged in blocks on an oblique plan, and facing south-west, each being isolated and devoted to different stages of lunacy. The buildings in course of construction will cover eight acres, and are intended to accommodate 600 inmates—300 males and 300 females—and provision is made for further extensions for 200 more, making 800 in all. They will be built of faced bricks with stone dressings, the material being obtained from local sources. All the floors will be fireproof. The architects are Messrs. John Giles, Gough, and Trollope, London, whose plans were selected in competition in 1893, Mr. C. H. Howell being the assessor, and the contractors Messrs. W. Brown and Son, Salford, whose contract for the buildings alone is £175,000. The asylum is to be completed by the spring of 1898. The surplus land will be used for farming purposes. The design includes, in addition to the main buildings and offices, a chapel for 450 patients, superintendent's house, recreation and dining-hall, with stage arrangements, two lodges, laundry, ample farm buildings, workshops, infectious diseases hospital, mortuary, and airing courts. No boundary-walls are required round the whole estate. Provision is also made for warming, ventilating, cooking, and washing appliances and machinery, the water-service, storage of rain-water, formation of roads, &c. The infectious diseases hospital will provide for twelve beds, and will be placed 300yds. distant from the main buildings, on the highest point of the site. The mortuary will also be completely detached from the main buildings. A permanent well of 7ft. diameter has been sunk to a depth of 110ft., and the yield is 70,000 gallons a day. From the well the water will be pumped to a tower 100ft. high, with reservoir holding 35,000 gallons. The illuminant will probably be the electric light.

EXMINSTER.—The 15th-century parish church of St. Martin was reopened after restoration on Monday. The old timbers of the roof have been repaired and strengthened, covered with new slating on the outside, and a plastered barrel ceiling placed between the moulded ribs on the inside. In the interior an improvement has been effected by the removal of the western galleries, and the opening to view of the tower arch and western window. The font, constructed in 1843, has been mounted on a new base, and placed in the tower. The old pews have been replaced by oak seats, and the floors under them laid with wood blocks; the passages have been paved. The works have been carried out by Mr. Herbert Read, of St. Sidwell's Art Works, Exeter, under the direction of the architects, Messrs. Rowell and Son, at a cost of £800.

LIVERPOOL.—The Welsh Presbyterian church, Princes-road, Liverpool, is now ready for reopening. The interior of the church and the organ-case and pipes have been cleaned and decorated. Pitch-pine ornamental glazed vestibules and screens have been constructed at the entrances of the church. The church and vestries are lighted by electric light. In addition, the mission hall and library have been enlarged and carried one story higher, above which contains two spacious classrooms, with lavatories, cloakrooms, stores, and offices. Also, a minister's vestry, with outer walls faced with Yorkshire stone shoddies with Stourton stone dressings, has been built between the latter and the chapel, with store cellars below same. The whole of the work has been carried out from plans and specifications prepared by, and under the supervision of, Mr. F. G. Williams, M.S.A., architect, 3, Cable-street, Liverpool. The total cost is nearly £2,000.

PETERBOROUGH.—New co-operative stores in Park-road are now on the eve of completion. The total cost, including land, is between £11,000 and £12,000. In March, 1889, the first section of the block was opened, the expenditure then having been about £7,000. The architect was originally Mr. T. Hind, of Leicester, and the second section has been carried out by his son, Mr. R. A. Hind. Messrs. Wenlock and Coe built the first portion, and Mr. Wenlock the section now completing. Two shops are now added for drapery and tailoring, and warehouses, arcades, and workrooms have been built. The block has a frontage to Park-road of 113ft., with a total height of 60ft. The Sheringham system of ventilation is used. The heating is by steam throughout from a 6H.P. steel Cornish boiler in the basement. The front elevation is of old red Whitchurch brick, relieved with dressings of Ancaster stone, the pilasters and other exposed parts being of Derbyshire stone. The central portion is executed in stonework. All the cellars are lighted at the front with Hyatt's prismatic pavement lights, and at the rear with windows looking into an open area. The drapery shop measures 20ft. by 40ft., and the tailoring department 18ft. by 40ft., and at the rear of the drapery is erected an arcade, with a glass canopied roof, 42ft. by 21ft. On the first floor is the mantle department, 32ft. by 20ft., with customers' fitting rooms, 14ft. by 8ft., and the tailoring room, 28ft. by 8ft., cutting-up and fitting-on rooms. On the second floor are the dressmakers' working-room, 22ft. by 20ft., milliners' working-room, 18ft. by 13ft., and on the other side (though unconnected) the tailors' room, 18ft. by 28ft., machine-room, &c. On the upper floors are library and reading-room, and a large assembly hall. In the roof are store rooms. The warehouses run a length of 68ft., and a mess-room for the operatives has been provided.

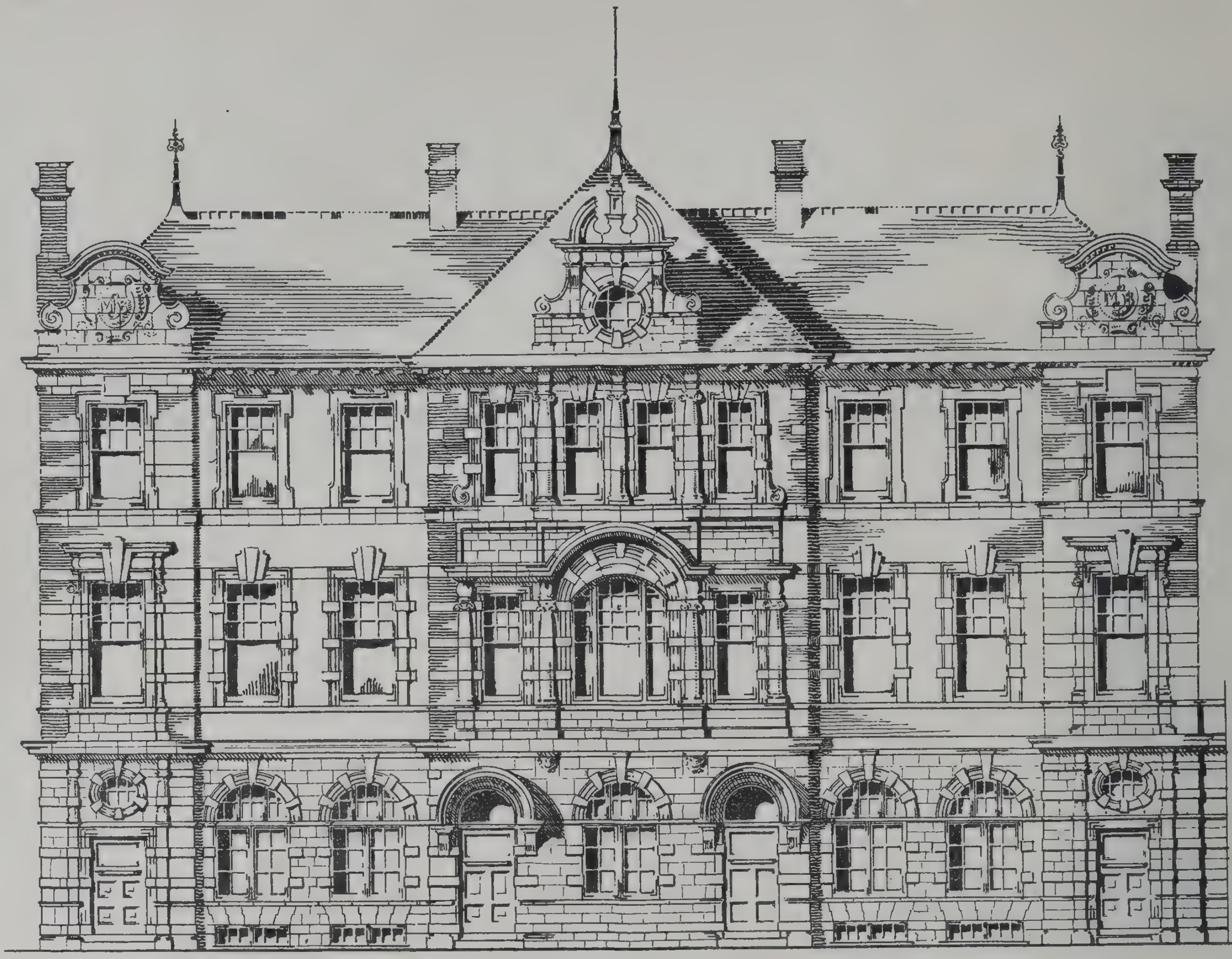
PORTMADOC, N. WALES.—A new Presbyterian chapel and school are to be erected at Portmadoc, from the designs of Mr. T. Taliesin Rees, A.R.I.B.A., of Birkenhead. The chapel is to accommodate 300 persons, with provision for future gallery. The schoolroom is to seat 150 persons, and the further accommodation includes kitchen, minister's vestry, heating chamber, &c. The style is Gothic, with traceried windows. The materials will be of local stone, with red Runcorn stone dressings and tracery. The interior will be finished in pitchpine. The contract has been let to Mr. John Shaw, of Birkenhead.

WETHERSFIELD, ESSEX.—A group of almshouses has just been completed, and has been erected at the sole expense of Mr. Arthur Henry Gower, of Ipswich, as a memorial to his parents, who many years ago resided at Wethersfield Hall. The range consists of four houses, raised on a terrace, each having a living-room, scullery, and other conveniences, with verandah both back and front. The style is Elizabethan, harmonising with the ancient architecture of the village. The cost has been about £1,000. Mr. E. F. Bisshopp, of Museum-street, Ipswich, was the architect, and the builder Mr. Alfred Brown, of Braintree.

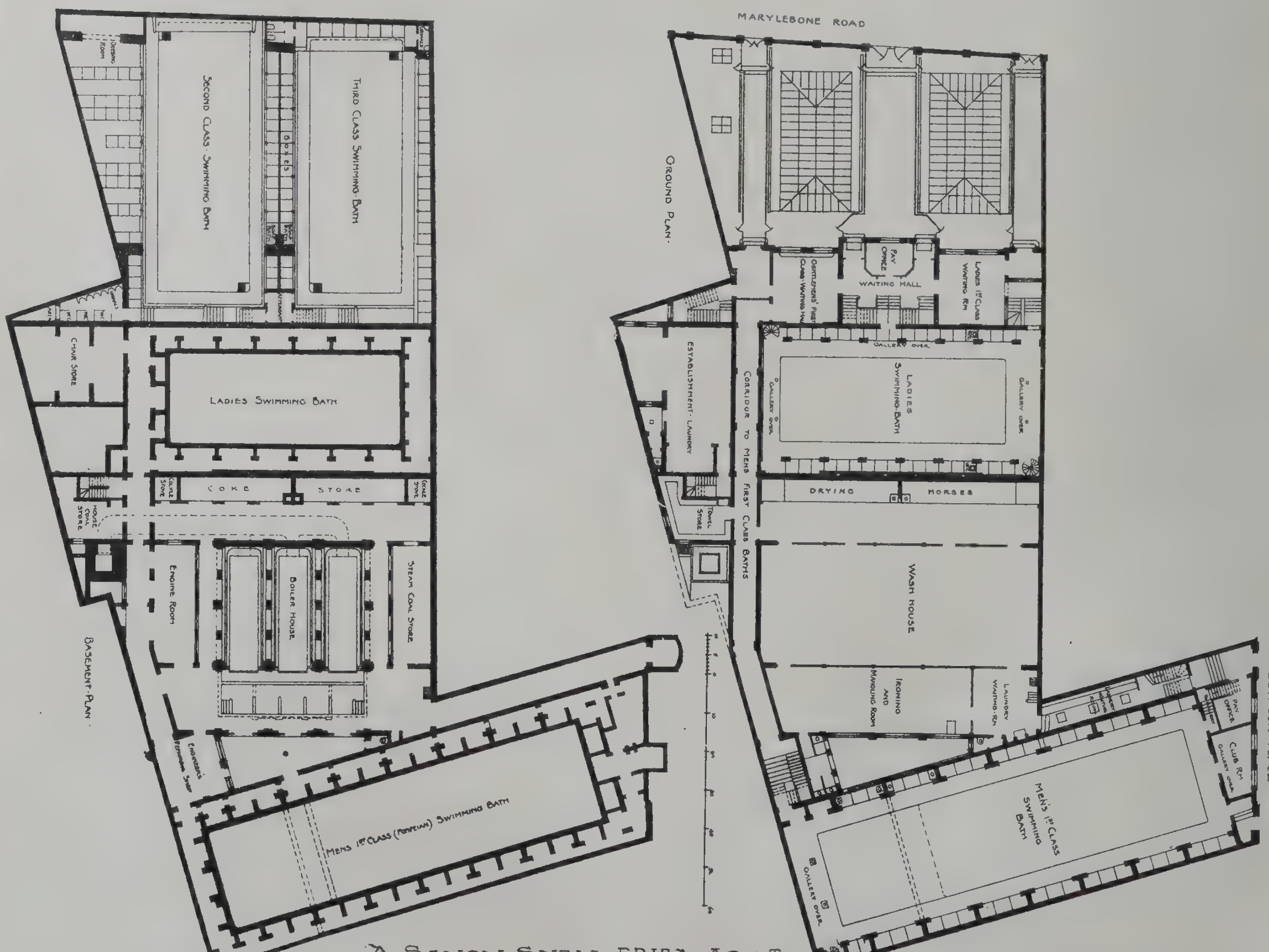
The Duke of Devonshire and Mr. Littler, Q.C., are about to open a large institute in Priory Park-road, Kilburn, recently acquired by the Middlesex County Council under the Technical Education Scheme, to be used as a Polytechnic for evening classes for the parishes of Willesden and Hendon. The sum of £3,400 has been paid for the building, and to this sum the Willesden and Hendon Urban District Councils have contributed. Already there are 250 pupils at the classes, which have been open a month. The building-trade classes are especially well attended; and plumbing, science, engineering, shorthand, and many other subjects are taught.

At Tuesday's meeting of the London County Council, the recommendation of the Highways Committee for the purchase of the undertaking of the London Street Tramways Company was considered. An attempt was made to postpone a decision on the matter; but a resolution to carry out the committee's recommendation was pressed, and carried by seventy-six to four. The chairman announced that, as these numbers did not comprise two-thirds of the Council, the resolution was lost.

The Lord Provost's Committee of Edinburgh Town Council held a special meeting, on Monday, in reference to the Jeffrey-street Bridge scheme. Before coming to a final decision, it was resolved to remit to the burgh engineer to prepare and submit a cartoon showing how the proposed bridge would affect the Calton Rock at its northern end, and to report, in consultation with Sir William Arrol, as to the probable cost of the bridge, including the acquisition of the necessary property in the line of construction.

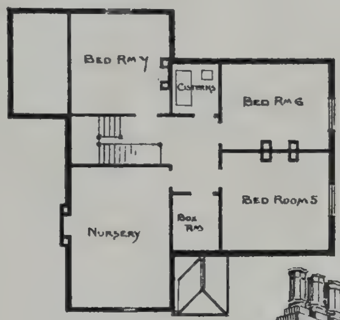


ST MARYLEBONE · PARISH · PUBLIC · BATHS · & WASHHOUSE ·

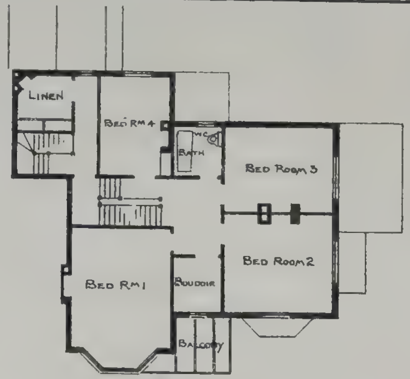


A · SAXON · SNELL · F.R.I.B.A · ARCHT

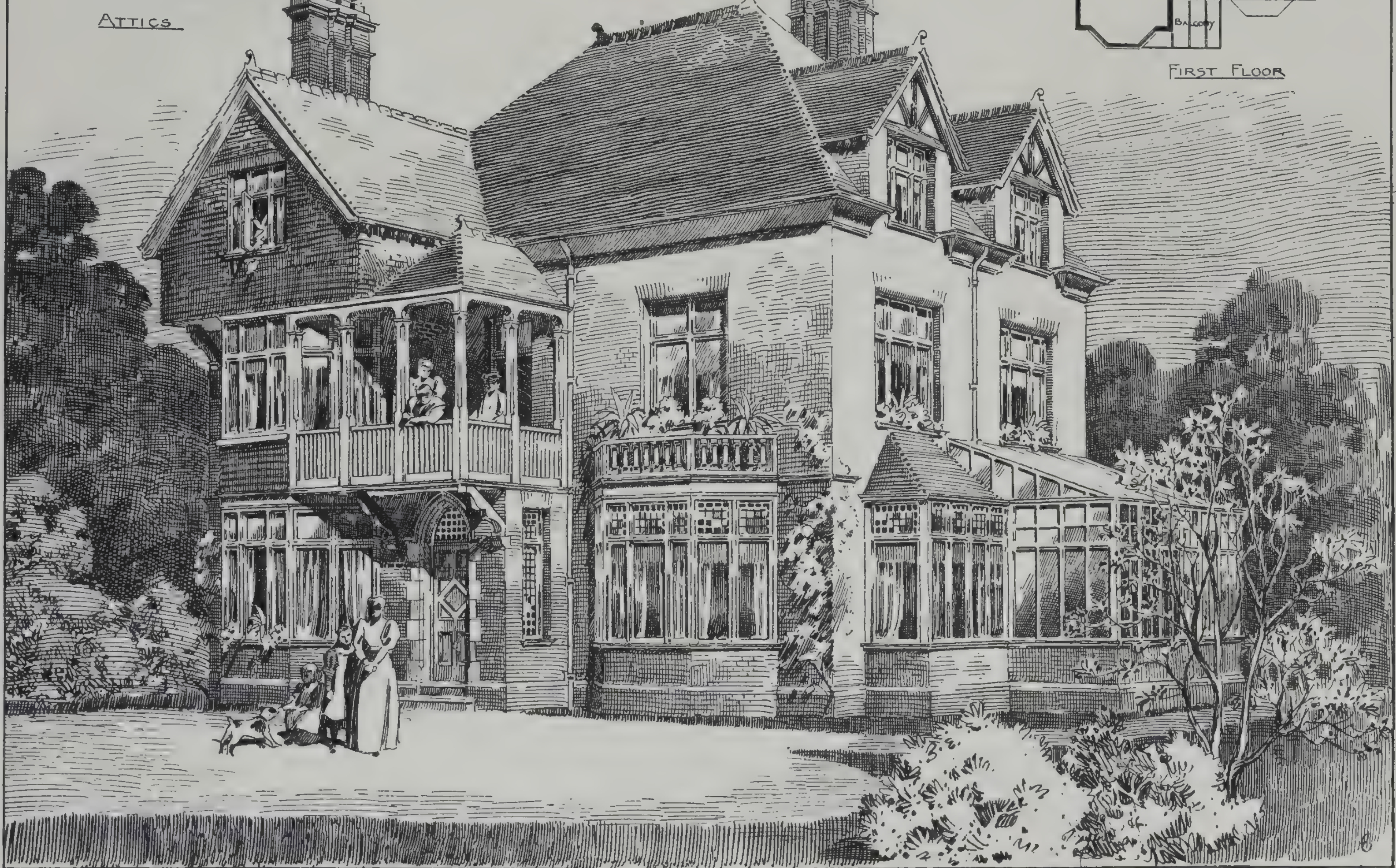
Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C.



ATTICS

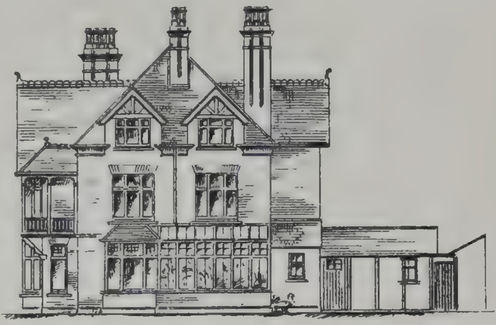


FIRST FLOOR

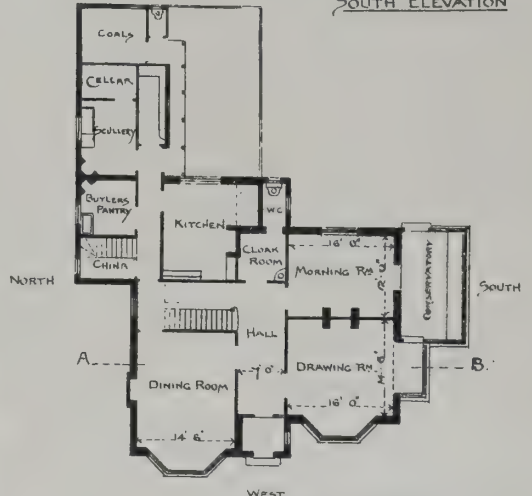


HOUSE AT CAMBERLEY, SURREY, VIEW FROM S.W.

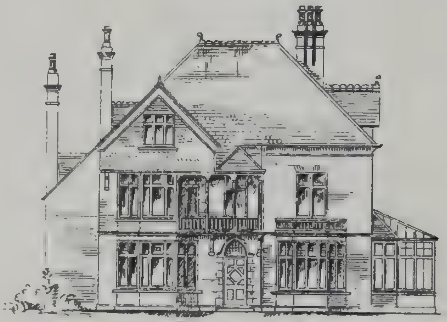
A. E. SIDFORD, M.S.A.
ARCHITECT.



SOUTH ELEVATION



GROUND FLOOR



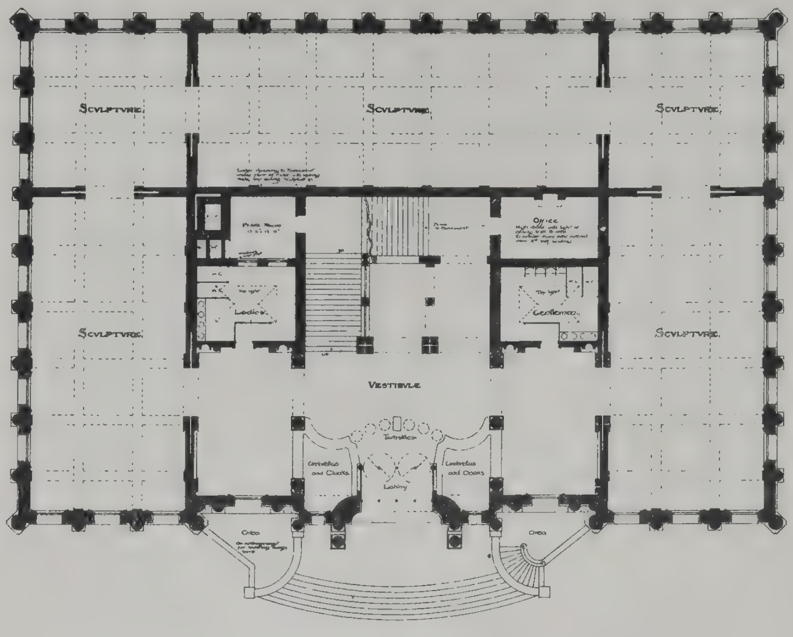
WEST ELEVATION

Photo Lithographed & Printed by James Akerman, 6, Queen Square, W.C.

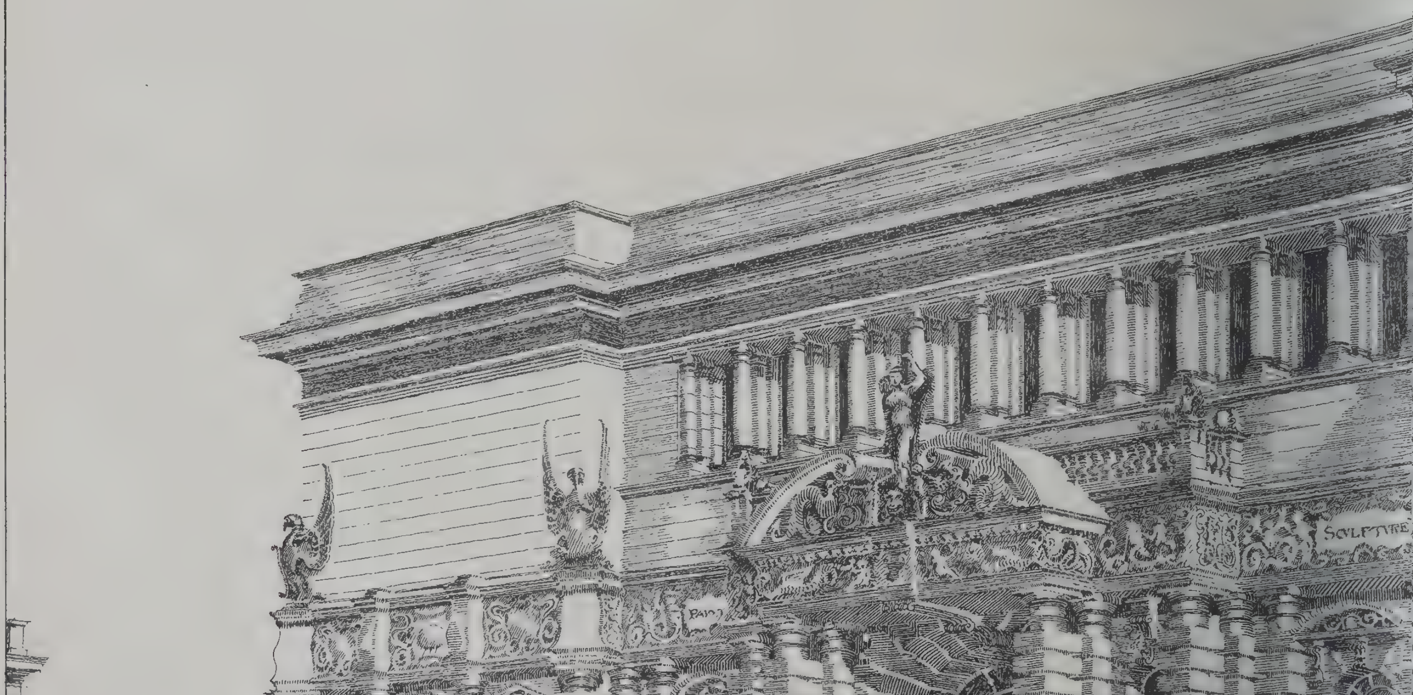
R·I·B·A· SOANE·M

•DESIGN FOR
•FOR THE E
•PICTVRES A

MEDAL·OF·MERIT·A



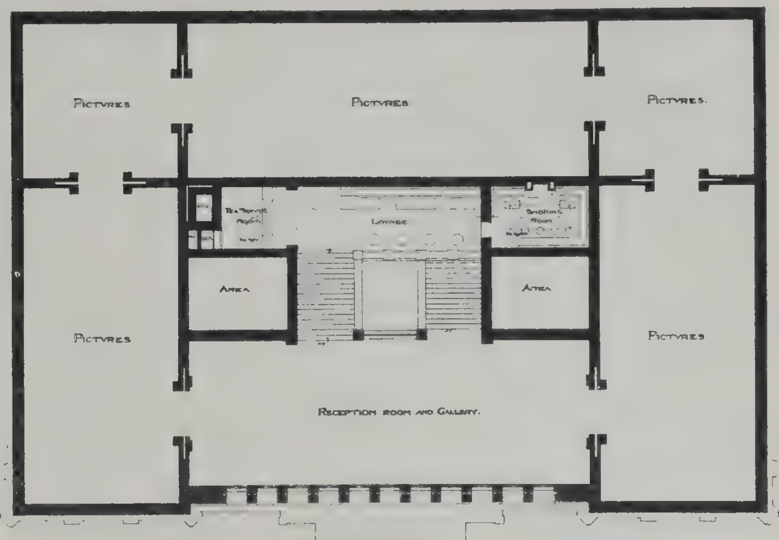
GROVND FLOOR PLAN.
Scale of feet.



DALLION · COMPETITION ·

A GALLERY • • •
HIBITION OF • •
ND SCVLPTVRE •

ARDED · HARRY · JEFFERIS ·



First Floor Plan.

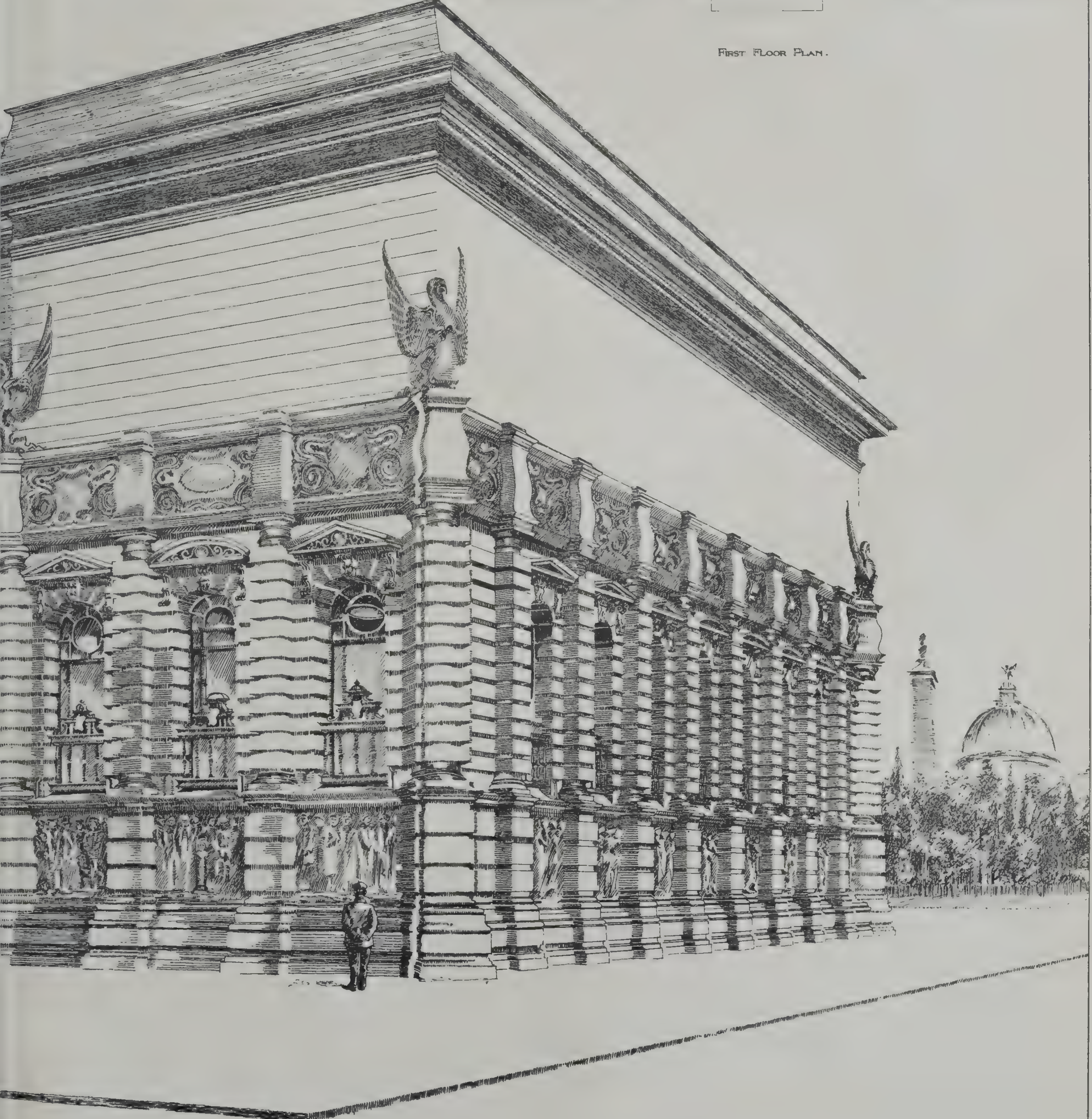
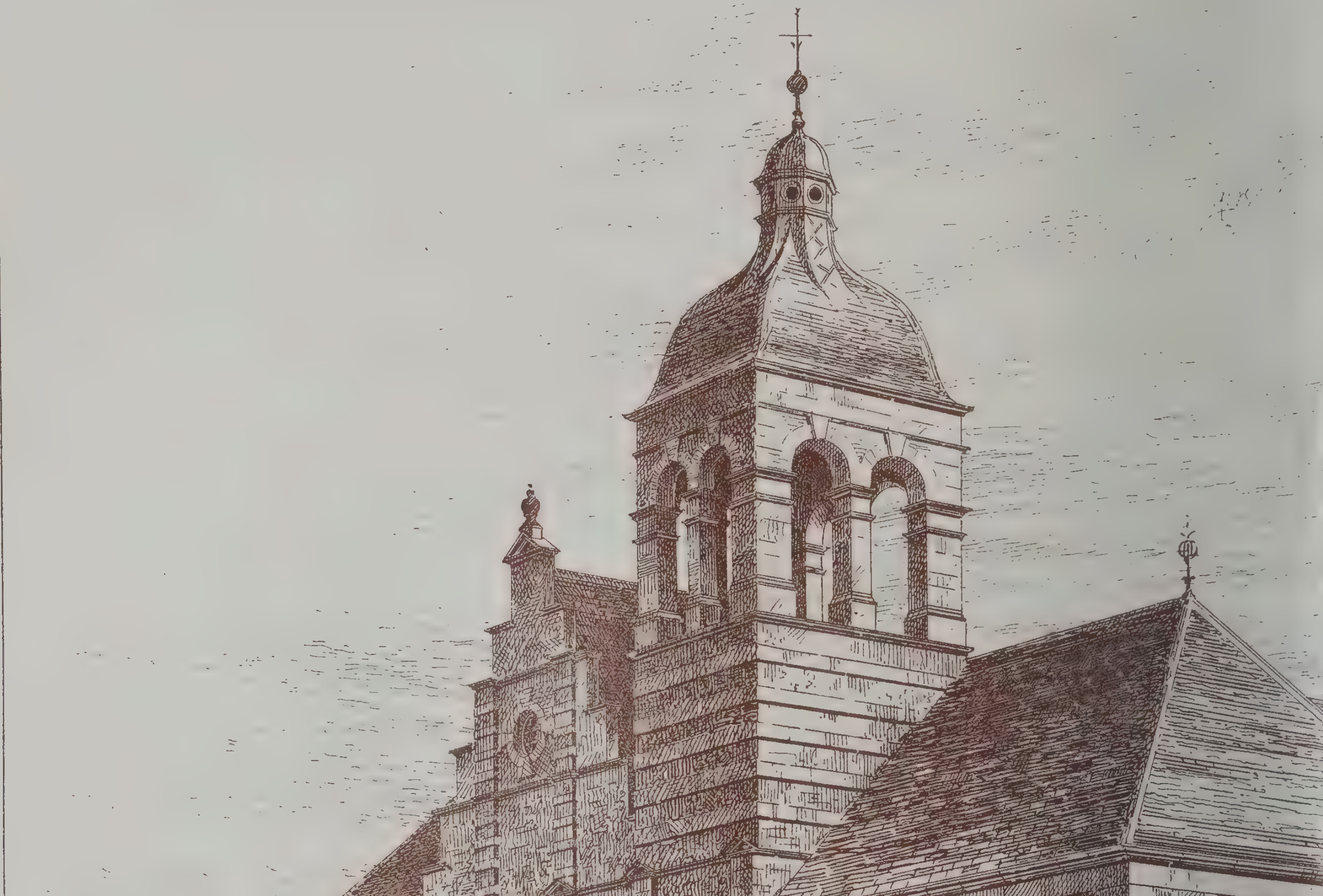
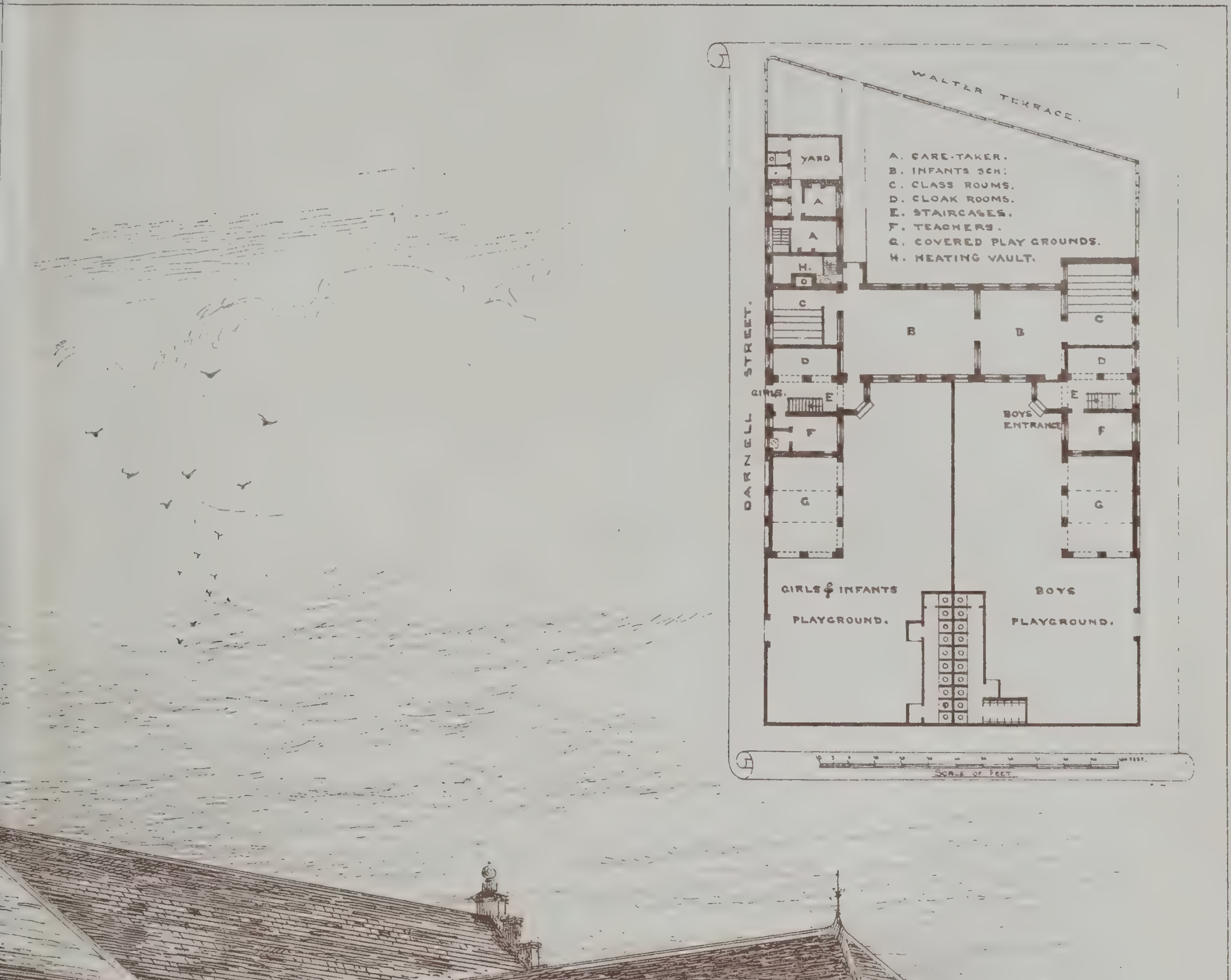


Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C.



Board School . Todd

Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C.



Nook. Newcastle-on-Tyne.

DUNN HANSOM & DUNN.
ARCHITECTS

OBITUARY.

We regret to announce the death of Mr. John William Trounson, F.R.I.B.A., F.S.I., M S.A., which occurred suddenly on Friday night at his residence in Clarence-street, Penzance. Deceased had been suffering during the last few days from pneumonia, but a fatal result was not anticipated. Mr. Trounson, who was the son of Mr. Trounson, builder, of Penzance, had an extensive practice as an architect throughout West Cornwall, and had carried out some important works, including the mansion of Boskenna at St. Buryan, now the restdence of Captain Paynter; the the additions to St. Peter's, Newlyn; the Jubilee memorial extension of St. Paul's, Penzance; the new Wesleyan Chapel, at Penryn; Pike's Hill Wesley School, Falmouth; the Bible Christian School, Heamoor; various board schools in Cornwall; Messrs. Chudleigh's premises at Johannesburg; and the recently-opened extension of the Penzance Wesleyan Day Schools. At the time of his death Mr. Trounson was engaged in carrying out an extensive commission for Mr. Barney Barnato, the African millionaire. He became a Fellow of the Royal Institute of British Architects in 1888, a Fellow of the Surveyors' Institute in May, 1891, and three years later was elected a member of the Society of Architects. Mr. Trounson, who was 46 years of age, leaves a widow and three children.

The death is announced of one of the senior members of the architectural profession, Mr. Thomas Cundy, F.R.I.B.A., formerly in practice in Grosvenor-gardens, Pimlico. Mr. Cundy, who died on Tuesday week at his residence, 2, Chichester-terrace, Brighton, was the son of an architect, and was elected a Fellow of the Royal Institute of British Architects in 1857, his proposers having been Professor T. L. Donaldson, Philip Hardwick, and his father, all long since deceased. He had served on the council of the Institute, and took an active part in the administrative work of the Architects' Benevolent Society.

Mr. J. H. Chapman, a well-known architect of Boston, Mass., and senior member of the firm of Chapman and Frazer, died suddenly at Fredericksburg, Va., a fortnight ago. Mr. Chapman was born in New York, and was a graduate of Yale College. He studied in the Sheffield Scientific School, and in the Royal Academy at Stuttgart, Germany, receiving his practical training in the office of Ware and Van Brunt, in Boston. In connection with Mr. Frazer, he carried out many large works near Boston, together with the Merchants' Bank Building, New Bedford, the Concord High School and the Episcopal Church in the same town, and the State Armoury at Nashua, N.H.

Mr. Richard J. Langridge, past-president of the Alliance Cabinet Makers' Association, died on the 6th inst. at his house in Libra-road, North Bow, aged 65 years. He was one of the originators, and for some time was secretary of the Trade Guild of Learning.

CHIPS.

The opening by the Duke of Devonshire of the new Home (the "Passmore Edwards House") at the colony of the National Society for the Employment of Epileptics at Chalfont St. Peter's, which was postponed from the 7th of August last, owing to the Duke of Devonshire being summoned to Osborne on that day, has now been fixed to take place on Tuesday, the 26th inst., at a quarter to three o'clock.

Professor Johannes Overbeck, the well-known Leipsic archæologist, and nephew of the celebrated painter, died at Leipsic on Friday, at the age of 69. His numerous works on Art and the History of Art will long keep his name in remembrance.

A memorial to the Irish Chief Secretary is being numerously signed praying for Government assistance towards providing railway extension from Clonakilty to Rosscarbery. The County Cork grand jury passed a sum of £25,000, with a baronial guarantee, provided the Treasury contributed £20,000.

A Roman Catholic church, dedicated to Corpus Christi, is being built at the rear of the Convent of the Cross at Pokesdown, near Bournemouth. It is Early English in style, and will cost £6,000. Mr. William Lune, of Malvern, is the architect, and Messrs. Jenkins and Sons are the contractors.

There has been erected in the salon of the Hotel de Ville at Paris a chimneypiece of white marble, the work of a syndicate of "Ouvriers Sculpteurs," the cost of which is between £11,000 and £12,000.

COMPETITIONS.

Bangor.—The award of the assessor, Mr. W. D. Caröe, M.A., F.S A., the architect to the Charity Commissioners, in the competition for the Carnarvonshire School for Girls, was published on Friday. Of the seven sets of plans sent in for competition he considers No. 5 to be the best. The author of these plans is Mr. John H. Phillips, M.S.A., St. John's Chambers, Cardiff. Mr. Phillips, it will be remembered, was also the successful competitor in the recent Tate competition, when he received the first prize offered for the best plans for Welsh Intermediate Schools.

Durham.—The question of the designs for the proposed new county buildings in Durham city was discussed by the Durham County Council at their last meeting. A report was received from the finance committee stating that they had revised the adopted plans of the buildings, and had made some alterations calculated to improve the general arrangements, and to keep the cost within the limit fixed by the council. They had directed the buildings to be faced with terracotta in front, and brick at the back. A quantity surveyor had been appointed, and the architects, Messrs. Barnes and Coates, had been instructed to make all necessary preparations for advertising for tenders in the early part of December. The clerk then read the correspondence which had been received in relation to the matter. The Royal Institute of British Architects had written expressing regret that Messrs. Cooksey and Cox, who were first in the competition, had been deprived of the opportunity of executing their design. Messrs. Phillip Tree and Ivor Price, honorary secretaries for the protesting competitors, had forwarded a memorial, in which it was stated that a gross injustice had been done to honourable professional gentlemen by their being set aside, without any valid reason, as if incompetent and unworthy, and local men, more or less unknown, substituted, who by the assessor's award had not earned the honour of being intrusted with so important a public work. They asked the council to remove this most unmerited slur and bitter disappointment by intrusting Messrs. Cooksey and Cox with the work they fought for and so gallantly won. The same gentlemen also wrote inclosing a communication from Mr. J. Vickers Edwards, the assessor in connection with the competition, stating that the designs of "Onward" (Messrs. Cooksey and Cox) were by far the best, and won purely on merit. That the one marked "Demos" (Messrs. Barnes and Coates, Sunderland) ought to have been disqualified, as the regulations issued to competing architects had not been complied with, and that, therefore, Messrs. Cooksey and Cox had not received the fairplay and justice to which Englishmen were entitled. There was also a letter from the Northern Architectural Association, Newcastle-on-Tyne, protesting against the action of the council, and pleading in favour of "Onward's" plans. The chairman, Mr. S. Storey, observed that the Institute of Architects admitted that the council had acted legally, and he should try to convince the council that they had acted according to the dictates of common-sense and for the best interests of the ratepayers. In regulation 28 it was stated, "If the estimate exceeds £22,000 the design will not be eligible for premium, and special consideration will be given to plans which can be carried out at the lowest cost." Again, regulation 34 read, "The council does not bind itself to carry out the works shown on the selected designs, nor to employ the successful competitor if it does so." That meant that the council need not use the plans, although they had paid a premium for them, or they might use them, and employ someone else to carry them out. Regulation 35 stated that the "council will appoint a competent architect as assessor to assist in selecting a design, and the council is to be at liberty to reject all or any of the designs." Other conditions stated that the council reserved full liberty with respect to all proceedings in connection with the erection of the building, and also that the council should be at liberty to reject the whole or any of the designs if they appeared ineligible or of too expensive a character. Such being the conditions sent to every competitor, and upon which every competitor sent in his plans, it was manifestly improper to urge that the council had done wrong either in not adopting the plan that got the first premium, or in not being guided solely by the opinion of the assessor, and the facts of the matter were that a certain number of plans were sent in, were received by the County Council surveyor, and placed at the disposal of the assessor. He (Mr. Storey) communicated with the clerk, and asked him to fix a day for the assessor to meet the committee. The reply they got was a formal award by the assessor, who had neither met nor consulted with them, in favour of three plans. The committee declined to receive that award, and they laid it upon the table and communicated with the assessor to the effect that he had exceeded his authority; that what they wished was that he should meet them, and, whilst he could advise the committee on many points, the committee thought that they could advise him as to the internal arrangements which would be most suitable and convenient for their own business. The assessor came to the committee meeting, and the whole matter was discussed. Another meeting was held, and the committee finally decided that the first premium should be given to "Onward," and the second to "Demos." They reported that to the council, the council accepted, the premiums were paid, and the council had possession of the plans. The committee, reinforced, met, and decided that the second plan was, on the whole, the most convenient internally, and was likely to cost a considerable sum less. Believing the second plan would be more economical, they adopted it, and the council agreed. It might be said the plan they had adopted did not comply with the regulations issued to competitors. Now, he had Mr. Edwards's report before him, and there was no statement to the effect that the plan in any way did not comply with the instructions, and there had been no statement to them verbally by Mr. Edwards. The second point to be urged against them was that they had adopted plans which, architecturally, would be a discredit to the council. In answer to this, Mr. Storey, after remarking that fortunately architects, like doctors, differed, read an extract from the Building News, an authority on architectural matters, which contained a somewhat technical criticism of the plans adopted, but couched in eulogistic terms. In reply to Sir Theodore Fry, the Chairman said: "There is £4,000 difference between the cost of £22,000 and £18,000." The report was then adopted.

Laying-Out Victoria Park Estate, Kirkstall.—The Victoria Park Estate, situated at Kirkstall, near Leeds, and comprising 52 acres of land, is about to be laid out by Messrs. J. Bexon and Son on behalf of the owner as sites for cottage property. It is intended that the dwellings shall be built in pairs, with small gardens attached, at a cost of £350 or £400 per pair, and that ground shall be reserved for public buildings, such as places of worship, schools, a reading-room, a hotel, and shops, and likewise for cricket, tennis, and bowls. Prizes have been offered for the best designs for streets and for houses, and these have been awarded as follows, by Mr. Charles Gott, M.Inst.C.E., F.S.I., Bradford:—Designs for new streets, &c.—1, Mr. Albert, E. Dixon, A.R.I.B.A.; 2, Mr. George Birkinshaw (South Milford); 3, Mr. John A. Webster; 4, Mr. Tom Dyer. Designs for houses:—1, Mr. Tom Dyer; 2, Mr. J. W. Thackray; 3, Mr. John A. Webster; 4, Mr. George Birkinshaw (South Milford).

Linslade.—The Linslade Parish Council, at a meeting on Friday last, awarded the first premium for the competitive designs for the sewerage and water supply of the district to Messrs. R. B. Grantham and Son, Northumberland-avenue, London, and the second premium to Mr. H. B. Nichols, of Birmingham. The rateable value of the district is about £20,000, and the estimates of cost varied from about £3,200 to £9,900.

The Sage House, Brooklyn and St. Mark's Avenues, Brooklyn, N.Y., has been successfully moved by B. C. Miller and Son, house-movers. The building is of stone, about 1,300 tons, built by a son of a Mr. Russell Sage. It has been moved 30ft. towards St. Mark's Avenue, and 20½ft. towards Brooklyn Avenue, and has been raised 2½ft. on its foundations.

A new stained-glass window was unveiled on Sunday week by the Earl of Feversham in the north aisle of Helmsley Church, making the fourth stained window in the aisle, all of which are historical. The new window is a three-light Late Decorated one, with figures of the principal persons who took part in the Battle of the Standard, fought near Northallerton, in August, 1138. As in the other windows, prominence is given to Walter Espee, described by Ældred, the third Abbot of Rievaulx, as the hero of that great event.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Leeds and Yorkshire Architectural Society.—The opening meeting of the twentieth session of the Leeds and Yorkshire Architectural Society was held on Monday night at the Queen's Hotel, Leeds. Mr. E. J. Dodgshun (the president) occupied the chair, and there was a large attendance. The President, in his address, said they had had under consideration the schedule of charges at present in vogue in the profession. The R.I.B.A. Council did not make many suggestions, and with the exception of two or three alterations in the existing schedule, no further alteration was thought necessary. Still, he believed it would occur to some of them that the present method of payment was not always quite commensurate with the amount of work done. If 5 per cent. was a reasonable charge, and none of them liked taking less, for preparing plans and superintending the erection of a large mill, or a huge block of warehouses, or a row of cottages where there was a multiplicity of the same features, surely it was quite inadequate payment for a church or a good house, where every stone almost, and every bit of joiner's work, to say nothing of the other trades, required the most careful thought and consideration in detailing. No doubt it was convenient to charge by percentage, especially as it had become a recognised custom; but to stick to 5 per cent. for everything was not quite fair. Recently the council criticised the conditions issued by the Leeds Guardians of a proposed competition for imbecile wards to be built at the workhouse, and they had forwarded a letter to the clerk, pointing out certain clauses which they should like to see either excluded or materially altered, and which, if allowed to remain, would prevent many of them competing. He agreed with Mr. F. C. Penrose that it was not necessarily by competition that the best result was obtained. Of course, it was hardly possible to dispense with competitions altogether, but he wished every architect would absolutely decline to enter any competition where the conditions and instructions were unfair or incomplete. Last year he spoke strongly against the city surveyor of Leeds undertaking the architectural work. He was now informed that the corporation had decided that in future the city surveyor should not be called upon to do architectural work, but that it should be competed for by architects. He wished they would go a step further and appoint a city architect, or if that was not convenient, give the work out to responsible architects in the town. Mr. H. Perkin moved a vote of thanks to the president, which was seconded by Mr. W. S. Braithwaite. The president then distributed the prizes to the successful students. The silver medal and five guineas, given by the president, were gained by Mr. R. Whincup, for a set of drawings of Skelton Church, near York. Two prizes were awarded to Mr. F. Musto, one for a design of a country house, and the other for sketches. Another prize was presented to Mr. C. W. Tomlinson for an essay on "Chimneys," with illustrations. A smoking concert afterwards took place.

Sheffield Society of Architects and Surveyors.—The monthly meeting of this society was held at the School of Art on Tuesday evening. Mr. Paul Waterhouse, M.A., F.R.I.B.A., of London, read a paper on the "Brotherhood of Architects." In his opening remarks, he pointed out that isolation is no more possible to the architect than to human beings generally; but that he is inseparably connected with his fellow-craftsmen in the present and the past. He urged upon all present the desirability—the necessity of promoting by every possible means, by personal influence, and by personal enthusiasm, such a spirit of unity and mutual assistance as would most truly make for the ideal brotherhood of architects.

* * *

A receiving order in bankruptcy has been made in the case of Alexander M'Clymont, of Cathcart-road, South Kensington, builder.

The Burgh Commissioners of Arbroath, stimulated to a reversal of previous action by the results of a recent election, unanimously agreed on Monday to rescind a resolution passed at the October meeting of the board, remitting to the water committee to secure the services of Mr. Wilson, C.E., Edinburgh, in looking out for a gravitation supply of water for the town. The water committee were now instructed to take steps with a view to the augmentation of the existing underground supply, and to report to the board.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to The Strand Newspaper Company, Limited.

TERMS OF SUBSCRIPTION.

One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India, £1 6s. 0d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front-page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No Front-page or Paragraph Advertisement inserted for less than 5s.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page Advertisements and alterations in serial advertisements must reach the office by Tuesday morning to secure insertion.

Situations.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., LI., LIII., LIV., LVIII., LIX., LX., LXI., LXII., LXIII., LXIV., and LXV. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Received.—E. Falconer.—J. G. C.—E. Peacock.—E. B.—F. A. and Co.—G. K. (Ramsgate).

"BUILDING NEWS" DESIGNING CLUB.

SECOND LIST OF SUBJECTS.

B.—A Small Public Bath, adapted also for use as a public hall, with four first-class and six second-class slipper baths, the baths to be used on alternate days by men and women. The bath hall to have a distinct entrance from the bath proper, with emergency exits for use only when the bath hall is used for public meetings, for which purpose a separate staircase from the gallery will be required. The swimming pond is to be 80ft. long by 28ft. wide in the clear; w.c.'s, &c., to be provided for each of the sexes. A small office and a pay-office to be provided. The site is in a street with a frontage of 55ft. and a depth of 130ft., having a back right-of-way 10ft. wide leading to the next thoroughfare. The bath proper to be towards the main frontage. Accommodation required for the caretaker's rooms, and a small board-room to be provided. A simple treatment for the façades to be adopted, suitable for brick and stone, and slate roofs. The position of boiler place and fuel store to be clearly shown. Elevation, and two sections, and necessary plans with a perspective view. Scale of elevations and sections $\frac{1}{8}$in. to the foot, plans 1-16in. to the foot. Plans of roofs optional. Skylights to be dotted on ground plan.

Drawings Received. — "Tadpole," "Blackbeetle," "Beckington," "Thrush," "Ivy," "Albyn," "Canary," "Peep Bo," "La Cigale," "Moor," "Dono."

* * *

Correspondence.

PROPOSED NATIONAL AND PROVINCIAL UNION OF BRITISH ARCHITECTS.

> "To thine own self be true;
> And it must follow as the night the day,
> Thou cans't not then be false to any man."
> —Shakespeare.

To the Editor of the Building News.

Sir,—No profession or trade was ever so sadly in need of protection from within and from without, as the present architectural.

No profession or interest was ever face to face with so many glaring incongruities, difficult problems, or monstrous anomalies in regard to position, pay, and patronage.

No other profession, or even trade, ever tamely submitted year after year to occupy such a false position, or permitted such flagrant injustice and gross wrongs to flourish on every side unchecked. Such exactitude from the public in general, and such an unproportionate return on their part in the ordinary remuneration tendered. But why multiply *ad nauseam*? Who, in the profession, is not too fully cognisant of these facts!

Looking back for about 30 years, we there witness the profession holding no very enviable position; but, on the other hand, what do we find to-day? Why, something infinitely worse! Whilst other interests have been fortifying and strengthening their positions, architects have made no progress whatever; they have not even remained stationary, but have gone from bad to worse.

During the above period, over and over again your columns have exposed cases of the grossest injustice, petty tyranny, barefaced extortion; wrongs made doubly hard to endure in that there was no appeal, no means of redress, all alike disastrous to the individual, and the best interests of the profession at large. Yet virtually these have practically been allowed to pass almost unnoticed — disregarded — and why? For the simple reason that there was no fully representative, sympathetic official body to which appeal might have been made—a body constituted bold and powerful enough to successfully cope with the difficulty, and thus uphold and vindicate the rightful interests and true position of the profession.

Surely if ever a body of men following an honourable calling were in want of a fully representative and complete organisation, that body is the architectural profession of this country. It may well be asked: Will architects as a body continue for ever simply to stand and individually be ignominiously pelted at by any outsider? Surely it is high time to sweep away the shame and disgrace attending such a false position.

The bare fact of the existence of an organisation as suggested above would undoubtedly exercise a most salutary effect upon the public mind, act and react, and prove one of the surest and strongest of levers to elevate and determine the true position and standing of architects; lift into its proper sphere the individual and collective status of architects, and place it in that honourable position to which it is so justly entitled. And this would ultimately render impossible many of the worst abuses which now are too common.

There is but one practical way of attaining this object. In the first place, all minor differences and objections must be sunk, and a loyal support given to a federation of architects comprising the whole of the profession. Surely its simple practicability must strongly commend it to all, and as far as objections of any weight are concerned, I fail to discover them. But, on the other hand, the benefits likely to accrue are innumerable, especially when we consider that such a body, powerful enough for the first time, will be able successfully to cope with and effectually veto so many of the present glaring inconsistencies. Such we may enumerate as the ordinary remunerative tariff in practice—I don't mean on paper—protection from unqualified practitioners, unjust and unprofessional competition, and that for ever an end may be made to the scandalous disgrace and loss too often attending the present system (?) of public competitions, with its cruel extortions of time and money, not to mention "the spurns that patient merit of the unworthy takes," all of which can unmistakably be traced to no other source than the nonexistence of a strong fully representative body, embracing the whole of the members of the profession, duly authorised and instituted solely for its mutual protection and benefit. And certainly it is difficult to understand why for so long this has remained unaccomplished, seeing that architects hold the remedy in their own hands. Surely, to go on as we are is not only a disgrace and a dishonour, but an infinite loss. Apparently some are inclined, as a forlorn hope, to pin their faith to Acts of Parliament. But whatever benefits or advantages might accrue from such, that power would certainly be made doubly effective following in the wake of a strong federation of architects, who have first determined within themselves to look after their own interests.

But a great majority seem never to have fully realised their individual responsibility, without which a large measure of all effort for amelioration will of necessity prove abortive. Or is it because there has never been suggested an easy practical way of demonstrating their sense of obligation? Is not the latter the main cause?

Granted, then, that there is a want, a crying want, for a union of architects, we may very reasonably ask, in what way can this desirable end be most easily and effectually accomplished?

In the first place, the qualification for membership ought to be as comprehensive as may be compatible with the dignity of the profession, and undoubtedly it should be open to all *bonâ fide* members practising in England, Scotland, and Wales.

In the second place, this body incorporate, to be an effective and efficient force, must, as a *sine quâ non*, be vested with full and unfettered powers to be exercised by the collective representative executive of its entire membership. As it will, if constituted as above, embrace in its ranks every architect in the country, it will include all the members of the Institute and other architectural societies—thus there will be no preponderance of power in any section of its membership, but each having a voice and equal representative power of voting on all vital questions. Provincial and city practitioners will alike participate and reap similar benefits and advantages, and thus inaugurate the fashion of less without and more within.

The country to be divided into provinces, the City forming one, and again each province subdivided into districts, with one or more representatives from each. General half-yearly meetings to be held in London, and an annual conference at different important centres.

Financially embracing, as this organisation is proposed to do, the whole of the practitioners in Great Britain by this combination, the necessary subscriptions will be reduced to a minimum—say, an annual subscription of 5s. in advance, which, if paid in the first instance within a given period of the founding of the union, will likewise include entrance fee, which after that date would be an extra 5s. This would cover the annual cost of general working expenses, of management, &c.

As to the present societies—including the Institute and other excellent architectural associations—all will be stimulated and strengthened in their individual influence and growth by this defensive movement, their status considerably heightened, and their laudable efforts for the higher technical training and artistic elevation of the profession receive a strong impetus. It is, therefore, hoped that members will cordially and unanimously co-operate in the furtherance of this movement. *Decus et tutamen.*

As the matter now stands, surely no one can honourably escape liability and remain passive. We must either approve or disapprove of the present situation. If the former, it will be interesting to hear what can be said in its favour; but if of the latter, do not let us shelve our individual responsibility, but let it be loyally and equally distributed amongst all. And what are we called upon to do? Why, in the very simplest possible way to unite in asserting and defending our just rights, which at present are notoriously neither asserted nor defended, and too often simply ignored—more honoured in the breach than in the observance.

I shall be glad to receive the names of all who are in sympathy with this movement on the above or similar lines, and it is most desirable that, preliminarily, we should signify our approval and unite in such numbers as will justify its immediate development. Needless to add, that any practical suggestions likely to prove useful will be most welcome.

Before closing, I cannot let this opportunity pass without bearing testimony, Mr. Editor, to the untiring solicitude and sincere interest reflected in your columns throughout the whole of the above period. You have ever been foremost in exposing abuses and suggesting remedies; but, unfortunately, the latter have never been responded to as they ought and carried into effect. Thanking you in anticipation,—I am, &c.,

George Ord.

16, The Avenue, Durham, Nov. 7.

SPELLING OF TECHNICAL TERMS.

Sir,—Having had occasion lately to turn my attention to the spelling of technical terms used in architecture, I have found that there are a good many words of which the spelling commonly or often adopted is either anomalous or without good authority. I give below a list of the most common of such words.

Asphalt.—This word seems to be usually spelt with a final *e*, as it is in French. English dictionaries, so far as I know, invariably spell it without the final *e*.

Clearstory.—It is difficult to understand why this word should be spelt *clerestory*, as it generally is, contrary to etymology.

Fascia.—This appears to be, etymologically, the correct spelling, as I do not think there can be much doubt that this word is derived from *fascis*, a band, and that it has nothing to do with *face*.

Mortise.—This, and not *mortice*, appears to be the correct spelling.

Pozzolana.—This is a purely Italian word, and if we admit that the Italians know how to spell their own language, it should be spelt as above, and not *pozzuolana*, as it is frequently found in English books. The latter spelling is taken from the spelling of Pozzuoli, where it is procured. If the English spelling is to differ from the Italian, it would surely be better to spell it phonetically, and call it *potsolana*.

Sill.—There seems to be no good authority for spelling this word *cill*.

Siphon.—This word is pure Greek (σίφων), and the spelling *syphon*, which is so common, is undoubtedly incorrect.

Story.—This is the recognised spelling. There seems no good reason for inserting an *e* before the *y* when this word is used with reference to a building, and thereby introducing an unnecessary complication into the spelling of a common word.

Spandrel.—This spelling appears to be more consistent with the analogy of words having a similar termination than the spelling *spandril*, for which I can find no good authority.

Style.—Etymologically this, and not *stile*, appears to be correct, as the word is derived from *stylos* (a column).

In addition to the above, I may mention the words *bracketing*, *riveting*, *strut*, *wainscot*, which are very often spelt with a double *t*, without any reason whatever. On the other hand, the word *tesselated* (from *tessella*, a small cube) has been deprived of an *l* with just as little reason.—I am, &c.,

Gavin J. Burns, B.Sc.

* * *

At a special meeting of the Chatham Town Council, on Thursday in last week, it was decided to give £1,680 for the widening of the High-street, near the Military-road.

The new corporation hospital for infectious cases of disease at Burton-on-Trent was opened on Friday. The institution consists of a series of blocks, which are situated on a terrace on the northern extremity of the Outwood Hills. There are six buildings, including wards, and an administrative block. The total cost, inclusive of the land, is estimated at £11,000. The buildings were designed, and their construction superintended, by the borough surveyor, Mr. J. E. Swindlehurst, C.E., and the contract was carried out by Mr. Hodges, Burton.

A pulpit erected in All Saints' Church, Falmouth, as a memorial, was dedicated on Thursday in last week by Archdeacon Cornish. Standing on a stone platform, the pulpit, with its circular front, is supported by a large Devon green marble shaft, surrounded by seven different coloured marble shafts, some twisted, others octagonal and circular. The body is formed of Derbyshire alabaster, inlaid with slabs of Devon marble of different shades, while the circular front has a floriated cross of white marble on a background of red marble. On either side are two figures, St. George and St. Piran, carved in Italian white alabaster. Messrs. J. and E. Goad, of Plymouth Phœnix Marble Works, have executed the work to the plans of Mr. Sedding, of Plymouth.

An adjourned inquest was held at Trentham on Monday, on the body of Hugh Perkin, joiner, Boothen, who was killed on the 25th ult. by a wall collapsing during some alterations at the Trentham Old Inn, which were being carried out by Messrs. Tomkinson and Betteley, builders, the deceased's employers. Mr. E. Penn, architect, Stoke, said he had examined the wall, and found the mortar fairly good. The wall could not have fallen had it been supported by plenty of sprags during the alterations. Mr. Thomas Roberts, architect to the Duke of Sutherland, stated that it was a mystery to him how it had fallen. Mr. E. L. Maddock, architect, Hanley, said that from the condition of the wall he should have had no hesitation in making the alterations which were being executed by the contractors for the work. The total height of the wall was only 5ft. odd, and it was a wonder to him how its fall could have killed a man. He should not have thought it at all necessary to sprag the wall. The jury returned a verdict of "Accidental death," expressing the opinion that every reasonable precaution had been taken by the contractors, that the wall was apparently sound and good, and fitted for its purpose.

Intercommunication.

QUESTIONS.

[11448.]—**Tensile Breaking Strain of Tie-Rod.**—Can any reader kindly say what is the tensile breaking strain (in tons) on a ¾in. round iron tie-rod, 38ft. long?—Q. E. D.

[11449.]—**Foundation Soils, Resistance of.**—Where can I find any authoritative information on this important subject? Does Rankine say anything of it? I thought there were some papers (forming part of a series on construction) in the Building News, but I cannot find them.—W.

[11450.]—**Concrete Floors.**—If broken brick is used for concrete filling-in between iron joists for floors above ground-floor level, what proportion of sand should be used? Specification reads: "Concrete to be composed of broken and Portland cement 4 to 1." Is concrete composed of broken brick cheaper than if composed of coke breeze? If coke breeze is used, should sand be mixed with it? Would broken brick and coke breeze mixed together make good concrete?—Doubtful.

[11451.]—**Dry-Rot.**—Twelve months ago I laid a basement floor, first filling in 16in. broken stone, then 6in. coke breeze, composed eight of screened coke to one of Portland cement, on to this composition was laid 1in. floor boards. Since being occupied they have covered these floors with carpet or linoleum. I now find that already the boards are going in dry-rot. Is this the fault of boards being imperfectly laid in composition, the fault of being covered with linoleum, or is the whole principle wrong? What suggestions could any reader kindly offer, and how best to remedy?—Grange-over-Sands.

CHIPS.

New parish schools are being built at the corner of Broadbridge-street and the New Avenue, Peterborough. They will accommodate 800 girls and infants, and will be built of white brickwork. Mr. John Thompson, J.P., of Peterborough, is the contractor.

St. Bartholomew's Church, Southsea, a comparatively recent structure, was partially wrecked in Monday's gale. The wind dislodged a heavy stone cross and a portion of the coping, which crashed down on the roof of the chancel and vestry, doing extensive damage.

The reopening services at the Prince's-road Welsh Presbyterian Church, Liverpool, were held on Saturday. The church has been cleaned and decorated, the building now being illuminated by means of the electric light. The organ has also been overhauled. New rooms have been added to the schools, and additional vestries have been erected. The work has been carried out from plans prepared by Mr. T. G. Williams, architect, of Cable-street, Liverpool.

The governors of the Northern Polytechnic Institute, Holloway-road, have appointed as principal Dr. J. T. Dunn, head of the Plymouth Science, Art, and Technical Schools, and formerly of the Gateshead School, and inspector of science schools and classes for the Durham County Council.

The town council of Shrewsbury adopted on Monday plans and estimates prepared by Messrs. John Taylor and Sons and Santo Crimp for a new sewerage scheme for the town. The total cost is put down at £67,500, which includes £685, the cost of land necessary for a sewage farm.

The members of the Sanitary Institute inspected the sewage and destructor works at Ealing, under the guidance of Mr. Charles Jones, M.I.C.E., engineer and surveyor to the Ealing Urban District Council, and on Tuesday evening a lecture was delivered at the Institute by Mr. J. Wright Clarke on the subject of "Details of Plumbers' Work."

The walls and roof of the Wesleyan Chapel at Skelmanthorpe, which was built in 1815, having been found to be unsafe, it has been decided to pull down the building and build a new chapel. Plans and tenders have now been accepted for the erection of a new chapel, at an estimated cost of £1,700.

A new clock and bell have been presented to the Rothwell, Yorks, new District Council Offices, by Mr. Thomas Hargreaves, J.P., Lofthouse, chairman of the District Council, Rothwell, in memory of his father. The clock was set going on Wednesday week. Messrs. W. Potts and Sons, clock manufacturers, of Leeds and Newcastle, are the makers.

The Dover Corporation resolved on Monday to apply to the Board of Trade for the necessary powers to enable them to construct electric tramways throughout the borough, the majority of the main streets being scheduled. At Sandwich negotiations are being carried on by the town surveyor with the landowners for the construction of a tramway to the seaside, a distance of two miles.

The new board schools at Ford, Devonport, will be opened by Sir George Kekewich to-morrow (Saturday). They have been built by Messrs. A. Lethbridge and Son, of Plymouth, from plans by Messrs. Hine and Odgers, of the same town.

Legal.

VESTRY AND SEWER.

THERE is no doubt that the Public Health Act (London), 1891, is already shown to be in need of amendment. This is especially so in regard to the repair of sewers by a vestry or other sanitary authority; for it appears that the statute provides no machinery whatever by which such an authority can be compelled to keep its sewers in order. In truth, the whole Act from beginning to end regards the sanitary authority as always being in the position of a complainant, while the possibility of its being a defendant has been entirely overlooked. The point was raised at the Lambeth Police-court in a recent case reported in our issue of last week (Nov. 8, 1895). There the owner and leaseholder summoned the vestry of St. Mary, Newington, for neglecting to repair and amend a certain sewer in the Gurney-road. It appeared that the houses are drained upon a combined system, several houses being served by the same pipe connection with the sewer in the roadway. The complainant contended that this being a combined drain, to the construction of which the consent of the local authority had never been given, the vestry were liable for its repair. On the other side, it was argued that owners of this class of property had, since a recent decision, been trying to throw upon the vestry the onus of doing such repairs, and that, at all events, the sanitary authority could not be proceeded against under the statute as it stood at present.

The magistrate, Mr. Hopkins, said the first question was whether or not this was a sewer, or only a drain common to the houses. He decided that, as a matter of fact, it was a sewer, and he held that the onus of proving its character was upon the vestry. But he could find no power in Section 12, or in any other part of the Public Health (London) Act, 1891, to compel the vestry to repair this pipe. Although the magistrate held that it was a sewer for which the vestry were liable, he could not make any order under the Act, and so the summons had to be dismissed; but as he was against the defendants on the facts and the merits, he declined to allow them any costs. There still remains the old cumbrous method of proceeding by indictment; but as far as can be seen, there is no other remedy for an admitted grievance.

Fred. Wetherfield, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

Provincial Architect.—Shop.—Extension.—Rights.—I do not know of any such easement under English law. But the matter is further complicated if you go beyond your own line of frontage. If there was his name on the pilaster, the adjoining owner would have a better ground of claim.

CHIPS.

Councillor Kitching, builder, who has been a member of the Darlington Town Council for some years, died from pneumonia on Saturday night. Mr. Kitching was ill during the late election, but he was re-elected by a good majority.

The new board schools, Sevenoaks, Kent, are being warmed and ventilated by means of Shorland's patent Manchester grates, patent exhaust roof ventilators and vertical inlet tubes, the same being supplied by Messrs. E. H. Shorland and Brother, of Manchester.

A statue of Edward Colston, the benefactor to Bristol charities, which has been erected on the open space at St. Augustine's, Bristol, was formally unveiled on Wednesday. The statue is the work of Mr. John Cassidy, of Manchester.

The Bird-in-Hand Hotel in the Long Causeway, Peterborough, is being rebuilt from plans by Messrs. Stevenson and Dorman, of Durngate-chambers, Northampton. The front is of Weldon stone and red brickwork. The contract has been taken at £3,100 by Mr. Henry Martin, of Northampton.

The Duke of Devonshire will visit Birmingham to open the New Technical School and distribute the prizes on December 13. The school covers an area of 110ft. by 210ft., and is six stories in height. The style is English Renaissance, and the façades are of teak, with terracotta dressings. The architects are Messrs. Essex, Nichol, and Goodman, of Birmingham; and the contractors Messrs. Sapcote and Sons, of the same city. The cost has been about £60,000.

LEGAL INTELLIGENCE.

Nottingham.—A claim for £7,740 made by Messrs. Brooke and Dearnley, shoddy dealers, having premises off Arkwright-street, Nottingham, against the Manchester, Sheffield, and Lincolnshire Railway Company has been settled by arrangement between counsel. The company will give the claimants £3,100 for so much of their land as is required for the construction of the railway. In the case of John Grundy's trustees against the company, the claimants have accepted the company's offer of £6,500 for the Guildhall Tavern, situated between Bridlesmith-gate and Fletcher-gate, and adjoining premises.

Important Warwickshire Arbitration in London.—Mr. Daniel Watney, president of the Surveyors' Institution, sat at Westminster on Friday as umpire in the case of "Lady Hood's Trustees v. the Manchester, Sheffield, and Lincolnshire Railway Company," a claim for about £7,000 for compensation for land taken from the Hood Estate near Braunston, four miles from Daventry and nine from Rugby, for the purposes of the new trunk line. Mr. John Bird, Huntingdon, was the arbitrator for the claimants; and Mr. A. M. Dunlop, Westminster, for the Manchester, Sheffield, and Lincolnshire Railway Company. Mr. Elwell, chief surveyor to the Great Northern Railway Company, and consulting surveyor to the War Office, and Mr. Denston Gibson (Messrs. Chesshire, Gibson, Fowler, and Wharton), 98, New-street, Birmingham, were the claimants' expert witnesses. On behalf of the Manchester, Sheffield, and Lincolnshire Railway Company, Mr. Arthur Vernon, High Wycombe, and Mr. Arthur Garrard, of Messrs. Buckland and Garrard, Old Jewry, London, E.C., were the principal experts; and their estimates were about £3,200. The case was adjourned.

Clergymen and Dilapidations.—The Queen v. the Bishop of Hereford.—Mr. Dibden moved on Saturday, in the Queen's Bench Divison, on behalf of the former vicar of Ditton Prior, for a rule *nisi* calling upon the Bishop of Hereford to show cause why he should not hear and determine upon the vicar's objections to the diocesan surveyor's report of dilapidations. Counsel said that the question at issue raised an important principle, which applied all over the country, the bishops of several dioceses having laid it down of late that they had no power to consider objections to the diocesan surveyor's report, and that all they could do was to order a new valuation, which must be made at the objector's expense. This would involve a great hardship to incumbents and vicars. For instance, in the present case the surveyor had valued the dilapidations of articles belonging to the vicar himself, and also serious dilapidations caused by a storm which had unroofed the vicarage after the vicar had removed, and was no longer liable. The Court (the Lord Chief Justice and Mr. Justice Grantham) granted a decree *nisi*, Lord Russell remarking that in his opinion the bishop was wrong.

Arbitration Case at Wardle.—A dispute has just been settled between Mr. Thomas Philip Willan, contractor, of Manchester, and the Wuerdle and Wardle District Council. The dispute arose out of Mr. Willan's contract for laying the sewer from the bottom of Wardle-lane to Halliday-lane, on the high road between Rochdale and Littleborough, and it was referred to the arbitrament of Mr. H. Graham Harris, C.E., partner with Sir Frederick Bramwell, C.E., of Great George-street, Westminster. The arbitrator, Mr. Harris, sat on several days at the Queen's Hotel, Manchester, some months ago and took evidence. The award is in favour of Mr. Willan to the amount of £73 15s., and it will carry costs against the District Council. The original claim was for about £370.

In Re Harry Richardson.—In this case, on which a receiving order was made on Oct. 10, the amended accounts show the liabilities to be £11,942, of which £6,882 are unsecured, with assets estimated to produce £2,689. The debtor has for many years carried on business as a property dealer, builder, and estate agent at various addresses in London. From 1881 to 1883 he had a partner, but has since traded alone. He attributes his failure to losses sustained on speculative purchases and sales of properties, to inability to realise without great sacrifice properties now held by him, to heavy law costs, and to judgment having been recovered against him in March last for damages (£750) for breach of covenant to repair, and for assigning the lease of 28 houses in Ammiel-street, Ammiel-terrace, and High-street, Bromley-by-Bow, respectively, without the consent of the lessors. An adjudication of bankruptcy has been made and a trustee appointed.

A Redhill Arbitration.—At the Surveyors' Institution on Monday Mr. Henry Currey, F.R.I.B.A., sat as arbitrator to assess the compensation payable by the London, Brighton, and South Coast Railway Company to Mr. Rennie for the compulsory acquisition of the whole of his estate at Redhill. The estate in question, which is known as Hooley Lodge, comprises a valuable residential property covering an area of about 12¼ acres, and is required by the company for the construction of the duplicate railway authorised by Parliament in 1894 for the relief of the traffic between Croydon and Brighton. Mr. Bidder, Q.C., who appeared for the claimant, presented the case as one to which the principle of reinstatement applied. Evidence in support of the claim, based upon this principle, was given by several land agents and valuers, who placed the compensation at £19,900. The inquiry was adjourned until Monday, the 25th inst.

Drain or Sewer.—Florence v. Paddington Vestry.—In this case, heard on Saturday before Mr. Justice Chitty in the Chancery Division, the plaintiff had purchased in 1894 the fee-simple of Nos. 149 and 151, Church-street, Paddington. Shortly afterwards he received from the defendants, the Paddington Vestry, a notice to repair a defective drain. The plaintiff accordingly opened up the drain and then discovered that premises at the rear belonging to another owner were drained into the drain. The plaintiff claimed repayment by the defendants of some £47 expended by him in repairing the drain, on the ground that it was a sewer within the meaning of section 250 of the Metropolis Management Act, 1855, and therefore repairable by the local authority, in accordance with "Kershaw v. Taylor" (L.R., 1895, 2 Q.B., 471). It appeared that the connection with the drain was made some 30 years ago, without the authority of the vestry, and merely by the consent of the then occupant of the Church-street houses, no other permission being asked. By section 250 "the word 'drain' shall mean and include any drain of, and used for the drainage of, one building only, and shall also include any drain for draining any group or block of houses by a combined operation under the order of any vestry or district board; and the word 'sewer' shall mean and include sewers and drains of every description except drains to which the word 'drain' interpreted as aforesaid applies." In "Kershaw v. Taylor," a builder had authority to make drains by which the sewage of each pair of four houses he was building was to be carried in a single drain to the sewer, and this was to be done to the satisfaction of the surveyor. The builder made a single drain for the four houses. As the drain did not merely drain one building, and was not created under the order of a vestry or district board, it was held to be a sewer within section 250, and to be repairable, not by the subsequent owners of the houses, who had no notice, but by the local authority. Mr. Justice Chitty said that "Kershaw v. Taylor" governed the present case. The connection here was made without the consent of the local board or the owner of the house. In "Kershaw v. Taylor" a scheme of drainage had been approved by the local authority, but the drains constructed were not in accordance with the scheme. Consequently, in both cases the drain was unlawfully made, and not under any order from the local authority. The connection here was unlawfully made, but the plaintiff did not claim under the person making the unlawful connection. The plaintiff had no notice that anything unlawful had been done. He was not bound to inquire as to another's acts. The plaintiff was entitled to a declaration that the drain was a sewer, and to be repaid the money he had expended in repairing it.

Committee's Promises are Binding.—Graham and Sons v. Mayor, &c., of Huddersfield.—In the Appeal Court on Tuesday, before the Master of the Rolls, Lord Justice Lopes, and Lord Justice Kay, an application was made by the defendants for a new trial of an action tried on July 29 and 30 last before Mr. Justice Mathew and a special jury at Leeds Assizes, or for judgment. The action, which was reported in our columns on Aug. 9 last, p. 211, was brought by the plaintiffs, contractors, to recover £999 11s. 10d., balance of payment due to them from the corporation of Huddersfield under an agreement for the execution of sewerage works. The agreement provided for payments on account, and final payment to be made on the certificate of Mr. Dugdale, the borough surveyor. In the course of the construction of the works it was discovered that it was necessary to tunnel through a mass of rock, and the plaintiffs considered that the cost of such tunnelling ought to be treated as extras. The borough surveyor refused to make allowances for this work on his own authority; but advised the plaintiffs to apply to the Health Committee of the corporation. The committee gave the plaintiffs a promise—which, however, was not reduced into writing—that they should receive proper remuneration for the work in question. At the trial the plaintiffs relied, in the first place, on an alleged certificate of the borough surveyor, but the jury found that no such certificate had been given. The plaintiffs then relied on the parole contract made with the Health Committee on behalf of the corporation. On this issue the jury gave a verdict for the plaintiffs for the amount of the balance claimed. After verdict, counsel for the defendants submitted that judgment ought to be entered for them on two grounds—

first, that the contract relied on by the plaintiffs was not under seal, and therefore was not binding; secondly, that by virtue of section 200 of the Public Health Act, 1875, the committee could not enter into any such contract at all so as to bind the corporation. Mr. Justice Mathew refused to entertain the points so raised, as they had not been taken before verdict. The defendants now applied to the Court of Appeal, and contended that they were entitled to judgment *non obstante verdicto*. They were not bound to take their objection earlier. The objection that the promise given by the committee was not binding on the corporation was properly taken when it was found that there had been such a promise in fact. It was not now a question of admissibility of evidence, but of the legal effect of the finding of the jury. The defendants had no power to waive the want of authority on the part of the committee to make a binding contract, or to waive the necessity for a certificate. They referred to the case of "Lamprell v. Billericay Union." The Court dismissed the application. The Master of the Rolls said that the objection that the defendants had taken their point too late must prevail. In his opinion it was not open to them to take the point now, and the application must be dismissed. Lord Justice Lopes concurred. Lord Justice Kay said that if an action were brought against a corporation on a contract to pay a sum of money on the giving of a certificate, and if the only question at the trial was whether a certificate had been given, and the jury returned a verdict that a certificate had been given, could the corporation turn round and say that the contract was not good because it was not under seal? It was clear that they could not, for they would have waived their objection in court, and, in his opinion, that illustrated what the defendants were trying to do in this case. They had waived the point that the promise of the committee was not binding on them during the trial, and it was too late to do so after the verdict.

Libel Action Against a Surveyor.—Davis v. Hawkins.—In the Queen's Bench Division, last week, before Mr. Justice Day and a special jury, an action was brought by Mr. F. C. Davis, builder, Bromley, Kent, against Mr. Stanley Hawkins, surveyor to the Bromley District Council, to recover damages for slander. Defendant denied that he uttered the words imputed to him. The plaintiff's case was that in January he was negotiating with Mr. Mackinnon, agent of the Equitable Life Assurance Society of the United States of America, for a loan of £6,000 to be made on the security of certain freehold building land at Bromley, and that on the 19th of that month, the defendant, with whom he had had some difference as to some buildings he had constructed, told Mr. Mackinnon and Mr. Hilt that they should be very careful of the dealings they had with plaintiff; that he would not accept plaintiff's cheque and give him a receipt for it until it was cleared; that the land in question belonged to a Mr. Cawston, plaintiff being one of a Mr. Cawston's dummies; and that plaintiff at the time was under a penality of £2 a day for defective building work. Plaintiff said there was no ground for the statements made by the defendant. After the evidence had been heard, the parties came to terms. The defendant tendered an apology, which was accepted, and the case was settled by judgment being entered for the plaintiff for £25.

House Agent's Commission.—Debenham and Others v. Chambers.—Mr. Justice Grantham, sitting without a jury, recently heard this action to recover £400 on an agreement. The defendant had on March 25, 1892, made with the plaintiffs, Messrs. Debenham, Tewson, Farmer, and Co. and Messrs. Quinton and Son, who acted jointly, an agreement which provided that the plaintiffs were to have the right to sell or let on behalf of the defendant the premises, 121 and 122, Bishopsgate-street Within. In case they found a suitable purchaser or tenant, or in case the defendant decided to build himself, the plaintiffs were to be paid a commission of £400. Another clause provided that the defendant must make up his mind within three months either to sell or to build himself, and it was on this provision that the main question turned. The defendant had not within the three months in question either sold the property or begun to build. He began, however, to build in December, 1892. The plaintiff's contention was that the defendant by his agreement was bound either to sell through them or decide to build in three months' time, and that, therefore, they were entitled to recover the £400 for their trouble, although within the time named he had done neither. For the defendant it was argued that as the plaintiffs had not procured a suitable purchaser or lessee within the three months named in the agreement, and as the defendant had not built within that time, they were not entitled to recover the commission. Mr. Justice Grantham, in giving judgment, said that he had come to the conclusion that the plaintiffs were entitled to succeed. It was said that, because the defendant did determine to build within three months he was not liable; but he was compelled by his agreement to make up his mind within three months. That was part of the contract, and the defendant knew it. Judgment for the plaintiffs, with costs.

External or Party-Wall.—At Westminster Police-court, last week, Mr. De Rutzen, after some long arguments, gave his decision on an appeal, under Section 150 of the Building Act of 1894, against a notice of objection given by Mr. E. Dru-Drury, district surveyor, as to a wall in course of erection by the builder for the Army and Navy Auxiliary Stores, in respect of an extension of their premises in Coburg-row, Westminster. The question involved was as to whether the wall could be for some part of its height a "party wall," and as to the remainder "an external" wall. On the result the right of making certain openings depended. Mr. De Rutzen decided the case in favour of the appellants, the Auxiliary Stores. Mr. Seager Berry said that probably the County Council would appeal on a case stated. The magistrate had no wish to discourage an appeal, but as that would add to the expense he would allow the appellants 20 guineas costs.

CHIPS.

Colonel Coke, C.E., held an inquiry on Friday respecting an application made by the Colwyn Bay District Council to the Local Government Board to sanction a loan for the extension of the promenade and other public improvements in the district. Evidence was given by Mr. Jones, surveyor to the authority.

The new waterworks at Launceston were formally opened on Thursday in last week. The absolute necessity of improving the water supply of the town had long been recognised; but matters were practically at a deadlock when, three years ago, Mr. John Kittow was elected mayor. He suggested the bold idea of bringing in a supply from Carne Downs, in the parish of Altarnun, a distance of ten miles. The scheme was adopted, and has been carried out under the direction of Mr. Silvanus Jenkins, engineer and surveyor, of Liskeard, and completed in the third year of Mr. Kittow's mayoralty. The cost has been £10,500.

The subscription list to the memorial of the late Professor R. S. Poole will close on December 5 next. The memorial, which will take the form of a life-size bronze medallion in high relief, has been intrusted to Mr. George Frampton, A.R.A., and will, when finished, be placed in the British Museum—probably in the Medal Room.

Mr. W. H. Dunn, architect, whose year of office as Mayor of Gateshead has just expired, has been re-elected an alderman of that borough.

A new church is about to be built at Prenton Hill, near Tranmere, and will be dedicated to St. Stephen.

The district council of Hales Owen have adopted plans prepared by Mr. W. J. Fiddian, C.E., for the internal sewerage of the Lye and Wollescote districts, which are included in the Upper Stour Valley main sewerage scheme. The estimated cost to Lye will be £4,410, whilst Wollescote will be called upon to pay £2,970.

A new organ, which has been erected in St. Michael's Church, Langley, by Messrs. Nicholson and Co., Worcester, at a total cost of £600, was dedicated by the Lord Bishop of Worcester on Friday.

Municipal life in Wakefield is agitated by a proposal to extend the Ringstone waterworks by the construction of three additional reservoirs, at an estimated cost of about £120,000. When the whole are completed the city will have a waterworks scheme of a very efficient kind at a total cost of nearly £900,000.

The award in the arbitration between Mr. Peele, the owner of the Glynn Estate, and the Penmaenmawr Local Board, respecting the claim as riparian owner for water, have been received from Mr. Croas, of Manchester, the arbitrator, who has assessed the amount of £355.

Messrs. Jas. Shoolbred and Co. are rebuilding that portion of their premises which stands at the corner of Grafton-street and Tottenham Court-road, from the designs of Messrs. Hovenden and Barber. Messrs. Holland and Hannen are the contractors, and the floors are to be fireproof, on the Mark Fawcett system.

New Board schools have recently been completed at Melton, Suffolk, at the cost of between £1,400 and £1,500. Mr. E. F. Bisshopp, of Ipswich, was the architect, and Mr. E. Adams, of Woodbridge, the builder.

At a meeting of the guardians of the Darlington Union, on the 11th inst., it was decided to erect a new block of buildings in Crown-street, comprising board-room, waiting-room, and offices for the clerk and his assistants, relieving officer, and the surveyor to the rural sanitary authority. Mr. G. Gordon Hoskins, F.R.I.B.A., was appointed architect.

WATER SUPPLY AND SANITARY MATTERS.

Hatherleigh.—This Devonshire village has just been supplied with systems of drainage and water supply up to modern ideas and requirements. The old masonry sewers and unglazed earthenware tile drains have been superseded by glazed stoneware socketed pipe-sewers, jointed with cement. All the new sewers have been laid on even gradients and straight lines, with manholes or lampholes at every change of gradient and intersection. Automatic flushing tanks have been constructed at the head of the main sewers, and these are supplied with water from the roads, surface channels, and from the waterworks. The outfall is near the bottom of the town, on land which has been under-drained with subsoil earthenware pipes. Ventilation is provided for at the manhole covers. The water supply is derived from a spring on the west side of the town, and the water is pumped up 165ft. to a covered service reservoir at the top of the town. The reservoir is built in two compartments, and will contain two days' supply for the entire population. The pumps are in triplet, and worked by an oil-engine, and are capable of raising the entire supply in eight hours. Hydrants for extinguishing fires are placed throughout the town. The works of both drainage and water supply were designed and superintended in their execution by Messrs. E. Appleton and Son, M.Inst C.E., of Torquay. The general contractor was Mr. S. G. A. Petherick, of Hatherleigh. Mr. Knowles has acted as clerk of works.

The Gorton Sewage Works.—The engineers have been Messrs. Lomax and Lomax, of Manchester, and under their direction the work has been carried out by Mr. Daniel Eadie, of Stockport. There are two detritus tanks, with a capacity of 110,000 gallons, and three large precipitating tanks, with a combined capacity of 1,079,000 gallons. The sewage, on entering the works, passes into the two detritus tanks, having first received a dose of ferozone sufficient to effect a complete precipitation of the heavier suspended matter. From these it flows into three precipitation tanks, where the lighter suspended matter is deposited. The sewage, having been clarified, is conveyed to six polarite filter-beds of a superficial area of 2,663sq.yds. The whole scheme is designed to meet the requirements of a future prospective population, and it possesses a convenience, said to be unique, in that the tanks and filter-beds are able to deal not only with the sewage, but also with a ½in. of rainfall over the entire area built upon. It is intended in future to deal with the sludge deposited in tanks by means of filter presses; but this is not yet included in the scheme. The outfall works have cost £17,000, and the concentrating sewers have involved an expenditure of £8,000 more. Other important sewers are about to be carried out, and when completed the whole of the sewage from the township will be conveyed to the outfall purification works, and the pollution of the rivers, so far as Gorton is concerned, will be at an end.

There is now being carried out a series of operations for the restoration of the upper portions of the tower and lantern of the Cathedral Church of St. Nicholas, Newcastle-on-Tyne, at the cost of the city corporation. The architect, Mr. Leeson, has estimated the cost of the work at £1,765, and there has just been introduced into the tower a new clock, which, with new dials, will cost about £680, manufactured by Messrs. Potts and Son, of Leeds.

A new parish room and clergy vestry, which have been added to St. Michael's Church, Upper Orwell-street, Ipswich, were opened on Monday by the Bishop of Thetford. The buildings join up to the present church at the south-east end, and consist of a parish room 39ft. square, with scullery attached, and entrances with vestibules from Bond-street and Upper Orwell-street, and a clergy vestry with door from same into chancel. The style is a simple form of Queen Anne, and the cost has been about £1,200. Mr. E. F. Bisshopp, of Ipswich, was the architect, and Mr. William Grayston, of the same town, the builder.

A new board school at Saxmundham, East Suffolk, was opened on Tuesday week. It forms three sides of a quadrangle, and consists of three rooms, comprising a large hall, an infant school, and a classroom, 60ft., 40ft., and 30ft. respectively in length, with a uniform width of 22ft. The quadrangle itself constitutes a sheltered playground, the open side of which faces south. On the west and east are the entrances, with cloakrooms and lavatories attached. The building is carried out with red facing bricks, with semi-circular window-heads of red bricks, the gable windows being relieved with Bath stone keys. The roofs throughout are covered with Broseley tiles. The corridors and cloakrooms are paved with red Staffordshire tiles. The plaster of internal wall is protected by a wood dado 4ft. high. The architect is Mr. T. E. Key, of 5, Bloomsbury-square and Aldeburgh, and the contractor Mr. W. Ingram Smith, of Woodbridge.

STAINED GLASS.

Gray's Inn Chapel.—A window to commemorate the connection of Thomas à Beckett with Gray's Inn was unveiled in the Inn's chapel recently. It appears that, by an Order of Pension, May 16, in the 31st year of Henry VIII., "consideration being had of the King's command that all the images of Thomas à Becket, sometime Archbishop of Canterbury, in any windows, either of churches or chappells, should be obliterated," it was ordered that Edward Hall, then one of the Readers of this House, should take out a certain window in the chapel wherein the picture of the said Archbishop was painted, and place another instead thereof in memory of our Lord praying in the wilderness. The Becket Window occupies the lancet north of the sanctuary, and replaces this one of the Saviour in prayer. The design, which was exhibited in the Royal Academy in 1894, is from the studio of Mr. G. W. Ostrehan, of Campden-hill, W., and depicts St. Thomas as Primate, Legate, and Chancellor. Above the figure are the towers and exterior outlines in darker hues of Canterbury Cathedral, and below is the scene of his martyrdom, with figures of praying monks. The window contains the arms of the donor, Mr. H. C. Richards, M.P.

Oxford.—The chapel of Manchester College has just been enriched by the completion of a stained-glass window at the west end. There are two rows of figures, the upper one representing Jesus Christ in the centre, and upon His right Joseph and Mary, and on his left Mary Magdalene and St. Peter, the lower row of figures representing the Four Evangelists and St. Paul. Below the figure of Christ and above that of St. Paul are the words "Know ye not that ye are the temple of God" (1 Cor. iii. 16). The figures are richly coloured, and stand out upon a light diapered groundwork. The window has been executed by Mr. William Morris, the figures having been drawn by Sir Edward Burne-Jones. Mr. Morris has also in hand the stained glass for the series of three windows on the north side of the chapel, and four of the windows on the south side. Those on the north side (the subject of which are Sir Edward Burne-Jones's cartoons representing the Six Days of Creation) will be fixed in the course of the coming winter. Those on the south side will not be ready till some time later.

Mr. S. E. Halliday, the contractor for the new church which is being erected at Stretton, entertained about 80 workmen and tradespeople at dinner. Mr. Halliday presided, and was supported by the vicar. The work of erecting the church is proceeding satisfactorily.

The Manchester Corporation have purchased three pictures from their current autumn exhibition—viz., "Summer Eve," David Farquharson; "The Drinking Pool," Arnesby Brown; and "When the Tide is Out," James Aumonier, R.I. The total amount to be paid for these works is £500, and the committee have still about £3,000 in hand.

The Great Western Railway directors at their meeting last week approved a plan and voted the necessary expenditure for remodelling and enlarging the passenger and goods station at Millbay, Plymouth, and for improving the access to the docks. The carrying out of the works will involve an expenditure of over £70,000, and the engineer has received instructions to get out the necessary detail drawings and specifications with the view to the letting of the contracts for the works.

At Thirsk, on Saturday, an illuminated clock, erected on the former site of the Market Cross, in commemoration of the marriage of the Duke of York and the Princess May, was unveiled. The clock has been built by public subscription at a cost of £250. The tower is in the Gothic style, and is built of sandstone from Rainton and Thimbleby quarries, relieved with columns of red sandstone from Rainton. The base consists of two red concrete steps, and a stone seat going round the tower. There are also drinking fountains. There are four dials to the clock, each 3ft. in diameter, surmounted by gables with finials, and the whole terminated by a central pinnacle, the highest point being 37ft. from the ground. The clock has been made and fixed by Mr. R. Richardson, of Middlesbrough.

Mr. T. F. Dicksee, father of Mr. Frank Dicksee, R.A., and of Miss Margaret I. Dicksee, and himself an artist of some repute, died at his residence, 2, Fitzroy-square, last week, at the age of 75. Mr. Dicksee was an exhibitor at the Academy for many years, while his brother, Mr. John Dicksee, was also well known in the profession, and there are other members of the family also exhibitors. Shakespeare's heroines were among his favourite subjects, and many of these, "Ophelia," "Beatrice," &c., were painted by him. "Olivia and Viola in the Garden" attracted much attention in the Academy Exhibition of 1892, and was reproduced. His only contribution to the walls of the Academy this year was a portrait of Mrs. Sidney Dicksee.

STATUES, MEMORIALS, &c.

Irvine, N.B.—This burgh is shortly to have a bronze statue of Burns, which will be set up on a prominent site. The commission for the statue was intrusted to Mr. Pittendrigh Macgillivray, A.R.S.A., who has at his studio, Ravelston Elms, Murrayfield, Edinburgh, just finished the figure in clay. The figure, colossal in size, is represented standing firmly on the left foot. The right foot is drawn up, and rests on a higher plane. The attire is a costume of the period—cut-away coat with broad collar, vest with open front, and necktie, knee-breeches, hose, and shoes. A plaid is thrown over the right shoulder. On the pedestal there are to be bronze panels with scenes from the poet's works.

CHIPS.

A Local Government Board inquiry was opened on Tuesday into the application of the Bolton Corporation to borrow £75,000 for the purposes of their new sewerage scheme. The scheme is opposed by the Little Lever District Council, the Lancashire and Yorkshire Railway Company, and by others. The inquiry was adjourned.

At the Estate Auction Mart, Tokenhouse-yard, business was dull in tone last week, and a large proportion of the properties offered failed to secure a purchaser. The aggregate of sales was only £46,099.

In an action heard in the Brompton County Court on Friday, "Shaddick v. Kirk and Randall," under the Employers' Liability Act, the plaintiff claimed £250 damages for injuries sustained by him on May 28 last. Whilst in the defendants' employment at Whiteley's Stores, West Kensington, timbering a trench, some concrete gave way and fell on the plaintiff, severely injuring him. The defence was that there were flaws in the concrete which could not be seen. His Honour found for the plaintiff with £200 damages.

At Bishop's Wood Church, Staffs, two stained-glass windows, executed by Mr. W. G. Taylor, of Berners-street, W., in the west end, have been dedicated. The subjects are full-length figures of St. John and St. James.

Good progress continues to be made in the preparation of the Geological Survey Map of England and Wales, on the scale of four miles to an inch. Of the thirteen sheets of which this map consists, four have been published, while the eleventh, comprising the tract of country between Reading and the mouth of the Bristol Channel, will shortly be issued.

A Local Government inquiry was held at Bolton Town Hall on Friday respecting the application of the corporation for sanction to borrow £75,000 for sewage purposes. In 1894 the corporation was summoned by the Mersey and Irwell Joint Committee for rivers pollution, and a magistrates' order for the execution of suitable works within twelve months was made, and the corporation had to provide for a population of 140,000, including some out-districts. The corporation have purchased Rhodes Farm, containing 145 acres, and situate near Clifton Junction. Mr. H. L. Hinnell, civil engineer, said the new works were calculated to meet all requirements for 30 years.

The new institute at Trentham, provided by the Duke of Sutherland, was opened last week. The style of the buildings is Early English, and they are of one story throughout. The block comprises a lecture-hall, accommodating about 350 persons, a billiard-room, a room for the use of the mothers, a library, and a refreshment-room. The upper part of the walls is of cement, below which is a deep dado of varnished pitch-pine. The buildings are from plans of Mr. Roberts, the duke's architect, the building contracts having been carried out by Mr. P. H. Bennion, of Longton.

A niche in the south porch of the parish church of Crewkerne, which has long been empty, has just been filled with a statue of St. Bartholomew, the patron saint of the church. The statue is in Ham Hill stone, and is slightly under life size (measuring 5ft. high exactly). It shows a short-bearded, bareheaded, middle-aged man, with a cloak thrown over his under garments. In his right hand he holds a copy of St. Matthew's Gospel, and in the other a large butcher's knife, emblematic of his martyrdom. Messrs. Harry Hems and Sons, of Exeter, were the sculptors.

The Cliffe Wesleyan Chapel at York was reopened on Friday, after restoration and renovation, carried out by Messrs. Swain and Son, of Selby.

The great hall block of the Church House, now in course of erection from the designs of Sir Arthur W. Blomfield, A.R.A., will be completed by the end of this year, and the Upper and Lower Houses of the Convocation of the Province of Canterbury will hold their next group of sessions in the temporary rooms on the ground floor of the building, which have been fitted for their use. The Duke of York has consented to open the great hall on some day towards the end of January.

Our Office Table.

The Trades Technical Schools, carried on by the Worshipful Company of Carpenters and other City Guilds connected with the Building Industries, at 155, Great Titchfield-street, Oxford-street (the premises for many years occupied by the West London School of Art), were thrown open for public inspection last (Thursday) evening. A large number of architects, builders, and others interested in the work of the schools, were present, including Mr. F. C. Penrose, F.R.S., P.R.I.B.A., who gave a short address. All the classes were at work from 7.30 till 9.30 p.m., and great satisfaction was expressed at the practical character of the training given.

The Selection Committee of the Lancashire Standing Joint Committee received between 80 and 90 applications from practitioners in all parts of the kingdom in response to their advertisement for an architect for police buildings in the county under their administration. Eight gentlemen were selected from this list on account of their experience in this class of work, and were afforded personal interviews at Preston County Offices last week, when the following three were successful in receiving recommendations to the General Committee, and from which the final selection will be made:—Mr. Littler, of Manchester, whose firm, chiefly in his late father's, Mr. Henry Littler's, lifetime, carried out work for the county to the value of nearly half a million sterling; Mr. Denison, of Wakefield, who, in the county surveyor's office for the West Riding of Yorkshire, has gained long and thorough experience; and Mr. E. Howard Dawson, A.R.I.B.A., F.S.I., Assoc.San.Inst., of Lancaster, who was articled with the present county architect for Cumberland, and has carried out a good deal of work both for the Asylums Board and for the County Police Committee in the neighbourhood.

At a recent meeting of the Statutory Board of Examiners, Mr. Fowler, the well-known surveyor to the Portland Estate and district surveyor for Shoreditch, announced his resignation of the office of chairman, which he had held since 1884, his membership of the board dating from 1869. Professor T. Roger Smith was consequently requested to act as chairman, and Mr. Lacy W. Ridge as deputy-chairman during the remainder of the official year.

Attention has been called to a vaulted cell, some 13ft. square, which, after being used as a coal-cellar for many years, has been "discovered" in the basement of a house in Britton's-court, Whitefriars-street. The stone roof, which is in good condition, is formed with eight ribs meeting in a boss or rose in the centre. The work is of the 14th century, and presumably the vault was part of the Carmelite establishment, a trace of which remains in the name Whitefriars still given to the district where it stood. In the south-east corner there is a low archway, from which a curved passage, at present blocked by a brick wall, appears to lead. In the earth which covered the floor to a depth of 2ft. or 3ft., a good many things have been found, such as bones, buttons, bits of china, coins, and tobacco-pipes.

A 100-ton Buckton vertical testing machine, provided at a cost of £1,200, was formally added to the engineering department at the Bradford Technical College on Monday night, in the presence of Professor Kennedy, LL.D., F.R.S., president of the Institution of Mechanical Engineers, and a good company of local engineers, architects, and surveyors. The first part of the ceremony consisted of breaking a piece of Low Moor iron $3\frac{1}{2}$in. by $\frac{3}{4}$in., which was done by the machine at 64 tons. Professor Kennedy, in a subsequent address, informed the members and visitors that, despite statements made to the contrary, technical education in this country in 1895 was not behindhand; during the past few years it had made rapid advancement, and was now in a condition of which they need not be ashamed. Abroad, the education given was excellent, strongly organised, and consequently much more uniform and systematic than in this country. At home there was not such uniformity as abroad; but he was of opinion that we got better results out of our men. This country certainly was in the front with practical laboratory training for engineers and mechanical men generally. He congratulated the Bradford Technical College on the laboratory it possessed, and on its latest addition in the form of the testing machine. In engineering, every man should be able to measure for himself. If they put a piece of steel into the machine and drew it to the limit of its elasticity, say 15 tons, and then put it away for two or three years, they would find its elasticity had increased to 17 tons or so.

At Friday's meeting of the county council of Cumberland, it was decided, after a discussion and division, to consider the expediency of taking measures to improve the present bridle-path from Borrowdale to Wasdale Head by Styhead Pass, in order to make a road suitable for cart and carriage traffic, and that the matter be referred to the highways committee to report thereon. The chairman of the highways committee explained that the distance between Seathwaite and Wasdale Head was 3½ miles as the crow flies; but at present the only available road for conveyances from the one point to the other traversed a distance of 55 miles. The county surveyor had suggested a road, which, following the hill sides, would enable the journey to be accomplished by driving a distance of about seven miles. The gradients of the road would range from 1 in 12 to 1 in 20. All the parochial and district councils interested on both sides of the Pass, except Borrowdale, had sent in memorials in favour of the construction of the road.

In a recent communication to the American Society of Civil Engineers, Mr. E. Gerber gives the results of a careful investigation into the present state of a number of bridges which had been painted with one of several classes of paint. In all cases rust was found to a greater or less extent, occurring always in spots in the centre of clean metal. Most of this, however, was thin, and was as bad in new structures as in old. It was, however, found that the iron oxide paints adhere more firmly to the metal than the lead paints, only one case being found in which the latter adhered well and was tough. It is, however, suggested that much of this brittleness was due to the adulteration of the oil by turpentine, benzine, or other petroleum products. There is more likelihood of such adulteration with lead paints than with iron, as they are more difficult to spread, and there is thus more temptation to dilute the oil. In some cases bridges coated with iron oxide 11 or 12 years ago were still in good condition, without having been repainted. Only two of the bridges examined had been painted with carbon or asphaltum paints; but the condition of things in these two cases was found to be not altogeter satisfactory, as in neither case was the coating tough and adherent. The metal had, however, been protected by them. Mr. Gerber thinks that the best method of securing clean surfaces is to coat the metal with linseed oil as it leaves the rolls.

The Frascati Restaurant in Oxford-street, which since it came under the management of the present proprietor, has always been a favourite resort, has recently been entirely redecorated and thoroughly renovated. The original plastic decorations were elaborate, and afforded but little scope for embellishment beyond an accentuation of colour effect, the general scheme of which is ivory-white, cream, and cinnamon, the tints developing in their descent down to a strong reddish brown. Where gold has been used it has been applied *en bloc* instead of the usual "gilding" method. The redecoration of the dome is a triumph in its way, and by a new and ingenious process all the ornamental work in relief has been enamelled so as to facilitate cleaning. The opportunity has also been taken to improve the ventilation of the building. The whole of the work has been carried out by the well-known firm of Messrs. Campbell, Smith, and Co., Newman-street, who have in hand at present, among other works, the decoration of the extension of the Tivoli, Strand.

Electric street railways or tramways have been greatly developed at Boston in the States. Within a radius of 10 miles from the Massachusetts State House are "26 beautiful residential cities," practically the suburbs of Boston, and these developments are said to be due to the transit facilities. Of the construction of these lines the *Building and Engineering Journal* gives some details. "On the short radius curves, grooved rails are used on both inside and outside rails, while if the radius is 150ft. the inside rails only are grooved, and if the radius is 350ft. guard rails are dispensed with. Both underground and overhead systems are employed; for overhead lines the poles are placed about 125ft. apart, and consist of metal tubing or yellow pine, square in section and set in concrete to a depth of 6ft. 6in. The trolley wire is 18ft. above the track, and is of hard drawn copper, and the guard wire of galvanised iron." The West End Company has four power stations, 26 engines, and 80 dynamos, and has 1,704 electric cars and 23 car-houses. A subway is proposed by the city for the purpose of removing the tracks and cars from the street. This subway is to have four tracks, 14ft. from top of rail to roof, and the total width 48ft., divided in the centre by steel columns supporting the roof.

The Tarrant Building, New York City, which had to be constructed to resist large and irregular loads, has been constructed, according to the description given by the architect, Mr. H. R. Marshall, so that the walls are entirely independent of the floors, which latter are carried on a system of cast-iron posts and pine girders. To avoid imperfections in the columns due to irregular contraction round the brackets holding the girders, the architect has used a system of annular corbel brackets of large size, which slide over the columns after the latter are fixed. The brackets rest on annular lugs cast on the columns, and are made of unusual strength and size, thus reducing the bearing of the girders, which are of hard pine. The wall columns are anchored to the walls by bar anchors, which play in slotted lugs cast on the columns. Other details of the building show that the architect has met the requirements of the case, and since its construction it has shown no settlement, although great variations of weight and temperature have been experienced.

CHIPS.

At the South-Western Police-court on Wednesday, Mr. James Rose, of Summer's Town, Wandsworth, was summoned by the Wandsworth District Board for failing to supply water to occupied houses. It was stated that the non-supply had lasted for thirteen weeks, and that the Southwark and Vauxhall Water Company had dug a deep well which drained the one which had supplied the houses. The magistrate observed that the defendant was not in fault, and that there was no remedy against the company, and the summonses were withdrawn.

At the invitation of Mr. Newbery and the committee of the Glasgow School of Art, a *conversazione*, attended by a large number of students and friends, took place in the Fine Art Institute Galleries, Sauchiehall-street, on Friday evening. A programme of musical selections was gone through during the two hours' proceedings.

The Duke of Norfolk has just given to Arundel a post office, which he has erected at a cost of £7,000. The interior is entirely fitted with fine British oak from the ducal estate, the public portion of the building being tastefully lined with glazed tiles.

At the monthly meeting of the Yeadon Urban Council, out of fifty-five applicants, Mr. Clifton Lund, of Walton-on-Hill, near Liverpool, was appointed surveyor and nuisance inspector, in place of the late Mr. Isaac Wood, at a salary of £90 per annum.

St. Peter's College, Peterborough, is being enlarged by an addition at the rear, at a cost of £1,200. The work is being carried out in red Leicestershire brick to match the present, and the contractor is Mr. Bridgefoot. The extension will provide on the first floor a common room 32ft. by 19ft., with a smaller one 20ft. by 19ft., and on the second floor there will be a lecture room 32ft. long, and chemical laboratory 20ft. long.

At Corsham, on Friday, Lord Edmund Fitzmaurice opened the first board school which has been erected in that parish. The building is near the main road leading from the railway station to the town. It is built of local hardstone, with Bath stone dressings. Wood block floors are provided, while the walls throughout have glazed brick dados. It was built according to the plans of Mr. Harold Brakspear; the contract was taken at £3,075.

The Brighton Town Council has resolved to purchase the undertaking of the Shoreham and District Waterworks Company for £56,700, and, to carry this out, to promote a Bill in Parliament.

The Museum of Comparative Sculpture at the Trocadéro has just obtained an important addition in the shape of a cast of the group representing the "Descent from the Cross," the masterpiece of Ligier Richier, in the Abbey Church of St. Michel. The library of the museum has lately received a series, 10,000 in number, of photographs from foreign monuments of art, obtained in exchange, and supplementing the collection of such records which was begun by Viollet-le-Duc.

MEETINGS FOR THE ENSUING WEEK.

Monday.—Royal Institution of British Architects. "The Sculptured Columns of the Temple of Diana at Ephesus," by Alexander S. Murray. 8 p.m.

Tuesday.—Society of Architects. Address by the President, E. J. Hamilton. 8 p.m.

Institution of Civil Engineers. "The City and South London Railway," by J. H. Greathead. 8 p m.

Glasgow Architectural Association. Lecture by Percy Fitzgerald, M.A., F.S.A., of London.

Wednesday.—Carpenters' Hall Lecture. "Sanitary Appliances," by Professor A. Wynter Blyth. 8 p.m.

Society of Arts. Opening Address, by Major-General Sir John Donnelly, K.C.B., Chairman of the Council. 8 p.m.

Northern Architectural Association. "Mediæval Mouldings: Features and Ornament," by C. S. Errington, A.R.I.B.A. 7.30 p.m.

Friday.—Architectural Association. "The Municipal Control of Buildings," by Dr. G. B. Longstaff, L.C.C. 7.30 p.m.

The Society of Architects.

Founded 1884. Incorporated 1893.

The FIRST ORDINARY MEETING of the Society of Architects for the Session 1895-96 will be held at the Rooms of the Society, at St. James' Hall, Piccadilly, W., on TUESDAY, November 19th, at Eight o'clock p.m., when the PRESIDENTIAL ADDRESS will be delivered by Mr. EDWIN J. HAMILTON.

ELLIS MARSLAND, Hon. Sec.

A new church vestry, oak choir-stalls, and marble and tile pavements and marble steps, have just been completed at St. Matthew's parish church, Ipswich. The cost has been between £600 and £700. Mr. E. F. Bisshopp was the architect, Mr. F. Bennett the builder, and the carvers Messrs. John Groom and Son, all of Ipswich.

New Roman Catholic schools have just been completed at Silvertown, E., from designs by Mr. J. H. Eastwood, of Gilston-road, S.W.

The urban district council of Tonbridge have referred back to a committee the proposal to offer 40, 20, and 10 guineas respectively for proposed free library buildings, intended to be built in High-street and Lyons-crescent, at an estimated cost of £4,500.

The foundation-stone of the new church at Carlton Miniott, near Thirsk, was laid on Saturday by the Dean of York. It is to occupy the site of the ancient parish church, which for many years has been in a state of decay. The architect is Mr. C. Hodgson Fowler, F.S.A., of Durham, and the contractor Mr. Harwood, of Marfield. The cost of rebuilding and furnishing is estimated at £1,200.

The dedication service took place on Friday of the new hall, which forms part of the scheme for providing a Presbyterian church in the rapidly-extending village of Whitley. The portion now dedicated has been erected by Mr. Thomas Robson, of Tynemouth, from the designs and under the supervision of Mr. Henry Gibson, of North Shields.

The Great Western Railway Company have just commenced improvements at the railway station at Devizes, including the erection of a new signal-cabin to work the up and down lines, in place of two existing small ones; and three new sidings for goods traffic, to accommodate 50 additional trucks. The work will cost £4,000, and between 80 and 90 men are employed.

It is proposed to drive a tunnel from the Delabole quarries to the sea-cliff, in order to get rid of the "addle" by the easy method of dumping it into the sea. The quarries are 300ft. deep, and the tunnel will be about a mile and a half in length; but it is believed that there will be sufficient slate obtained in making the tunnel to cover the cost, about £30,000, most of which would be expended in labour. The refuse is at present brought to the surface—rather an expensive process, and one that does not conduce to economical working.

A new board school in Princess-road, Moss Side, Manchester, was formally opened on Friday by the Marquis of Lorne, M.P. The school building has been designed on the central hall principle, the school hall being in the middle and the entrances and offices at the sides. The building is of three stories. On the ground floors are six infants' class-rooms. The central hall is on the first floor, and at each end of the hall there is a range of four class-rooms. The second floor is the playground for boys. On this floor are chemical laboratory and a lecture-room, with gallery. A room for instruction in manual work and a cookery room have also been provided. In all, places are provided for 1,226 children. The left wing of the building includes offices for the board on the ground floor, and in the right wing is a caretaker's house. The cost of the whole school and the board offices and caretaker's house has been about £14,000.

LAVERS and WESTLAKE.
PAINTED GLASS WINDOWS.
MONUMENTAL BRASSES.
MURAL DECORATION.
ENDELL STREET, BLOOMSBURY, LONDON, W.C.

FAMBRINI & DANIELS,
MANUFACTURERS OF IMPERISHABLE CONCRETE MASONRY FOR
CORNICES, STRING-COURSES, MODELLED PANELS, AND EVERY STONE-WORK REQUISITE.
LANDINGS and Plain or Moulded and Mitred STEPS, durable throughout.
WORKS AND OFFICES: LINCOLN.

DOULTING STONE.
CHARLES TRASK & SONS.
(THE DOULTING STONE COMPANY),
DOULTING, SHEPTON MALLET.
LONDON AGENT:
E. A. WILLIAMS, 16, CRAVEN STREET, STRAND, W.C.

HAM HILL STONE.
The attention of Architects is specially invited to the Durability and beautiful COLOUR of this material.
Quarries Well Opened; Quick Despatch Guaranteed; Stonework Delivered and Fixed Complete. Samples and Estimates Free.
Address:—
THE HAM HILL STONE COMPANY,
NORTON, STOKE-UNDER-HAM, SOMERSET.
London Agent:—
Mr. E. A. WILLIAMS, 16, Craven-street, Strand, W.C.

JOHN GRUNDY,
HEATING APPARATUS MANUFACTURER.
ESTIMATES FREE. SUCCESS GUARANTEED.
Foundry: TYLDESLEY, MANCHESTER.
Showrooms and Workrooms:
TYLDESLEY BUILDINGS, TORRENS STREET, ISLINGTON, N.
West End Showrooms: 57, WIGMORE STREET, LONDON, W.
CHIEF OFFICE:
30, Duncan Terrace, City Road, London, N.

WM. OLIVER & SONS,
MAHOGANY, WAINSCOT, WALNUT, TEAK, VENEER, and FANCYWOOD MERCHANTS,
120, BUNHILL ROW, LONDON, E.C
The most extensive Stock of every kind of Wood in Planks and Boards, dry and fit for immediate use.

TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender; it adds to the value of the information.

ASHFORD, EAST KENT.—For furnishing the new board schools:—

	£	s.	d.
Bennett Furnishing Co. (accepted)	£139	0	0

BECKENHAM.—For building a new kitchen and for drainage works at the George Inn, Beckenham, Kent. Mr. Robert M. Chart, F.S.I., Union Bank Chambers, Croydon, architect and surveyor:—

	Contract No. 1.	Contract No. 2.	Total.
Waller, D., Jun., Croydon	£195 0 0	£79 10 0	£274 10 0
Goulder, E., Croydon	182 0 0	69 0 0	251 0 0
Howard, T. G., Mitcham	149 15 0	75 5 0	225 0 0

EASTLEIGH, HANTS.—For the erection of a new Baptist church. Messrs. Lawson and Donkin, Yelverton Chambers, Bournemouth, architects and surveyors. Quantities by the architects:—

	Chapel.	School.	Total.
Pearcy, W., Poole	£889 19 0	£230 0 0	£1,120 8 0
Treherne, Eastleigh	863 6 11	239 1 11	1,102 8 10
Chinchen, W. J., Bournemouth	895 0 0	195 0 0	1,090 0 0
Burt and Vick, Poole	861 0 0	199 10 0	1,060 10 0
Elcock, F., Pokesdown	825 0 0	322 0 0	1,047 0 0
Wickham, Eastleigh	822 0 0	215 0 0	1,037 0 0
Hunt, C., Winton	791 18 10	189 12 2	981 11 0
Rowland, Southampton (accepted)	711 0 0	185 0 0	896 0 0

BURSLEM.—For lighting the public baths by electricity, for the town council:—

	£	s.	d.
Crompton and Co. (accepted)	£215	0	0

CARSHALTON.—For the erection of a billiard-room at Hill House, Carshalton, Surrey, for Captain Thomas Goodson, J.P. Mr. Robert M. Chart, F.S.I., Union Bank Chambers, Croydon, and Mitcham, Surrey, architect:—

	£	s.	d.
Stewart, D., Wallington	£485	0	0
Waller, D., Jun., Croydon	450	0	0
Burges, J., Wimbledon	370	0	0
Burnaud, E. J., Wallington*	353	0	0

* Accepted.

GOSPORT.—For the erection of a villa at Alverstoke, Gosport, for Mr. W. E. Churcher. Mr. Harry A. F. Smith, M.S.A., Star Chambers, High-street, Gosport, architect:—

	£	s.	d.
Light, W. R., and Son	£2,940	0	0
Hill, W., and Co.	2,931	0	0
Croad, J.	2,927	0	0
Dash, C. M.	2,901	0	0
Ward, W., and Son	2,789	0	0
Lear, C. J., and Son (accepted)	2,787	15	0

HAMPSTEAD MARSHALL, BERKS.—For taking down and rebuilding the schools, for the Trustees. Mr. James H. Money, The Broadway, Newbury, architect:—

	£	s.	d.
James, E. C., Newbury	£429	0	0
Elmo, G., Benham	330	0	0
Brown, G., Devizes	328	0	0
Pope and Co., East Woodhay*	313	0	0

* Accepted.

HASSOCKS.—For the erection of a detached villa, Stanford-avenue, Hassocks, for Mr. W. G. Robinson. Mr. Clayton Botham, 42, Ship-street, Brighton, architect and surveyor:—

	£	s.	d.
Saunders and Sons, Brighton	£2,066	0	0
Oram, Burgess Hill	1,987	0	0
Norman and Burt, Burgess Hill	1,942	0	0
Taylor and Kensett, London	1,820	16	6
Box and Turner, Ardingly	1,775	0	0
Downer, Burgess Hill	1,450	0	0
Hollands, Hurstpierpoint*	1,429	0	0

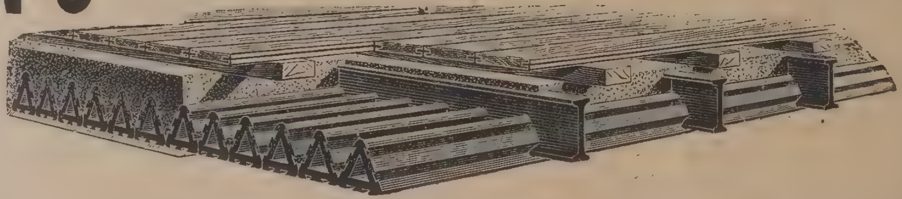
* Accepted.

IPSWICH.—For alterations to the lavatory of the Grand Jury room at the Shire Hall, St. Helen's, Ipswich, for the Suffolk County Council. Mr. Miller, county surveyor:—

	£	s.	d.
Parkington and Son	£72	10	0
Stearn, A., and Son	67	12	6
Crisp and Smith	64	18	6
Kenny, G. A.	64	14	0
Bird, B., Jun. (accepted)	64	10	0

All of Ipswich.

HOMAN'S FIREPROOF FLOORS



USED IN NEARLY 2,000 BUILDINGS.
ROOFS, PIERS, BRIDGES, JOISTS, AND GIRDERS.
CONSTRUCTIONAL STEEL AND IRONWORK.
GRANITIC STEPS AND PAVING, ASPHALTE, &c.
HOMAN & RODGERS, ENGINEERS,
LONDON { OFFICES: 17, GRACECHURCH STREET, E.C. WORKS: RATCLIFF, E.
Telegraphic Address, "HOMAN RODGERS, LONDON." Telephone No. 1026.
MANCHESTER { OFFICES: 10, MARSDEN STREET. WORKS: WEST GORTON.
Telegraphic Address: "NAMOH, MANCHESTER." Telephone No. 637.
FIRECLAY BRICK WORKS:—PARKSTONE, DORSET.

ZINC ROOFING.
COPPER ROOFING.
SOLE INVENTORS and PATENTEES of SOLID STOPPED ENDS, &c.
NO EXTERNAL FASTENINGS. NO SOLDER.
F. BRABY & CO., L^D.
352 to 364, EUSTON ROAD, LONDON, N.W.

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXIX.—No. 2133.
FRIDAY, NOVEMBER 22, 1895.

THE END OF IRON ARCHITECTURE.

IRON, in one or other of its forms, was never used so much in building as it is to-day, and yet was never treated with so little regard to its architectural capabilities. To a large extent this is its own fault. In other words, it results from inherent vices in the material, which, in the present state of our knowledge, have to be dealt with in ways which keep it pretty much out of sight. Five-and-twenty years ago sanguine young architects were thinking of devising an "iron style." Metal had been admitted into building, but, save on the smallest scale, not into art, and how to transform it and make it a worthy rival of wood and stone seemed the pressing problem of the future. Nobody gives his mind to the subject now. Iron construction is more and more in vogue; but iron architecture, till science shows us how to modify the nature of iron, is given up as hopeless.

And yet a real advance was made in that bygone period. Something was actually effected here and there towards natural and graceful design, even in cast metal. The ironfounder, and the class of architects—if so they could be called—who chiefly employed him, began by copying masonry details. Their idea of an iron capital, for instance, was an attenuated Corinthian or Composite one, in which a lot of detached leaves were screwed to or stuck against a shapeless "bell." It is said that even now, in the dark places of the earth, such abominations are set up by the "building negotiant" or surveyor-of-all-work. But in the last generation even men of taste and culture found it difficult to get anything better. They began, however, by dropping the deciduous foliage, which, to tell the truth, had a tendency of its own to drop when it was least expected. They resolved that their capitals and similar details should at least be real and lasting, and this was the first advance. Then it became clearer and clearer to them that the whole set of forms which had been transferred from stone to iron were very unsuitable to the latter. As regards undercut mouldings, this had always been obvious. The founder was ready enough to say how much trouble they gave him; how they made him divide his mould into many pieces, as the only way of drawing out the pattern; and how he would infinitely rather cast them separately, like his acanthus leaves, and pin them on. Where this was not agreed to, he tried, naturally enough, to reduce the hollows, and so to shape them that the pattern would "draw out." But mouldings, whether Classic or Gothic, with their deepest shadows thus done away with, are no longer worth retaining. Moreover, their finer lines and edges were a failure, and in the end the thoughtful designer of cast work gave them up, and originated types suited to the stuff he was dealing with. No sharp lines, no deep sinkings, no great inequalities in thickness, to produce flaws in cooling; these were the conditions he had to fulfil. And in proportion as he fulfilled them, he found himself coming nearer and nearer to the work of the old Sussex and Hampshire founders of two or three centuries ago, who lived when arts and crafts had not quite ceased to be, and who shaped their detail to suit their hands as well as their heads.

An architect of genius—who died, it is true, while his genius was unripe, but whose failures were more suggestive than many men's successes—did something in iron architecture which is still interesting. Mr. Woodward's experiments at the Oxford University Museum were mainly in the right direction, severely as they were criticised by his contemporaries who never ventured off the beaten track. "Whatever brought you here, Mr. H.?" said a patronising visitor to an eminent writer who had been placed for a few weeks in a private asylum. "What will never bring you here, sir," said the supposed lunatic; "too much brain." It was just this that made Woodward to differ from his critics. They would never have had imagination enough, or force enough, to go wrong where he went wrong, much less to invent what he invented that was good and right. On the whole, these terms may fairly be applied to his ironwork. It was only a first attempt at true modes of working. It was a mere hint of what he might have done in that line with years and experience, but it was better than what any architect had done before him. It shows that he realised the nature of cast iron, and was learning to model it almost as a sculptor models clay. He had buried his masonry formulas; he made his capitals no longer round on plan, or square or octagonal; his very curves were not circular; he threw out a plate here and a flange there, just where construction required it; and he bounded and joined them all by the smooth, flowing lines which make casting simple and easy. Perhaps he was less successful in applying wrought-iron decoration to his cast work. He did not quite blend the two things into one whole. But the applied leaves were avowedly applied. They were no sham, like the founder's cast acanthus leaves; and even if they were quite removed, they would leave a groundwork behind which was beautiful and characteristic.

When things got as far as this, how was it that they got no farther? It was not that no other architects saw the suggestiveness of Woodward's work. It was not even that they had all abjured modernism, and were resolved simply to repeat what had been repeated a thousand times in bygone ages. This, perhaps, had something to do with it; but it was not the full explanation. The real reason was, that about this time cast iron was "found out." Cast-iron girders—which had long been in fashion amongst builders for carrying great masses of brickwork over shop-fronts and similar openings—cracked in many cases without visible cause, and fell. "A flaw in the casting" was the explanation at the inquests, and this made people look about for some material whose flaws did not fail quite so suddenly. Then cast-iron columns, too, which had been vaunted as fireproof by persons who thought that whatever would not burn was indisputably proof against fire, were found to collapse with very little heat indeed. The destruction of the Surrey Music Hall was an object-lesson to Londoners about the effect of fire on cast iron, and dozens of similar cases carried the same teaching to other parts of the kingdom. By degrees it was realised that cast iron is not safe anywhere against cross strain, and that though at common temperatures it is strong enough against vertical pressure, it will hardly bear its own weight when red-hot. For girders, this was the end of it. Rolled-iron joists came in; and came, as many of us thought, to stay. Steel may be now superseding them; but it is not quite certain yet that steel is as safe as it is strong. In the matter of rails, the St. Neot's railway accident suggests that it is not. But, in any case, cast iron has taken a long farewell of us as regards girders. In columns its virtues keep it in use; but its weakness when exposed to fire puts it, or ought to put it, out of sight. In buildings it is only safe when thoroughly embedded in concrete or something similar. There is no more question, therefore, of architecturally treating its shafts or its capitals or its bases. The only concern now is to make them strong enough, and to shape them so that they can be effectually covered up. That is the end of attempts at developing an iron architecture.

On a smaller scale, of course, iron is largely used, and is seen as iron. And even on the very largest scale there are cases—as, for instance, in bridges—where protection from fire is unnecessary. So much, then, is left, out of what looked, a generation back, like a practically unlimited field for design. But here another weakness of iron comes out, and a weakness which affects wrought metal even more than cast. This is its tendency to rust. It acts in two ways, at least. It makes the life of iron structures short. More than 20 years ago rust by tons weight was scraped off the Menai Tubular Bridge, which was only built about 1856. We published last week a note by an American engineer on the present state of various other railway bridges of recent date; and the sum of it was, that no class of paint affords real protection. "We may not live to see the day"; but for another generation there is a bad time coming, as regards its iron bridges. If railways are superseded before then—whether by flying machines, petroleum motors, or anything else—all may be well; but if not, there is a prospect of incessant accidents, and intolerable outlay in repairs. As regards small details in iron, the case is not so serious. It is simply that there is no satisfactory way of preserving them when they are used externally. The common thing, of course, is to paint them; but this has frequently to be re-done, and the end of it is that all the delicate work, whether in wrought iron or cast, is practically obliterated. Oxidation, moreover, goes on below the paint, especially at points where moisture is apt to collect, or where some galvanic action is set up. To see how nearly, in about a century and a half, this can destroy even unusually solid castings, it is only necessary to look at the railings of St. Paul's Churchyard, especially on the north side. Many of them are almost eaten away on the lower part. Thinner railings, and especially wrought ones, perish in a fraction of the time, so that the architect who means his work to last has little inducement to make a great external feature of his ironwork. This, of course, has always been so, We have lost, in consequence, most of what the Mediæval workmen did, unless it was either used internally or was much sheltered, as door-hinges are. But we had hopes, a quarter of a century ago, that this congenital weakness of iron might be overcome. The Barff process promised to cover the metal with a durable rustless surface, and, more than that, with a truly metallic one. It was simple and ingenious. The work to be protected was raised to a high temperature, and kept for some hours in superheated steam. The effect of this was to convert the face, not into ordinary rust, but into magnetic oxide, firmly attached to the objects which it covered. This oxide differs little from iron in appearance, and it is unaffected by air, water, and weak acids. The problem of protection seemed, therefore, to be solved; and there was apparently no reason, thenceforth, why the smith's work should not last as long as the mason's or the carpenter's. Unfortunately, for the light decorative features as to which this promised most, it has not proved as successful as could have been wished. A slight bend, such as may easily happen in fixing, or in daily use, will imperceptibly crack the film. No damage appears at the time; but damp enters there, rust begins, and quickly spreads. The same thing happens—as one can see at almost any railway station—with enamels on iron, which, if they had proved really permanent, might by this time have been made agreeable, and even beautiful.

The sum of the whole matter is, that we are never likely to have an iron architecture

—a mode of building, that is, in which the properties of that metal are brought out and turned to artistic uses. We may have iron construction hidden away under plaster and concrete. We may have smaller iron details, as all ages have had. We may have them for a thousand purposes, and we may have them, and ought to have them, of incomparably better design than we now do. Such work as Woodward's need not be uninstructive to us, though we do not apply it, as he did, to columns, and other great structural features. The principles on which he worked—the principles on which the old South-country founders worked—are the very principles which need applying to our hideous stoves, and grates, and ranges, and all the other abominations of the modern pattern-book. If the iron-caster would only design, or train somebody to design for him, castings suited to his processes and to the nature of the stuff he works in, it would be better for himself, and for all of us. He gives himself a world of trouble in trying to imitate everything that he should not—wrought-iron detail, stone detail, wood detail; and the more he labours and takes pains, the more he is left behind. The least repulsive things he does are those which he never intends to be seen: his castings for purely mechanical purposes, in which he shows his practical knowledge instead of his artistic ignorance. If he could but content himself with being natural, and not aim at being fine, how respectable, in comparison, he might become! The smith, on the contrary, has kept up, or revived, the old traditions of his craft. He can still do good work when he gets the chance. Some day, perhaps, the chemist—who, as he well knows, has an infinity yet to learn about the constitution of iron and its alloys—will hit on an alloy which is malleable and rustless, and then the smith may have such opportunities as he has never had before. His work will then be as welcome out-of-doors as it now is within.

COARSE AND REFINED ARCHITECTURE.

"NOTHING," says Goethe, "is more significant of men's character than what they find laughable," and George Eliot, in one of her essays, commenting on this passage, observes that the word "culture" would be more appropriate than the word "character," and she very truly remarks, the last thing on which the cultured man can have community with the vulgar is their jocularity. We may easily paraphrase this remark by saying the last thing in which the artist can agree with the uncultured person or the man in the street is his sense of what pleases him. As the vulgar person may see something to excite his risibility, which would in no degree amuse the refined nature, so in like manner we find that qualities and attributes of architecture, painting, or music, which captivate the ordinary man or woman, are often repugnant to those who have studied these arts. In the two latter arts the truth of this proposition is incontestable, and we have ample proof of it every day in the lack of appreciation and sympathy shown by ordinary people to good music and pictures. They are positively deaf to those subtle melodies and gradations of sound which delight the cultured amateur in music, and blind to those refinements of drawing and colour which charm the connoisseur of painting. But in architecture, perhaps the most abstract of the three, the appeal to the popular mind is not so obvious; there is a general idea that a fine building appeals to all grades of minds alike. In a certain sense, no doubt, it does: its size, and imposing symmetry, and ornamental adjuncts are qualities which appeal to all, and delight the imagination; but there are other qualities of a more abstract and subtle character which the average minds do not appreciate, and which, so to speak, elude their mental analysis. Every architect must have had ample evidence of this in occasional remarks made on his designs and buildings by people who have no taste in such matters. The competitor knows, too well and painfully, the sort of criticism his design undergoes during its public exhibition — he especially who, oblivious of popular taste, has attempted the problem from a different side; or he who, with the study and fervour of a true artist, has rejected all clap-trap and trickiness of drawing by adopting a plain but artistic exterior. Those who have ventured out of the beaten tracks of Classic and Gothic, and who have adopted the more vernacular and unambitious models of 17th or 18th century architecture, know how very little understood or appreciated their work is, and what small chance there is for designs of this class, when they have to compete with others in more popular styles. Building committees, and even assessors are sometimes led away by certain salient and attractive features, which in themselves have no real merit, but which rather increase the cost of the building. Indeed it is well-known that this sort of attractive clap-trap has been the bane of competition in the past, and even still the resources of the architectural property shop are often more influential than the ablest designs. All this is very disheartening to men who have become masters of "style" in architecture in the highest sense, and not mere copyists and dabblers in it. There are certain "properties" of architecture which the competitor who wishes to win takes care to place before his patrons. He knows quite well what are the features and qualities which most please the uncultured mind. These we may be summarised under three general heads of (1) scale or magnitude, (2) elaboration or ornament, (3) captivating features, and they are equivalent to those popular qualities of melody in music which please the ear, and those who like realistic scenes, execution, and colour in painting. A large building is imposing to the popular mind;—the ordinary man is more interested to know the height of a building or its length, than whether such height or dimension is really necessary. The height of a tower or spire is a question which concerns the boy in the street a great deal more than its outline or proportion. As to ornament, we know that its quantity rather than its quality is esteemed by the public; it does not matter to the ordinary passer-by whether the frieze or band of ornament round a building is cast in cement or sculptured in stone; whether he sees a piece of cast ironwork from a trade catalogue, or designed expressly for the work. Again, redundancy and complexity of parts is taken by such people as "artistic." A front overcrowded with details or carving is admired more than one of simplicity and good detail; even such a thing as a turned newel, or baluster, or table-leg is esteemed rather for the complexity and number of its mouldings than for the artistic combination of plain and moulded parts. With such people true ornament is unknown and unappreciated. We have referred to certain other salient and attractive features which captivate persons who have little knowledge of, or taste for, art. These features are like the catch-phrases which seem to have such a sway over people of a certain calibre of mind. The dome is one of these features: it exercises a kind of potent charm over the popular mind; no building is thought fine without one. The same may be said of the portico. People who admire the Royal Exchange, St. Peter's at Rome, St. Paul's Cathedral, the British Museum, the Capitol at Washington, can see nothing to admire in buildings like the Law Courts, the Bank of England, and other edifices devoid of such features. Even a commonplace vestry-hall with a dome or angle turrets to recommend it is regarded with more esteem than a well and appropriately designed elevation. It is astonishing what a few turrets or columns will do. The most refined "astylar" façade or Neo-Grec composition is dull and uninteresting to a person who has no æsthetic sense; but so a classical piece of music or a learned discourse falls dull on the ears of the average auditor. Symmetry and balance are other qualities which excite pleasure; but to the architect they are only agreeable when they become the true expression of plan. Thus we may go on enumerating other features and qualities which, while they are attractive to the average person, have no meaning or artistic value to the architect. To the keen and sensitive artist they are in fact fulsome and vulgar.

The bearing of these remarks on competition is obvious. Designs in which the accompaniments we have drawn attention to are conspicuous never fail to become the favourites, while those in which real art and refined details appear are at a discount. But the real artist has to possess his soul in patience, and be content to draw a blank so far as competition prizes go. The appointment of an assessor is a guarantee —or ought to be a guarantee—that the mere clap-trap elements of design are set aside, and the real merits of plan and elevation judged. We cannot always expect even an assessor to exercise good taste in these matters—in fact, in a few instances he has been led away by the same allurements of style; but it may be generally affirmed that his advice, even if not always taken, as at Durham, has a beneficial influence over the committee. We have now much less of these blandishments of style; better taste in architecture and art education have rendered it almost impossible for any enlightened body of committee-men to accept replicas of noted buildings. We have seen the same wave of enlightened taste, or art culture, passing over the United States and the Colonies, transforming the vulgar and bizarre taste for churches and state houses prevalent a few years ago, in which the Five Orders and the Batty-Langley style were conspicuous.

Comparing many of the recent public and private buildings, the city halls, banks, insurance buildings of New York City, Chicago, Philadelphia, of Sydney, and Melbourne, with those erected a decade or two ago, we must acknowledge a refinement in style due to the trans-Atlantic intercourse, and the influence of European art. Yet the public taste remains far behind.

In furniture and decoration the popular and bizarre elements continue to linger in a more objectionable form than they do in architecture. This is owing mainly to the less direct influence of the artist between the manufacturer and the purchaser. In selecting chairs, and tables, and cabinets, as in chosing wall-papers, and carpets, and curtains, everyone thinks himself a judge; the maker simply caters to meet the largest demand and the public taste, however vicious it may be. Modern "art furniture decoration," as it is euphemistically called, is the merest veneer or pretence of what is considered good art, and people buy it because it is fanciful and pretty and fills up a room more decoratively, than the plain well-thought-out furniture which is designed by Mr. Norman Shaw, Mr. H. Baillie Scott, Mr. R. W. Edis, and other architects and craftsmen. At one time, cusped arches, stop-chamfers, and notches went down. Now it is the over-wrought and turned piece of furniture or overmantel, made after the manner of Jacobean, Chippendale, or so-called Renaissance. Even now the turned spindle and fretwork style find customers among many, and the exuberant curves of the late Louis Seize are preferred to the more sensible forms. Plain surfaces and refined mouldings are not showy enough for the ordinary buyer or the denizens of Curtain-road. Popular tastes die hard! Though we do not see such vulgarities in wall-papers as we did forty years ago, we still find people preferring the "loud" forms and colours in their crudest form as decorative motives. If the design is fairly good, it is the most pronounced colours or contrasts that are chosen. Gradation and delicacy, whether in form, or contour, or sound, are two attributes which one can hardly expect the uncultivated to understand. The choice and right use of mouldings, for instance, is one of the most certain tests of the architect's education; where to place ornament is another; but all the reading and drawing in the world will never teach how to do these things without an instinctive sense of the principle of gradation as controlled by judgment. To take such a common thing as a turned baluster: the simplest dictate of reason would place the boldest and plainest mouldings at the bottom; but how often we find the reverse followed, as if the members were crushed by the plainer ones above. Again, all curved members, or profiles, or ornament should be separated by plain surfaces—a rule equally ignored. But these things are subtleties to the ordinary designer, and he can no more discern them or appreciate them than the average man can discern the varieties of musical time and forms of movement in a work by Beethoven, or the subtle harmonies of tone in a landscape by Turner.

GIVING CERTIFICATES.

VERY easy and perfunctory as the duty is of giving a certificate, the architect is inclined to attach less importance to it than the requirements of the law demand. It is easy to sit down and fill up a printed form of certificate, as published for the use of architects, when the contractor applies for one, without considering the obligation imposed upon the architect. Building contract certificates are of several kinds, according to legal textbooks, though, as a matter of fact, they all come under two principal heads—Progress Certificates and Final Certificates. The former may be called intermediate certificates, given for the benefit of the contractor, to enable him to obtain payment on account during the progress of the work. When an architect gives a progress certificate, he does not mean it to be taken as conclusive as to the final amount, nor in any way to be taken as conclusive in a claim for damages. Lord Cairns laid down the rule that such a certificate must be taken simply as "a statement of a matter of fact—namely, what was the weight, and what was the contract price of the materials actually delivered from time to time upon the ground, and the payments made under these certificates were altogether provisional and subject to adjustment or to readjustment at the end of the contract"; or, as Pollock, C.B., has said: "Progress certificates are to be treated as sums paid on account of whatever the plaintiff might eventually be entitled to recover from the defendants, whether for original or additional work." It is in this sense that an architect gives a progress certificate; his principal obligation and duty is to ascertain by examination or measurement of the materials or workmanship supplied or used in the building, whether there is sufficient to justify his client to make an advance. It has nothing to do with "extras" ordered or sanctioned which are made in a separate bill; nor is it an exact account of the materials or items in the building. Now, we know a great many contractors who would make a claim for the extras to be added to a certificate of this kind. They have done extra work, and think they ought to have the amount included as the work proceeds in the same certificate. The architect sometimes yields to the request. There may be exceptional instances where the builder is unable to meet his expenses unless these additions are paid for as the work proceeds; but it is more correct to make a separate account of them. It is the safer and better plan to adhere to the system which has been confirmed by the Courts: that an intermediate or progress certificate is simply to show that the client is quite safe in making a payment by way of advance. Lord Hatherley, in "Thars's Sulphur and Copper Company v. McElroy," said clearly on this point:—"It is not an exact sum made up by calculation of items, and by applying the prices to the quantities of articles supplied. It is really nothing but this: it is an account sent in to show that the company are quite safe in making such payment as they may think proper by way of advance, because there is now upon their ground property of such a value." The ordinary builder of small means can make what agreement he likes, with the consent of the other contracting party; but if he signs the ordinary form of contract, he cannot expect any certificate he obtains to include within a certain percentage a payment for all materials and work he has supplied and executed. The recently-published Institute Schedule states that the contractor is to be entitled to payment; when in the architect's opinion work to a certain value has been executed in accordance with contract, "at a certain rate per cent. of the value of work so executed until the balance retained in hand amounts to £——, after which the instalments shall be up to the full value of the work subsequently executed." "When the work is practically completed he is to be entitled to receive £——, part of the said sum of £——, under the architect's certificate, and payment of balance within a period of —— months, or as soon after the expiration of —— months as the works shall have been finally completed, and all defects made good according to the true intent and meaning hereof, whichever shall last happen."

One of the difficulties into which the architect is sometimes landed, is that the contractor, after obtaining a certificate, thinks he has secured a guarantee that the work is properly executed, and is thereby exonerated from any liability to make good defects; but the ruling of the Courts have left him no ground for this view. It is well, however, for an architect to make this point clear in the contract by stating distinctly that no certificate he may give is to be considered conclusive evidence as to the sufficiency of any work or material, and that no certificate shall relieve the contractor from his liability to make good defective work.

Final certificates are legally classified as either of payment or satisfaction, or approval of work and material, or payment *and* satisfaction. An authority on law writes: "A certificate of satisfaction need not include the amount payable, and if it does, without being so provided by the contract, it does not bind either party, except as to the fact of satisfaction." "It is sufficient to enable a builder to recover payment of the balance, though no amount is certified for," so it has been held by Jervis. When the certificate is for payment *and* satisfaction, one implies the other, so that if an architect provided that the balance of the contract price be paid to the contractor within a certain time from the certificate stating that the works are completed to his satisfaction, in law it will be held that the certificate for the amount implies one of satisfaction as well. In the case of "Clemance v. Clark," it was ruled that an architect may delegate his duties or employ others to assist him. Further, a final certificate must be conclusive and binding, for which end the architect must have power to bind his employer. Even if he does not know his business, it has been decided that if he certifies he is satisfied, the employer is still bound by the mistake. In short, nothing short of fraud or collusion will invalidate an architect's certificate; he may be unfair, but the contracting parties are still bound by his decision, and no court of law will reverse that which both parties have agreed to abide by. The power thus lodged in the architect is considerable, and in certifying, he should endeavour to exercise them honestly between the two contracting parties. As will be seen, it is the final certificate which has the binding effect; those given during the progress of the work are not conclusive, though they are conditions precedent to payment, and as such should be given only after a careful inspection or measurement of the work.

THE SOCIETY OF ARCHITECTS.

THE first ordinary meeting of the Society of Architects for the current session was held at St. James's Hall, Piccadilly, on Tuesday evening, the President, Mr. E. J. Hamilton, in the chair. The following sixteen architects were elected by ballot as members:—Henry Greig Badenoch, 21, Pilgrim-street, Newcastle-on-Tyne; Robert Bentley, 53, Church-street, Whitehaven; James Bruce, 21, Pilgrim-street, Newcastle-on-Tyne; Joseph Thomas Chambers, Shepley, near Huddersfield; Edgar Hinton Fawckner, Queen's Chambers, 41, High-street, Newport, Mon.; John Chappell Jackson, Town-hall Chambers, Boro' High-street, S.E.; David Pugh Jones, Telford Villa, Beru-road, Pontypridd; George Jones, 17, George-street, Aberystwyth; Tom Jones, 17, George-street Aberystwyth; Joseph George Needham, 11, Powerscroft-road, Lower Clapton, N.E.; Richard Barry Parker, Moorlands, Buxton; John William Rodger, 14, High street, Cardiff; Thomas Ridyard Roscoe, the Town Hall, Old-street, E.C.; Robert William Sampson, Manor Offices, Sidmouth; Louis Alfred Westwick, West Hill Drive, Mansfield; and Herbert Payne Wyatt, 30, Raeburn-street, Acre-lane, Brixton, S.W. Four nominations for membership were read.

The adoption of the annual report of the Council, of which we gave a full summary last week, p. 695, was formally moved by the PRESIDENT, seconded by Mr. ERNEST DAY, of Worcester, and agreed to.

THE PRESIENTIAL ADDRESS

was then delivered from the chair. Having acknowledged in fitting terms the honour conferred on him by re-election, Mr. HAMILTON continued:—The record of the past year shows steady progress. After careful, though entirely impartial, examination of qualifications by the council, 41 new members have been elected—being exactly the same number as in the previous year—and our Society may be congratulated on the addition to its ranks of two such distinguished ecclesiastics as Bishop Browne and Dean Farrar, and of another member who may fitly be described as a very apostle of pure art, Mr. John Ruskin. The papers and lectures of the past year have been both interesting and useful. I would urge upon all our members the paramount importance of individual effort, in order to strengthen the hands of the council in the work of the Society. Suggestions of a practical nature will always be welcomed and carefully considered. And further, by the reading of papers, and especially by regular attendance at the meetings and participation in the discussions which ensue, much material aid may be given, and the general and practical usefulness of the Society be increased. We do not exist for ourselves alone. Paragraph 3 of the Memorandum of Association states that: "The objects for which the Society is established are the promotion and advancement of architectural art and practice, and its allied arts, sciences and crafts, and the maintenance of the honour and the interests of the profession of architecture." The special feature of the present year (the details of which must perforce occupy a large proportion of the council's attention) will be the inauguration of an examination test for candidates desiring membership. I fear that some misconception exists as to our objects in this new departure; and, even at the risk of repetition, it cannot be too emphatically stated that there is on our part no desire to compete with, or exercise rivalry against, any other examining body; nor do we aspire to the dignity of a general examining centre for the profession. We are certainly not prepared to accept the heavy responsibilities which such an aspiration must involve. Our object is a very simple one, and such as one would have supposed it would readily be conceded that every learned or technical society had a perfect right to maintain. We desire only to secure a fair test of proficiency for our own membership; and, whilst we welcome all fair criticism, we cannot help feeling that it does not always come with the best of grace from those who have already guarded themselves with a like precaution. That such a position is not unnatural I am fully aware, and I earnestly trust that we, on our part, having taken means to safeguard our own Society from incompetence, may not settle down in the enjoyment of a sweet but selfish contentment. The larger question of the compulsory examination and registration of all architects is of undiminished importance, and must be kept well to the front! The pressure of public business, combined with opposition where we might reasonably have looked for support, has, up to the present, delayed the passing of the Bill; but, meanwhile, interest must not be allowed to flag. Members may do much by embracing opportunities of speaking of the matter to their friends and clients, and thus aiding public opinion, which is such an essential factor in the successful issue of a public measure. Personally, I cannot say that I regard examinations as an absolute panacea for all professional ills. Nor should the mere removal of grievances nor the securing of personal rights be the main purpose of our efforts. Our primary aims should be two-fold: first, the furtherance of architectural art; and, secondly, the promotion of public benefit. To what extent, then, are universal examinations calculated to secure or assist these ends? Examinations are evidently not creative—they are but tests. The education which leads up to them is of prior importance; and it has been with this end in view that the council, in framing the list of qualifying examinations, which shall be accepted in lieu, or partly in lieu, of the Society's examination, endeavoured to give full recognition, as far as practicable, to all institutions providing a regular and protracted course of study. It is eminently satisfactory to note that the Government is becoming increasingly alive to the importance of the study of architecture, though they might do well to recognise more fully and materially aid existing institutions, which are most ably providing opportunities for such study. It is gratifying to observe also the somewhat rapid growth of facilities for architectural training in the great provincial centres, by means of lectures and classes, to which Mr. Penrose referred the other evening in his able and most practical address before the Royal Institute. I readily admit there are dangers in examination —dangers of what Mr. Caröe has lately and aptly described as stereotyped efficiency, yet there is not much ground for fear as to a full development of the artistic spirit. Examination cannot create this spirit, neither can it fitly *test* it. But education itself is not creative; it only cultivates existing faculties by drawing out powers possessed, and by the enlightening influence of added knowledge. No plans we can formulate will limit our profession to true artists; and though a really good architect cannot be produced without the "artistic sense," yet those who lack it, but still join our ranks, must be the better for education. So, too, will the true inborn artist need education if he is to become a really good architect. The creations of art will be faulty without the aid of science, for we work not in fantasies, but in stone and brick, wood and iron; and not only the stability of our buildings, but their real artistic worth must in large measure be regulated by our knowledge of the properties of the materials which we use. Now, such kinds of knowledge can very well be tested by examination, as can also in large measure the history of our art, although I confess that the underlying principles of the various styles of architecture may be too rigidly formulated. It is for this reason that I would urge the wisdom of framing examinations on as practical lines as possible. You cannot test the artistic spirit by examination, and if there be danger of fettering its free development in the process, it lies rather on the art side than the practical. An extensive and accurate knowledge of the nature of the materials and principles of construction can prove no check to the development of art; but it is, on the contrary, essential to its exercise in connection with architecture. To architectural students examinations are of very real value. Entering an architect's office at an age when the seriousness of their life's work has hardly yet been grasped, compulsory examinations would prove a most valuable stimulus to solid work. They would also afford a means of directing and regulating the bent of a young man's studies. For, notwithstanding recent improvements, there are yet very many, perhaps the majority, of students in the provinces, who have no opportunity for attending classes of architectural study. Nevertheless, we must bear in mind, and the student must not forget, that the successful passing of the examination is not the goal to be sought; real education is the important thing —an education which shall not stop short with merely "satisfying the examiners"—a factor which may bear too strong a ratio to the benevolence of these gentlemen, whose task is often a difficult one. Rather an education which shall train the eye to see and the mind to think, the memory to store and the intellect to use. An education which shall have for its aim the execution of noble work. Not necessarily of great work, in the sense of magnitude or elaboration of ornament; but of work noble, because true, chaste, and beautiful; executed with materials suited to their ends, and wrought with a knowledge of their properties, the plan of the building well devised to serve its purpose, and the design fitly expressing its uses. No calling demands of its followers such versatile knowledge or the exercise of such varied gifts as that of architecture. Artistic feeling, knowledge of materials and construction, if practicable, experience of handicraft in the workshops, ability to draw, a sound acquaintance with mathematics and statics, a study of ancient examples, aided, where possible, by travel, a good business capacity, a sound judgment, together with a measure of legal knowledge. It is evidently only exceptional men who can really be masters of all these things; yet the catalogue is by no means strained. Considerations of expense will rarely permit of a student securing an effective training in them all. With the one exception of the artistic feeling they are, however, all of a nature which can be brought under an examination test, although some of them, as, for instance, actual handicraft, could scarely, under present conditions, be held compulsory. It is well, indeed, that a due elasticity should be given to the examinations by offering to candidates, where practicable, a choice of subjects, or by making some papers optional, thus giving scope for the particular bent of the candidate's tastes. These, then, are some of the considerations which show that examinations are calculated to be beneficial to architectural art, by better equipping those who exercise it. The benefit which would accrue to the public is briefly, though comprehensively, set forth in the preamble to the "Architects' Registration Bill"— "Whereas it is expedient that persons requiring professional aid in architecture should be enabled to distinguish qualified from unqualified practitioners." It is now generally admitted that such facilities should exist. A large majority of architects at least are practically agreed upon two further points; first, that the public are lamentably deficient in capacity to judge for themselves on this head; and, secondly, that compulsory examination tests would in a large measure help to secure the desired end. The Royal Institute of British Architects has twice virtually admitted this principle. In the year 1859-60, a resolution was passed by the Council recommending "the initiation of a scheme to be cautiously and gradually developed and brought into working order, in which too much should not be attempted at the onset, but which, in accordance with the rule now established in other professions, the ultimate result should, in their opinion, be the establishment of compulsory examination extended to all architects, whether members or not of this Institute." No effort to give effect to this resolution appears to have been made for over 30 years; but in the year 1890 the opinion of the Institute was again tested at a special meeting, when the following resolution was carried by a large majority: "That while not opposed to the principle of compulsory examination as applied to those about to practise architecture, this Institute is of opinion that the difficulty of restricting by statutory powers the practice of architecture to those who have passed an examination is at present so insuperable that it is undersirable to make an immediate application for such powers.". These facts sufficiently prove that whilst for reasons which it is not for me to suggest, the Royal Institute has hitherto opposed the Bill, it nevertheless endorses its main principle. It is, of course, a fact that the great majority of houses are now erected without the superintendence of an architect. This might still be the case even after the passing of the Bill; but it would, nevertheless, tend to give employers assurance that they would get a *quid pro quo* for fees expended on professional assistance. In addition to this, the surveyor of every district, whose duty it is to examine all plans and certify all buildings, would, under the Act, have to be a properly qualified architect. The public benefits of Registration are such as have been admitted and given legal effect to in other professions, such as law, medicine, &c., and the Society of Musicians is now moving in a similar direction. The applicability of the principle to the architectural profession has been recognised in other countries by the passing of a Government measure in Ontario and by efforts in the same direction in France, America, and Australia. Both the justice and wisdom of the measure are indeed so generally recognised that I am constantly meeting with persons who imagine that compulsory registration actually exists, and are amazed to find that it does not. It is difficult to see what can be gained by delay. The question has been well threshed out, its objections fairly met, and only a united front is needed to insure the speedy passing of the Bill. On the broadest grounds, therefore, of the public weal, and of the common interests of the profession, I would respectfully urge the co-operation of the Council of the Royal Institute with the Registration Act Committee in the furthering of the scheme. I feel strongly confident that they would find hearty support from a majority of their own membership; and I am fully assured that the Society of Architects would be ready, in no spirit of jealousy, to continue its active support of the measure. Passing to more general topics, may I ask you to glance with me at certain considerations affecting the ordinary every-day life of an architect in the exercise of his calling. That such a life is often more arduous than rosy will be confirmed by the experience of not a few of my colleages. To most young men possessed of any measure of ambition there come visions of large commissions and conceptions of princely structures, which shall rise up into the sunlight under their fostering care and earn for them a just renown! Such are, however, in the vast majority of instances, dreams—destined to be unrealised. It is only one architect in a thousand who has the opportunity of erecting large and magnificent buildings. The great bulk of architects have to content themselves with humbler work, and added to this the fact that architecture is for us in a very practical sense "a calling," as being the means of maintaining ourselves and our families, tends often to tone down very materially the dreams of youth. Especially in the provinces men have often to undertake duties which are not altogether congenial to artistic natures, and the daily routine of office life is sometimes tedious. There is in all this much danger of our best faculties being thwarted and dwarfed, and our highest instincts buried in "the daily round, the common task." There may be some who need to be reminded that truly great work is not always regulated by magnitude, nor real beauty by costliness: that it is worth while to put one's soul into the design of modest structures, and to expend time and thought on very simple details. For, after all, the effect of the many less important structures in influencing and moulding the public taste is greater than that of the few stately buildings here and there. The façades of the houses, shops, and warehouses which line our streets—our country dwellings framed in foliage, and cottage homes in groups or terraces—the proportion of the rooms in which we sit for hours, and the refinement or vulgarity of their ornament. These are subtle influences farther reaching than has as yet been at all fully recognised. We must all of us have frequently been conscious of the charm felt in looking upon some very simple work; some quiet façade, devoid of all stately features which may deck its neighbours, clamouring for observation, yet well proportioned, with well-balanced window openings, every line telling, every moulding chaste; or some cottage or small country house, it may be devoid altogether of ornament—a lack which nature soon supplies—yet exquisite in form and colour, telling in sky-line, and with a home-like look of comfort; and we are ready to grant that as much genuine pleasure may be derived from such sights as from gazing upon the most magnificent pile which the mind of man can devise.

Unfortunately, upon these simpler works the average capitalist very often does not seek our aid, imagining the builder and merchant can give him all he wants. Be it ours, then, to show by the superiority of our work, that we can give him something worth securing. I am fully aware of the difficulties which surround us in the attempt, and difficulties which do not obtain to an equal degree in other professions. When a man consults his lawyer he is willing to place himself in his hands, because he is conscious of his own ignorance; but the man who builds is rarely so ready to admit his ignorance, or to recognise the fact that years of study and practice have raised the level of his architect's judgment in matters of taste above that of his own. The limit of cost insisted upon is often too far below what is necessary for good building, the reason for this being that the estimate has been arrived at by a comparison with actual work which has been executed, though very indifferently, elsewhere; very possibly by a speculating builder. These are very real difficulties which lie in our path. But they are not insurmountable, and rightly met may serve as an impetus to noble effort. We must, doubtless, be prepared to make sacrifices—to refuse to worship the Baal of vulgar taste for show and display, quieting our conscience with golden commissions. If we would serve the highest interests of our art, we must often run counter to popular admiration, and frequently be called to exercise much tact and patience in relation to our clients. But the end is worth the effort. For a true record of our life's work would take but little cognisance of the vastness of the accumulated sum expended upon our buildings; it would rather recognise the extent to which we have wrought into our work the principles of truth and beauty, and the faithfulness with which we have discharged all the functions of our art. Working in this spirit, we may all achieve something worth the doing, and leave behind us "footprints on the sands of time." Our footprints in this sense, however, if we have built well, will be like the petrified rain-drops imprinted on ancient rocks. The more need, therefore, that they should record our best effort. Perhaps there are few of us who have not wished at times to pull down and rebuild our former works, and especially is this the case with architects in the provinces, who have to live with their works, and whose mistakes are ever staring them in the face. If it be thought that in all this I am trenching somewhat on the province of the preacher, I can only reply that I do not recognise this sharp distinction between sacred and secular. Art has indeed been often called the handmaid of religion! Her claim, however, rests not in the limited sense of mere association with the externals of Christian subjects, but rather in the embodiment of noble principles. It has been said that "art is more god-like than science; science discovers, art creates." Yet this is not wholly true. There is only one Creator, and art, too, is but an explorer and an interpreter. She seeks for truth and beauty—not as a mistress, but as a humble student. Yet she is greater than science. Science merely explores and discovers; art interprets and applies. Good materials, sound construction, graceful proportion, chaste ornamentation—these are foundation principles upon which we may raise superstructures of beauty, whether stately or humble, simple or ornate. Our work lies in applying these principles to our building—gaining our knowledge from science, our vision from art.

At the close the President was accorded a hearty vote of thanks, on the motion of Mr. Ernest Day, seconded by Mr. H. G. Quartermain, and supported by Messrs. Henry Lovegrove, A. R. Finch, and G. A. T. Middleton.

◆

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

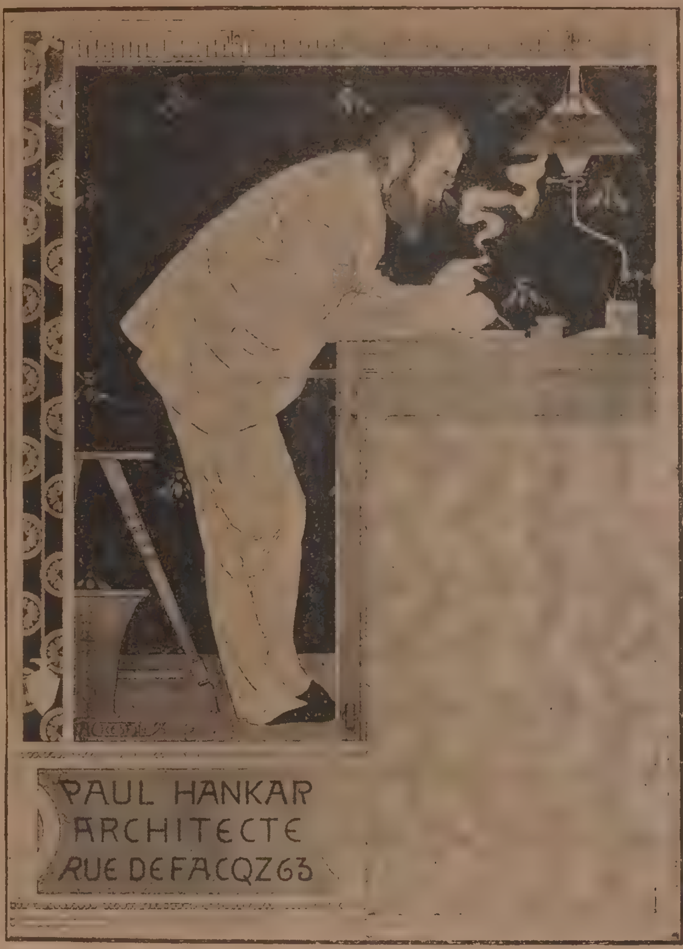
The second ordinary meeting of the Institute for the session was held on Monday evening, Mr. F. C. Penrose, F.R.S., the President, in the chair.

On behalf of a body of subscribers, Sir Arthur W. Blomfield, A.R.A., formally presented to the Institute a portrait of Mr. James MacVicar Anderson, ex-president.

THE SCULPTURED COLUMNS OF THE TEMPLE OF DIANA AT EPHESUS.

A paper on this subject, illustrated by photographs of the remains found by the late Mr. J. T. Wood, and now in the British Museum, and by drawings of conjectural restorations of the temple, was read by Mr. Alexander S. Murray, LL.D., F.S.A., the Keeper of Antiquities at the British Museum, and a discussion followed.

◆



AN ARCHITECT'S POSTER.

Mr. PAUL HANKAR, a Belgian architect, has advanced, it would seem, somewhat upon the ordinarily accepted rules of professional etiquette current among architects in London as to the question of advertising, seeing that this gentleman has had recourse to a poster with his portrait upon it and address under his name. We herewith illustrate the design, which, in many ways, is quite admirable, and as a poster seems to leave little to be desired. The scale and plumb line decorate the margin, while set squares are very decoratively contrived in a pattern by the side of the drawing-table, against which Mr. Hankar is depicted at work, and enjoying in the meantime a quiet smoke, indicating ingeniously to would-be clients how congenial an artist their architect is likely to prove. The warmth of the gas-lamp, too, is drawing the smoke from the master's cigar very naturally in graceful curls up under the shade. Mr. A. Crespin is the author of this very capital design, in which the conventional is thus cleverly combined with the naturalesque. In the hands of a less capable artist and draughtsman, it is easy to imagine what terrors some architects' posters would very likely become if the profession in this country were to follow up the idea of advertising by posters. Some architects already use some exceedingly ugly headings to their office notepaper, which in every way are devoid of beauty and good taste. What the posters of such gentlemen might be like is enough to make the reckless shudder, and while we can but admire Mr. Crespin's design for Mr. Hankar's placard, we certainly cannot advocate its imitation as a suitable method for the development of architectural practice. Our indebtedness has to be acknowledged to Messrs. Geo. Bell and Sons for the loan of this illustration, which is taken from a highly interesting and eminently artistic book just issued by that firm under the title of "Picture Posters,"* giving examples in all countries, with descriptions by Mr. Charles Hiatt, who has, with no little ability, written an illustrated *résumé* of the picture placard or poster from the earliest days of such things down to the present time. Samples among the English varieties are reproduced from the pencils of Walter Crane, Fred Walker, Herkomer, Sir John Millais, Stacy Marks, Ed. Poynter, Sir James Linton, Charles Green, Dudley Hardy, Maurice Grieffenhagen, and others, down to Aubrey Beardsley, not forgetting to name A. Morrow's "New Woman," and Bernard Partridge or the Bros. Beggarstaff, whose work is among the best. The French examples, too, are most entertaining, while many of the American designs are exceedingly clever and well drawn. This is not exactly the place to describe such things at length; but inasmuch as our public thoroughfares must always, nowadays, be more or less enlivened by placard advertisements, it is undoubtedly of no little importance that the designs employed for the purpose should be both good in colour and drawing, with a due observance to suitability of decorative effect. The attention which the subject is now receiving at the hands of some of our most capable artists is an encouraging sign of the times, and this charming book of "Picture Posters" will go far to enhance the merit and character of such productions. Most persons with any love for the artistic side of contemporary art would be glad to possess so capital an assemblage of attractive placard designs.

◆

CLASSIC DETAILS AND THEIR APPLICATION.*

By G. A. T. Middleton.

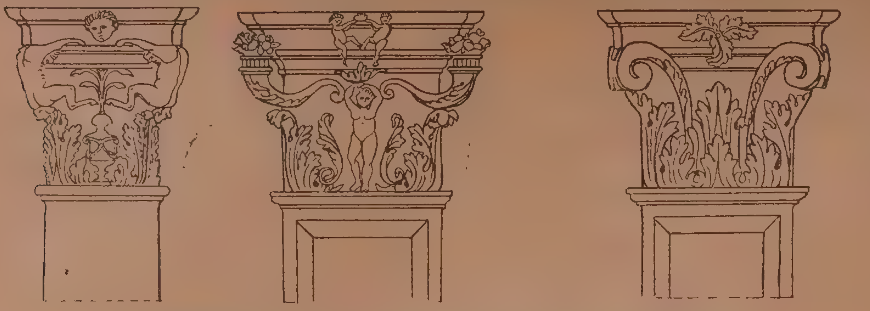
XVII.—FRENCH RENAISSANCE: FEATURES AND ENRICHMENTS OF THE EARLIER WORK.

By the time that the Renaissance had completely ousted the Gothic general outlines in France, the smaller enrichments had not changed much from those which had for a time commingled with the Gothic, and had been used to beautify Gothic forms. They, and the minor features also, appear to have been based on the delicate and imaginative work found in the interiors and in the monuments of Florence,

---

* Picture Posters. By Charles Hiatt. London: George Bell and Sons, Covent Garden, 1895.

* All rights reserved.

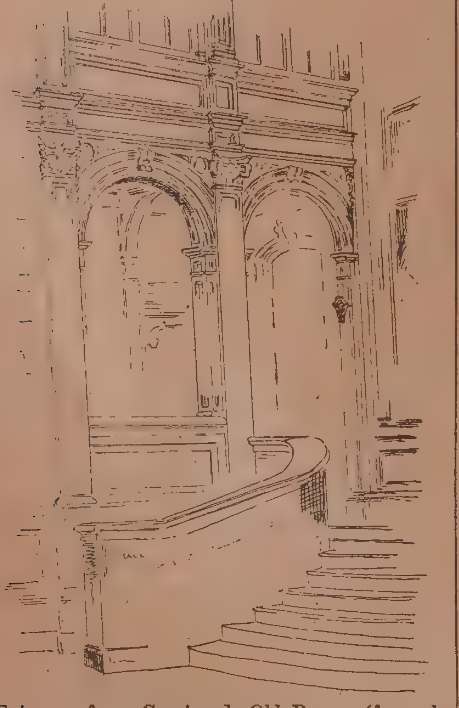


Three Capitals from the Hôtel d'Ecoville, Caen.—(*From* Sauvageot.)

having much the same perception of proportion, and making a very similar use of finely-drawn mouldings and of low-relief carving. An example of this is the altar-piece in the north transept of Dol Cathedral, which might just as well have been designed and made in Italy, so far as all absence of characteristic French feeling is concerned.

That the pilaster was much employed has been already mentioned; but to how great an extent it is not at first easy to understand, though, perhaps, it was not always a true, but a false, pilaster which was used. Portions of wall—such as door, dormer, and window-jambs—were panelled in so similar a manner to the pilasters proper, that they frequently have the appearance of being themselves pilasters, and sometimes inadvertently receive that name, though in many instances they act more as antæ.

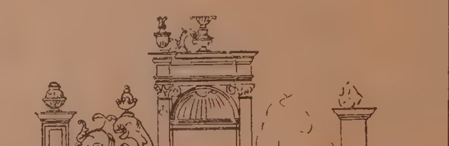
This panelling, which may be noticed upon the accompanying illustrations of the entrance and door of the Hôtel d'Ecoville (now generally known as the Old Bourse) at Caen, is usually rectangular, like that of Florence; but it is not infrequently found in a diamond-shaped pattern, as in the pedestals to the pilasters flanking the door.



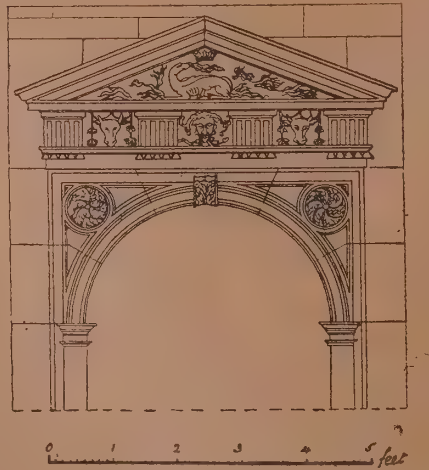
Entrance from Courtyard, Old Bourse (formerly Hôtel d'Ecoville), Caen.

As for the carving, this, as usual, is easier to show than to describe. While being somewhat similar to the Florentine in motive, the surface to be enriched being covered with well-designed scrollwork amongst which animal life is frequently found, it yet partakes of a peculiar spray-like appearance, apparently the last relic of the Gothic admixture which had but recently been in vogue. The grace of it all is perfect. The little figures which occur are always exquisite specimens of modelling, and as they are found as often in the capitals as elsewhere, it is frequently quite impossible to ascribe these to any definite order.

Enlarged details of three capitals which appear in the view of the court-yard entrance of the Hotel d'Ecoville show that they are dissimilar, and that while all are ornamented with the acanthus leaf, and have the abacus shaped on plan as usual in the Corinthian, yet the projecting horns, usually carried by the tendril volutes, are in one supported by cornucopiæ, and in another by hoofed human figures, facing inwards and with the heads bent down, like porters carrying weights upon their backs. In the second, too, a tiny nude figure is introduced, and two others, smaller still, appear above it.



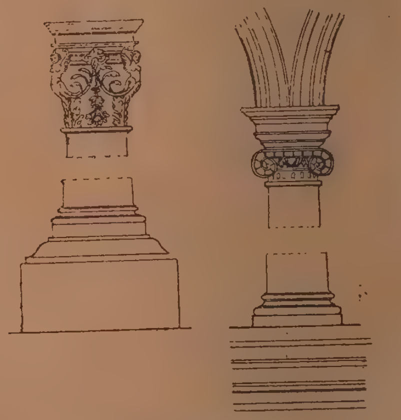
Doorway in the Old Bourse (formerly the Hôtel d'Ecoville) at Caen.—(*Measured by* Mr. E. R. Barrow.)



Detail of a Door of the Staircase in a House at Orleans.—(*From* Sauvageot.)

In the doorway to the same building, again, there is seen a monkey seated upon the continuation of the impost moulding, and flanking the door on either side, while the pilaster capitals have horses' heads in place of volutes, and birds where the Corinthian caulicolæ would be, and so on, *ad infinitum*;—endless variety and equally endless beauty, for these are all so charmingly composed and well executed, in subordination to simple and still unobtrusive general lines, that the effect is perfect.

Another doorway, from a house at Orleans, is an example of the employment of a Doric frieze, spoiling an otherwise beautiful piece of proportioning, or, rather, tending to spoil it, for it scarcely does so entirely. Still, the use of the heavy triglyphs and metopes is an evident mistake, out of harmony with the general delicacy of the whole, and with the usual feeling of this, commonly known as the François Premier, period. It is illustrated to show how easy it is to spoil a good thing, rather than an example of what was then common. The columns and capitals from the same building exemplify the best traditions of the period—free and artistic use of Classic details, kept in subservience to a well-thought general design, without slavish copyism of either the ancient or the contemporaneous work of Italy.



Details from a House at Orleans.—(*From* Sauvageot.)

COUNTY LUNATIC ASYLUMS.—XXXIII.

By George H. Bibby, F.R.I.B.A.

DISTRICT ASYLUMS ABROAD AND AT HOME.

THERE has always existed, unfortunately, a strong prejudice which has led the friends of the insane to seek extreme privacy for them, and thus exposing them, not merely to inadequate accommodation and treatment, but to all the imaginable evils attending their becoming objects of financial speculation. In a great measure the deficiencies of the private and public houses for the insane of former days have long since been satisfactorily dealt with, and at the present time any defects that may be found in the smallest private asylums or the largest county asylums, whether *structural* or otherwise, are liable to be advertised in the annual reports of the Commissioners in Lunacy for England, Scotland, and Ireland. Much of the earlier legislation was directed for the benefit chiefly of the insane poor, not observing the fallacy that because the sane rich are well able to take care of themselves, the *insane* rich must be so too.

A private asylum for the richer classes might well be planned upon the lines of a good hotel or boarding-house, providing every means of cure, and every requisite for the comfort and happiness of the patients, and all precautions against their illegal detention. The question of accommodation may decide that of the terms of payment. A patient requiring special rooms and attendance, and a separate table, should contribute to the funds of the establishment a larger sum, in proportion, than those who are contented with the accommodation provided for all. These are, in fact, the principles on which a family hotel (as well as many other forms of public enterprise) are carried on, and it would be well for the community that all these institutions should be frequently visited by committees from time to time, as are county asylums; and no private asylums

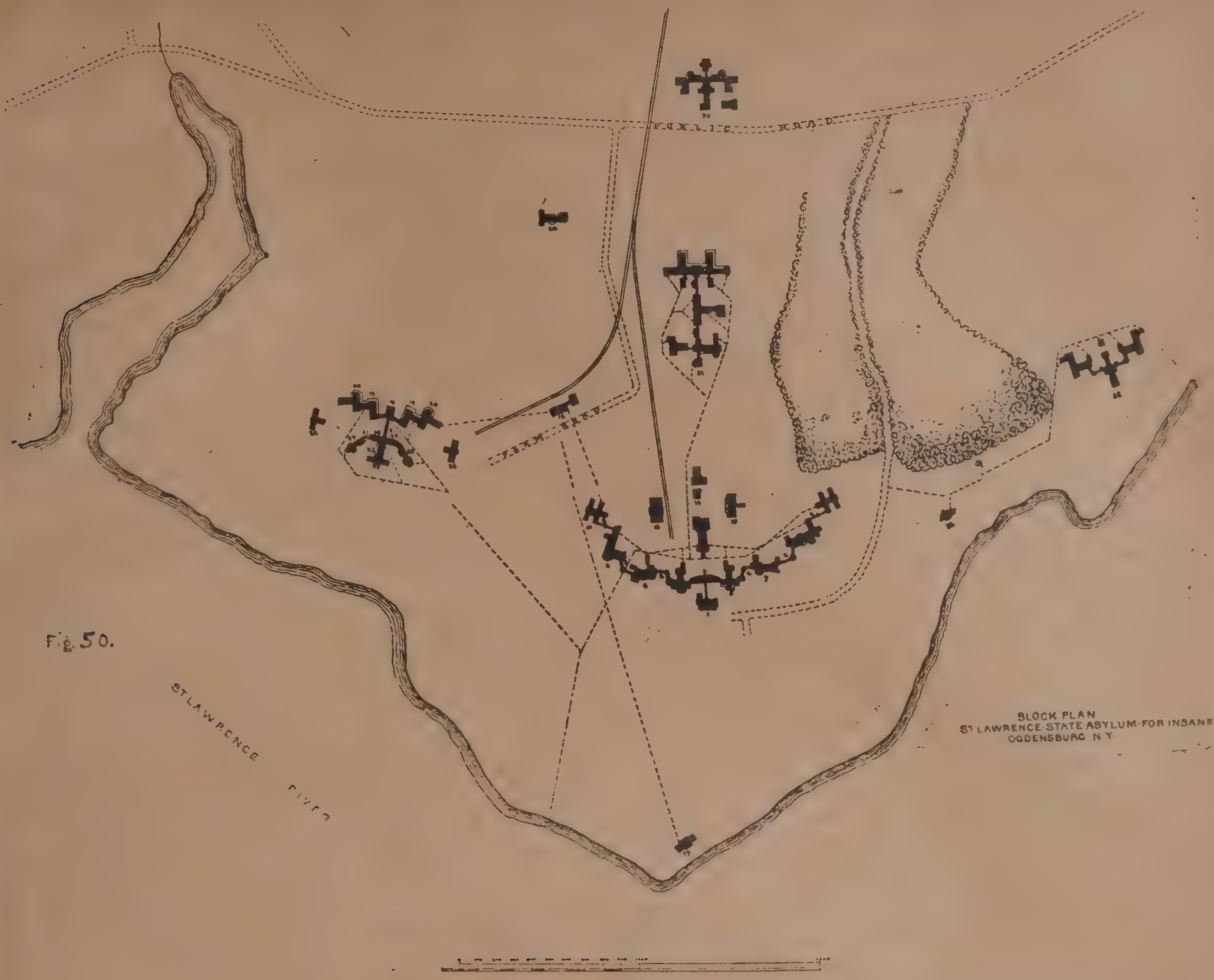


Fig. 50.

should remain unvisited by either local or departmental authorities.

While the poor derive benefit from the better food and care of the public asylum, the rich patients in private asylums are beneficially influenced by causes relatively similar. The internal arrangements, therefore, of a private asylum should be in accordance with the tastes and occupations of the inmates, and the tedium of uniformity must be prevented by such aids as are employed for like purposes in everyday life: billiards, books, and music are not enough; there should be social reunions with a view to affording opportunities for mixing in the society of persons of sound mind. This is a point of great importance, for "to have the world and its recreations brought from time to time into contact with the insane, is less valuable even as an amusement or a pastime than as a means of satisfying them (especially when allowed to meet their friends or relatives) not only that they are not forgotten, but that their return to the world, its business and its duties, is still looked for with anxiety and delight."

The family group in an asylum is, or ought to be, associated in conversation, light reading, and all the diversified occupations that embellish refined society, with no other restraint than what individual circumstances may require, or the knowledge of the medical superintendent of the house may dictate.

In this description of asylum the patients should be the guests and associates of the superintendent and his family, amongst whom may be assigned the duties of moderating the impressions from without, and of regulating the desirable degrees of intercourse with the world. Here the first public efforts of a returning healthy mental activity should meet encouragement, and here those doomed never to know the happiness of recovery experience protection and even pleasure to the measure of their faculties.

The ever-watchful kindness, the considerate forbearance in the discharge of duties often irksome, harassing, and even dangerous, and the ready inventiveness to suggest new thoughts to cheer and amuse, are difficult to secure, and are generally looked for in vain in the private lodging or the private family, and whatever comparison may now be made between British, American, or Continental lunatic asylums (either private or public), there is reason to believe that our Continental neighbours were in progress of being freed from the evils of defective systems prior to the improvements of asylum management and construction in this country.

Many of the American asylums are of considerable extent, and have elaborate structural arrangements; the plans in some instances are upon the separated cottage system, and the areas of land occupied are therefore very considerable; others are upon the old-fashioned block arrangements.

Those asylums built upon the cottage plan may be conveniently connected in their various departments with subways or tunnels, in which may be inclosed electric wires, gas, steam, or water pipes. Many asylums are lighted by electricity; indeed, in the United States generally, electric lighting has for many years been more extensively used than in England, and during a visit to America so far back as the year 1888 I was surprised to see quite small villages in out-of-the-way parts of the States of Ohio, Indiana, and elsewhere brilliantly lighted with electric lamps.

Amongst several American asylums where scientific management of the insane is carried into effect are the "Johns Hopkins" Hospital, Baltimore (which is said to possess the best laboratory in that country); the Maryland Hospital for the Insane, Catonsville, Baltimore; the New Jersey State Hospital, Morris Plains, New Jersey; the Danvers Lunatic Asylum, Massachusetts; the St. Lawrence State Hospital; the Government Hospital for the Insane, Washington; the Toledo Asylum for the Insane, Ohio; the Columbia Asylum for the Insane; the Utica State Hospital, New York; the Alabama Hospital for the Insane, Tuskaloosa, Alabama; and the McLean Hospital, Boston, Massachusetts.

The Utica State Hospital is said to be the oldest established of the New York State asylums, and is erected in the Classic style with a fine entrance; it is a three-story building, and contains nearly 1,000 patients, who are looked after by about 100 day attendants and about a dozen night nurses. It is erected in stone, upon an estate the area of which is 200 acres; the structural arrangements are considered to be unsatisfactory. This is scarcely a matter for surprise, as it is the first building of the kind erected in this State; but the establishment having the repute of being excellently managed, with special arrangements not usually found in asylums, I regret to have been unable to call at Utica during my journey from the Western States.

Amongst other arrangements at the Utica State asylum the bathroom appears to be particularly noticsable, as it is entirely without baths!

The bathroom is lined to a considerable height with marble polished slabs, and has a floor with inclines from each side leading to a central gutter.

The patients are provided with an adjoining dressing-room, also with adjacent lavatories, urinals, and water-closets.

When ready for the bathroom, the attendants receive the patients in turn and place them under a fixed spray of water, which may be heated to the exact temperature required. If the patient be unable, or reluctant, to cleanse himself, or restive, &c., the attendant (*who is attired in a bathing-dress*) soaps him down, and washes him by means of a portable jet, with indiarubber piping.

This appears to be a very easy mode of cleansing the insane—easier for the attendant, and better for the patient, inasmuch as no bath-cleansing is necessary, neither is it possible for more than one person to be bathed with the same water.

About three miles from Ogdensburgh (which is situated on the southern banks of the River St. Lawrence, in the State of New York, and somewhat north-east of Lake Ontario) is the St. Lawrence State Hospital, which is said to stand upon an estate of nearly one thousand acres. This asylum was commenced to be built during my stay in the United States in the autumn of 1888, and has cost about £250,000, inclusive of land and all fittings and appliances ready for the reception of 1,500 patients. It was built in sections, and the patients were received in instalments as the various buildings progressed, and the grounds were laid out for the whole estate concurrently with the erection of the buildings, which are arranged with a central and several detached blocks having the usual administrative offices. The materials used are red sandstone and rock-faced granite.

The general arrangement is very unusual, and the institution is spread over a considerable area, as will be perceived from Fig. 50, the reference to which is as follows:—1, Administration building; 2, corridors; 3, general medical office, library, and dispensary; 4-5, reception cottages; 6-7, observation cottages; 8-9, cottages for convalescents; 10-11, cottages for disturbed patients; 12, kitchen building; 13, amusement hall; 14, laundry building; 15, employés' dwellings; 16, boiler-house; 17, pumping station (The foregoing include all the central blocks.) The infirmary blocks are as follows:—18, Administration building; 19, day-room; 20, dormitories; 21, corridors; 22, kitchen; 23, infirmary for men; 24, infirmary for women; 25, dining-room for men; 26, dining-room for women; 27, employés' rooms; 28, detached buildings; 29, cottage for farm help; 30, block No. 2; 31, block No. 3; 32, block No. 4; 33, superintendent's house.

The central or hospital block is three stories, and the remaining portions are either one or two stories in height. The water supply is from the St. Lawrence River, and the sewage is discharged into the same river, but lower down. There are about 250 attendants, being at the rate of about one to every six patients, a liberal provision beyond which is usually allowed in the county asylums of this country, except for cases of a specially difficult or dangerous character.

The architectural character of asylum erections in this country, as well as the grouping of the parts on plan, are usually much left to competing or selected architects; but the chief points to which attention is directed, and upon which asylum committees usually insist, are soundness and economy of construction, simplicity of design, economy with reference to working, supervision, and future extension, and a strict conformity to the instructions and suggestions for the construction of asylums issued by the Commissioners in Lunacy, and the too-close observance of which has, in some instances, precluded architects from exhibiting originality in their plans or great improvements in their proposed arrangements.

(*To be continued.*)

CONCERT HALLS AND ASSEMBLY ROOMS.—V.

By Ernest A. E. Woodrow, A.R.I.B.A.

THE parish-room of later date has developed considerably beyond the cold, unfurnished schoolroom formerly used for parochial entertainments, and we find, as in the case of the illustrations of this chapter, that it may become—and has, in some cases, advanced into—a hall for theatrical performances, as well as for general assemblage, with a proper stage, and brick proscenium wall.

By the courtesy of the architects, Messrs. J. E. K. and J. P. Cutts, who have kindly lent me their drawings for the express purpose of illustrating my remarks in this chapter, I am enabled to draw attention to a case where the parish-room of St. Andrew's, Fulham, has been built, under the directions of the vicar, the Rev. E. S. Hilliard, by the skill of the architects, so that it complies so far with the regulations of London County Council as to enable them to obtain a dramatic, as well as a music and dancing, license. Here we have a hall, 36ft. wide by 50ft. long, of such a size to accommodate 342 persons, built with a stage having in miniature all the necessary stage appliances so that stage plays can be produced; there are the usual traps, battens, flies, wings, &c., of the stage of the theatre proper, and there is even, in addition, something which is not found in more than half-a-dozen London theatres—viz., a fireproof asbestos curtain, filling the proscenium opening. The proscenium wall is, of course, of brickwork, and built to pass through and above the roof, as in an ordinary theatre. Beneath the floor of the hall are the club-rooms, with separate exits, used for the clubs in connection with the parish.

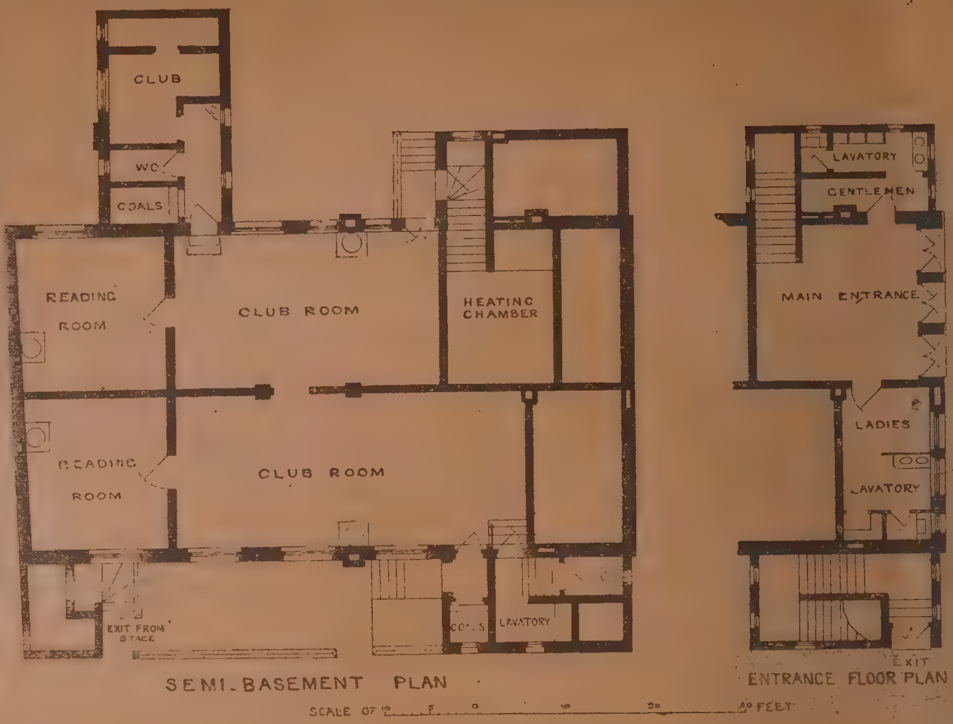


Fig. 1.

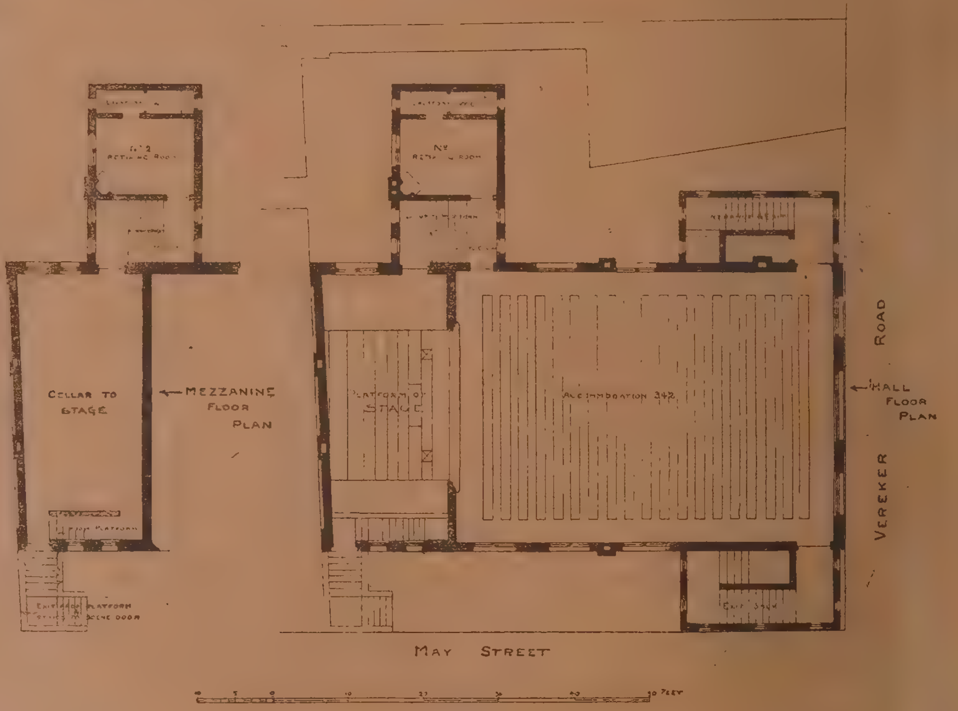
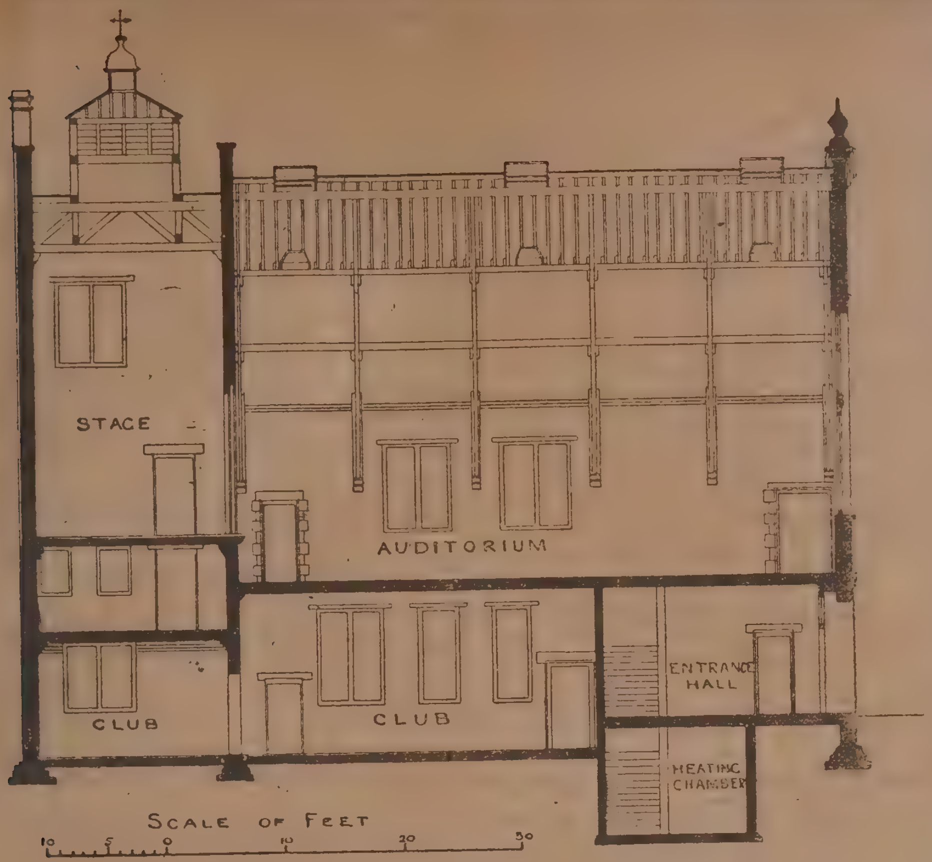


Fig. 2.

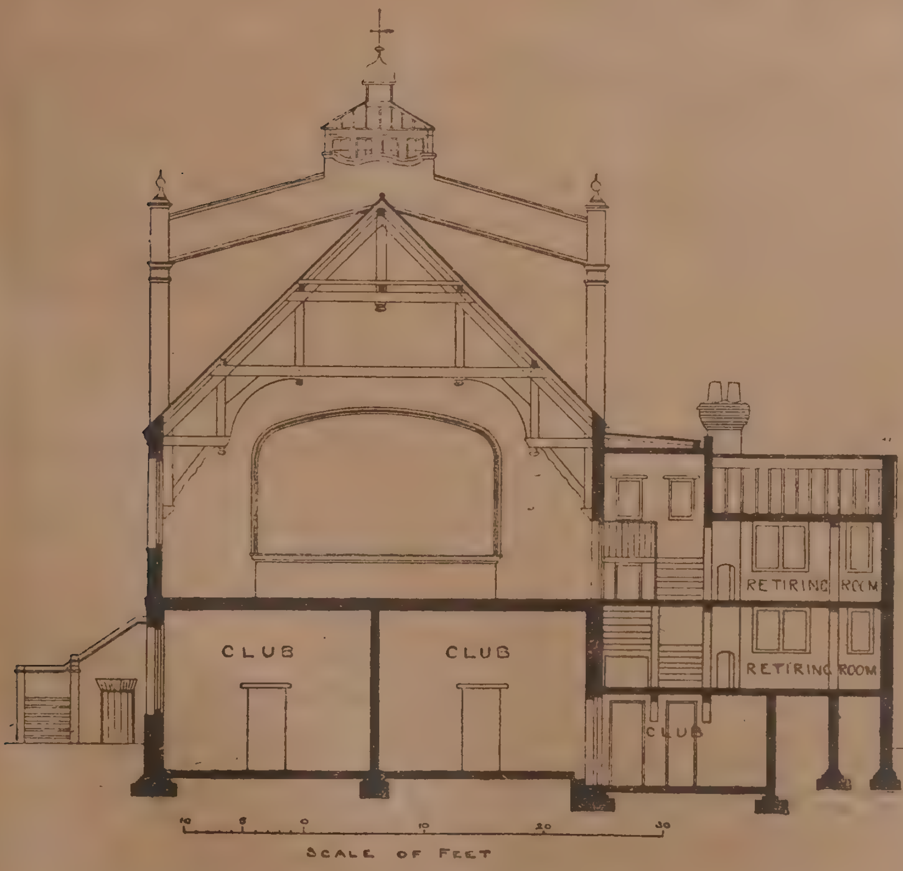
The hall has its separate entrance staircases, 4ft. 6in. wide, in accordance with the regulations; it also has its exit staircase in addition of the same width. Its gas arrangements are safe from public interference, its fire appliances are of the pattern used by the Metropolitan Fire Brigade, its doors are fitted with automatic bolts, and in general all the details of the Council requirements are complied with.

Here we have a case of good work being carried on in a good structure; but how frequently do we find what is known as parish work carried on in structures totally unfit for the purpose—dangerous death-traps. The better the work, the better the structure should be. There is no excuse for bad planning, dangerous staircases, the meeting of one or more streams of people upon a common landing, and such-like familiar defects in planning within a building, because the work carried on there is of a charitable character. A teetotal lecture-hall should be as safe from the risks of fire and panic as a music-hall with all the privileges of drinking, smoking, and promenading; the teetotal fanatic is as likely, in excitement, to create a panic as the frequenter of a music-hall, and the life of the one as well as the other should be protected by good planning. The architect should never be carried away by the thought that a narrow and winding staircase is good enough to be admitted in a hall of this kind, although it would not be permitted by the authorities in a theatre of varieties. It may be said that there is not the same risk from fire in a parochial hall as there is in a music-hall on account of the stage and scenery used in the latter; but there is an equal risk of false alarms, stampedes, and panics from causes of excitement and mischief amongst the audience. I have mentioned before the probability of these false alarms



LONGITUDINAL SECTION

FIG. 3.



CROSS SECTION THROUGH AUDITORIUM

FIG. 4.

occurring in assembly rooms of all classes, as the fanatic, the mischief-maker, or the rogue may find his way into any assembly. It is the same in dealing with old cases as in dealing with new: old structures used for the parish and philanthropic gatherings should be as stringently supervised as the regular places of public amusement. The older they are the more likely they are to require such supervision and reconstruction.

So closely associated with the parish-room is the club-room and the working men's club, that mention may well be made of these buildings in this chapter. Frequently, as in the case of St. Andrew's Parish Room, they form one and the same building, and, at times, the rooms of the club are used as the retiring-rooms, cloak-rooms, dressing-rooms, and refreshment-rooms for the hall when it is used for public entertainments.

The club may, of course, contain any number of rooms, such as reading-rooms, library, billiard-rooms, card-rooms, smoking-rooms, dining-rooms, kitchens, caretaker's living-rooms, &c., according to the particular requirements of each individual case. There is, however, one thing which I wish to point out, and that is—that wherever there is the slightest risk of fire occurring in these adjuncts to the club, the whole of these rooms should be structurally separated, by fireproof floors and walls, from the hall where the assemblies take place, as is done in Messrs. Cutts's design. There should be distinct and separate entrances and exits for each part, and no communication of any kind whatever through which fire or smoke could travel to alarm the audience of the assembly-room. This is a most important point in planning buildings of this class—a point too frequently overlooked by the architect, on account of the convenience to the management which such communication affords.

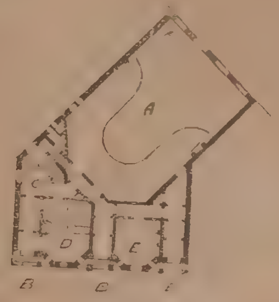


FIG. 6.—A, hall; BBB, entrances; C, staircases; D, smoking-room; E, retiring-room.

More particularly do I insist upon the desirability of such separation when kitchen and living rooms form part of the scheme. Probably, when only such apartments as reading-rooms and billiard-rooms exists, the risk is small; but even then there should be a separate exit from these rooms to those used by the audience of the hall, as is the case in the illustrations of St. Andrew's Rooms.

In connection with working men's clubs there are frequently large concert-rooms. An example is given (Fig. 6) of an existing working men's club, not as an example which should be copied, but as one to illustrate what is embodied in a building of this class. The diagram shows that there are three entrances—one to the left, leading to the club, the other two to the hall, which has a gallery. The hall is 53ft. long by 36ft. wide, and will seat on the ground floor about 450 persons. There are baths beneath the hall, and the front portion consists of a club, with reading-room, smoking-room, and billiard-room, &c., on the ground and two other floors. There are also kitchens, connected with all the floors by a lift.

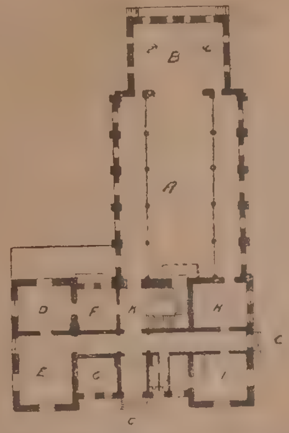
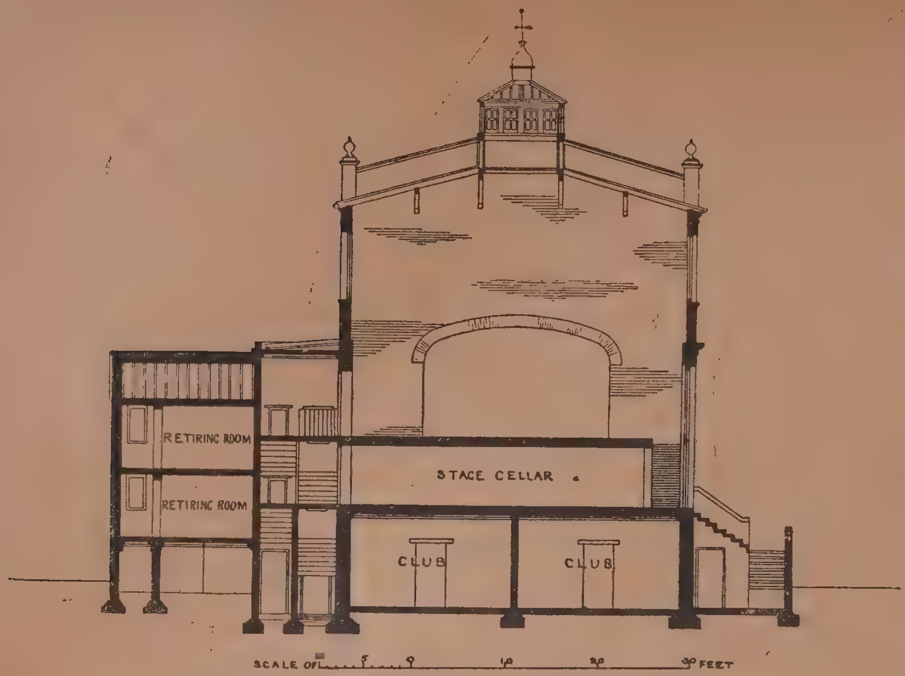


FIG. 7.—A, hall; B, stage; C C, entrances; D, billiard-room; E, club-room; F, reading-room; G, waiting-room; H, dining-room; I, kitchen.

Here is an example of the club and assembly-room in one fire risk, with all the exits passing



SECTION THRO' STAGE LOOKING TOWARDS AUDITORIUM

FIG. 5.

in one direction—passing, indeed, through the club premises. Should a fire occur in the club, the occupants of the hall would have their retreat entirely cut off. As there is a street at the back, it is strange that no exits are provided at the end of the hall, away from the club-house: it shows a lack of knowledge on the part of the architect of the essential provisions for the safety of the audience.

In Fig. 7 I produce a plan of the Steelworkers' Union Club at Osnabrück. The hall is 40ft. wide by 62ft. long, and has a stage 30ft. by 23ft. at one end. The hall is connected with a club, having a billiard-room, reading-room, and visitors' room, kitchen, &c. There is no separation between the hall and the club in this case, and the only exit from the hall is through the club, so, as in the last case, should there be a fire in the club, the people could not get out.

The working men's club-house, with its assembly-room, is a building frequently to be met with abroad in connection with large works. For instance, in December, 1890, Mr. A. F. Krupp presented to the officials and staff of his factory a building entirely for their own recreation and enjoyment. This was a structure erected in connection with an hotel, also the property of Mr. Krupp, and it contains a large room for dances and festivities for the employés, a large dining-room, reading-room, bowling-alley, billiard-rooms, &c. The officials pay an entrance fee of five shillings, and an annual subscription of six shillings, which money goes towards supplying books and the sixty technical journals, including among them the BUILDING NEWS, which are taken in for the use of the members.

THE GREAT TITCHFIELD STREET TECHNICAL SCHOOLS.

AS we briefly mentioned last week, a very successful inauguration took place on Thursday evening, the 14th inst., of the season's work of the Trades Training Schools, conducted at 155, Great Titchfield-street by the Carpenters, Tylers and Bricklayers, Masons, Plasterers, Wheelwrights, and Painter-Stainers' Companies, in conjunction with the British Institute of Wood Carvers. Mr. E. Smith (master of the Carpenters' Company) presided, and Professor Banister Fletcher, J.P., C.C., as chairman of the committees, presented to Mr. F. C. Penrose, F.R.S., P.R.I.B.A., an address of welcome. He then read the reports received from the judges of the work done in the schools. The Tylers' and Bricklayers' Company's report showed that the practical problems both in the elementary and more advanced types of gauged work had been executed by the students in a workmanlike manner, and they had also shown steady progress in their drawing and in the technical knowledge acquired. In the masonry class one student had brought to a successful finish one bay of the cloister of Gloucester Cathedral. Other students had built a staircase, elliptical on plan, with winding stairs and raking arch, &c.; a section of a dome, a circular-headed tunnel on a circular plan, full-size groining springers, &c. In the carpentry classes they had completed models of roof trusses, king, queen, and mansard, together with a trussed partition, dragon tie-piece with hipped rafters, a framed centre with all the various joints in carpentry, horizontal and raking shores, framed floors, &c. There had been a slight decrease in the joinery class on the entries of last year, that being mainly due to the unsettled state of the building trade in London. The Joiners' Company had now associated themselves with the other companies in furthering the technical work undertaken. The plumbing classes had proved successful, and the instruction comprised roof work and sanitary plumbing. Good practical work had been done in making balusters, modillion blocks, trusses, and moulding, some in plaster for casting and pressing in Portland cement, cutting moulds in iron and zinc, wax, and gelatine mouldings. Fibrous plaster was shown in making reverse moulds; casting from theory and forming girder casings; setting out on the bench a portion of the panelled ceiling; laying down the ribs and moulding it, ready for casting. With regard to the wood-carving classes, they relied for support, as regarded pupils, entirely upon the trade. Some students were at work during the whole day carving, having expressed a wish to improve in drawing or modelling. Great success had attended the classes in every department.

Mr. Penrose expressed his pleasure at hearing so satisfactory a report, containing as it did so much hope for the future. Some years ago architects were in despair at the idea that the old apprenticeship system, which had fallen so much into abeyance, was likely to be discontinued. The great City companies had, however, revived the practice, and, through their munificent assistance, that and other technical schools in London had been formed. The co-operation of the Architects' Association with the schools was extremely interesting to him. It was of the greatest importance that young architects should be able to study at an institution of that description, and he hoped that its success would still continue. An inspection of the various workshops was then made.

INTERNATIONAL BUILDING TRADES EXHIBITION.

HANDICRAFT COMPETITIONS.

IT will be remembered that when the prizes were handed to the successful competitors at the Royal Agricultural Hall, in April last, the Duke of Fife stated that certificates would be prepared, and given to those competitors who were not so fortunate as to obtain medals.

A cleverly-drawn certificate has been prepared by Mr. H. Phillips Fletcher, A.R.I.B.A., and copies of these were handed last week to the undermentioned craftsmen, by Prof. Banister Fletcher, J.P., F.R.I.B.A., the chairman of the consultative council:—Carpentry, S. Evans; plumbing, W. Webb and W. J. G. Traquair; plastering, W. T. Drew; masonry, J. Hawley; bricklaying, F. Mills.

CHIPS.

Colonel Sir Thomas G. Glen-Coats, Bart., has promised to erect a drill-hall on a site in High-street, Paisley, adjacent to the Coats Memorial Church. It is understood that the new structure will cost £5,000.

Mr. Walter Emden's scheme for the utilisation of the site of Her Majesty's Theatre in the Haymarket, embraces the erection of an Imperial Opera House, a restaurant, an opera club, and sets of shops and residential chambers. The share capital is fixed at £250,000, and debentures to the extent of £200,000 at 4 per cent. have already been applied for. The new opera house is to be more commodious than any theatre in the metropolis, having seats for 2,784 persons.

The monthly report of the Labour Department states that the building trades continue well employed, though there has been a slight seasonal decline. The percentage of unemployed members in unions making returns is 1·9, compared with 1·6 last month and 3·8 per cent. in October, 1894. The furnishing and woodworking trades also continue busy, the percentage of unemployed union members remaining at 2 6, as in September, compared with 4 6 per cent. in October, 1894.

On Saturday a meeting of the creditors of Robey E. Carpenter, architect, Burton-on-Trent, was held at the Midland Hotel, Burton, Mr. Hall, assistant official receiver, occupying the chair. The liabilities were stated to be £874 9s. 8d., and the assets, after deducting £16 5s. 8d. for preferential claims, £89 15s. 10d. Mr. W. Bennett was chosen as trustee, and a committee of inspection was appointed.

The free library committee of Dundee have accepted from Mr. J. Martin White, M.P., the gift of a picture by Mr. Arthur Melville, A.R.S.A., A.R.W.S., which, after being hung in the Fine Art Exhibition, will be placed in the permanent gallery.

The national memorial to the late David Owen, the Welsh novelist, will take the form of a monument, to be erected at Mold, his native town.

The crematorium and chapel of the Scottish Burial and Cremation Society are to be opened by Sir Charles Cameron on Wednesday next. The buildings have been erected in the Western Necropolis, Maryhill, Glasgow.

A remarkable improvement has taken place in the trade of the North Staffordshire Potteries with the United States. In volume of product for the American market, it exceeds in the period ended Saturday, with seven weeks of the year to spare, the highest record. The trade with Australia and the South American Republics is also improving steadily.

A Welsh Baptist chapel, erected from the designs of Mr. Glynn Davies, was opened on Monday at Glenadda, Bangor. Mr. D. Owen, Glyngarth Post-office, Llandegfan, was the contractor.

In commemoration of the bicentenary of the death of Dr. Busby, head master of Westminster School for 57 years, his successor, Mr. Rutherford, has presented to the school a marble bust of the famous autocrat, executed by Mr. T. Stirling Lee.

The Ipswich Corporation have approved of designs for a drinking fountain and shelter, prepared by Mr. Brightwen Binyon, of that town, which some subscribers have offered to place in the newly-acquired Christchurch Park.

The Bishop's Waltham Water Works Company propose to extend their limits of supply, and will go to Parliament next session with a Bill empowering them to lay mains to Curdridge, Swanmore, Droxford, Hambledon, and other places in the district.

The Southampton Corporation discussed, on Wednesday week, the question of new municipal buildings. The controversy turned on the question of site, a committee submitting a report in which they unanimously recommended that the buildings be a section of the portion of the public lands in the centre of which the statue of Lord Palmerston now stands. The report was rejected by 27 votes to 13, several members regarding the scheme as premature, and others objecting to the appropriation of common lands.

CONTENTS.

The End of Iron Architecture 729
Coarse and Refined Architecture 730
Giving Certificates... 731
The Society of Architects 731
The Royal Institute of British Architects 733
An Architect's Poster 733
Classic Details and their Application 733
County Lunatic Asylums.—XXXIII. 734
Concert Halls and Assembly Rooms.—V. 736
The Great Titchfield Street Technical Schools 728
International Building Trades Exhibition 738
The Building News Directory ... ... xi.
Our Illustrations 739
Building Intelligence 758
Cast Iron in Builder's and Contractor's Work.—IX. ... 759
Books Received 760
Architectural and Archæological Societies 761
Competitions 761
Correspondence 762
Intercommunication 763
Legal 763
Legal Intelligence 763
Water Supply and Sanitary Matters 764
Our Office Table 764
Meetings for the Ensuing Week 765
Tenders 766

ILLUSTRATIONS.

NEW PARISH CHURCH AT CRATHIE. — INTERIOR OF THE MERCHANT TAYLORS' HALL.—MEDICAL SCHOOL, QUEEN MARGARET'S COLLEGE, GLASGOW. — NEW SCHOOLS AT DERRY. — PREMIATED AND OTHER DESIGNS FOR MODEL DAIRIES.

Our Illustrations.

NEW PARISH CHURCH, CRATHIE.

The Queen's church at Crathie has a special interest, and the accompanying photographs from the building, which was recently opened, will accordingly be welcomed by our readers. The architect was Mr. A. Marshall Mackenzie, A.R.S.A., from whose description we print the following :—The church stands halfway between Ballater and Braemar upon the shoulder of a hill, surrounded by birch and larch trees, looking down upon the valley of the Dee, with the old churchyard and manse close by. It stands east and west, and is cruciform, having nave, transepts, and a good-sized apse at the east end, with a central tower at the crossing. The material used for the walls is a beautiful light grey granite. The walls are built of finely-jointed ashlar, showing the natural rock face produced by the stone being split, without leaving any tool-marks on the exposed surface. The mouldings are finely dressed with sharply-cut hollows and clean-edged fillets, intended to contrast with the broad surface of the rock walling, and to mingle a little lightness and grace with that feeling of strength and duration which is always produced by well-built granite masonry. The roofs are covered with light grey slates from Conniston, in Westmoreland, and at a distance the difference between the grey of the slates is hardly distinguishable from the grey of the granite walls. The windows in the transepts are three-light lancets, a precedent for which is afforded by the south transept aisle of Pluscarden Priory. The door at the Queen's entrance was suggested by the door of the north transept at Pluscarden. The windows in the nave have three mullions and tracery of the Decorated period; one example like it is to be seen in the south aisle of Jedburgh Abbey. The outside measurements of the tower are 25ft. by 24ft., and 64ft. high to the parapet. The steeple, which is slated, rises 36ft. higher than this, making a total height of 100ft. 6in. The copper weather-cock which terminates the steeple is a reproduction of the old one which used to surmount the steeple of St. Nicholas Church, Aberdeen, and is still in existence. The steeple carries four fine bells, cast in Munich, and given by Princess Louise and Princess Beatrice. The bells are hung partly outside the steeple, with slated hoods over them. The entrance is at the west end, protected by a large open porch constructed of wood and slates. From the west door, the length to the east end of the apse is 106ft., the width of the nave is 24ft. 4in., and the height 30ft. The south transept is entirely devoted to the accommodation of the Queen and Court, and has a separate door. The north transept accommodates the vestry and pews for the heritors of the parish. The apse measures 23ft. wide and 24ft. long, having a semicircular end. The crossing of the nave, transepts, and apse is marked by four wide stone arches which support the centre tower. The arches spring from four massive pillars, measuring 4ft. 3in. in diameter, giving a girth of about 12ft. 9in., and built of fine axed granite. One of the stones of the base of the south-east pillar was laid by her Majesty the Queen, with much ceremony, on the 11th September, 1893. The floor of the apse is raised by four steps of white granite. It is lighted by five lancet windows, their sills having an elevation of 9ft. above the level of the floor. The windows of the rest of the church have also been well raised above the floor. Those in the nave are 8ft. up, and in the transepts 14ft. This is a point of some importance which the architect was particular about, knowing well the unfortunate effect of low windows; and, on the other hand, the becoming effect of light admitted from as high as possible. The rose window in the west gable is purposely kept as high as possible in order that the light from it might be cast upon the apse at the east end from a point behind the congregation. The surface of the walls in the interior is treated in the same way as in the exterior—viz , rock ashlar and finely-dressed mouldings. The windows have widely-splayed sides, with moulded drop arches over. A high dado of panelled oak surrounds the lower part of the walls next the pews. The ceiling is lined with wood between the principals, which are arched, and the floors of red tiles, herring-bone pattern. The church is rich in royal gifts. The Queen has filled the south transept window with stained glass.

CITY GUILDS.—XIII. : THE HALL OF THE MERCHANT TAYLORS' COMPANY.

We gave an account of the history of the buildings of this great City company in our issue for October 25th last, written by the architect to the Court, Mr. W. Hilton Nash, F.R.I.B.A., who lent us plans and details to accompany his article. This contribution was supplemented by Mr. John Hebb, assistant architect to the London County Council, in a letter which we printed on the 8th of the present month. To-day we give a view of the Great Hall, showing the upper end of the apartments, with the Master's chair and high table. To the right hand is the old Gothic bay window, recently opened up and thrown into the hall.

MEDICAL DEPARTMENT, QUEEN MARGARET'S COLLEGE, GLASGOW.

This adjunct forms a complete section in itself, apart from the college building. It is to be used for the anatomical and physiological departments of the work. The slope of the ground admitted of the whole of the preparation departments being placed in the basement without any excessive excavation. The communication between this and the ground floor is by means of a lift. The scheme of the ground floor is simple; the dissecting room, lecture-theatre, museum, &c., entering from a central hall lit from the roof. The rooms of the anatomical department are intercommunicating, and admit of an easy supervision. The dissecting-room, theatre, and museum are lighted from the roof, the latter room being the height of the two stories. The stone used in the construction is the sandstone from Gifnock Quarries. The opening ceremonial took place last Monday, and the building will forthwith be in constant use. The architects are Messrs. John Honeyman and Keppie. The drawing which we reproduce was exhibited this year at the Glasgow Institute of the Fine Arts.

FIRST DERRY PRESBYTERIAN SCHOOLS (SELECTED DESIGN).

These schools were erected last year on the City Wall, Londonderry, by the congregation of First Derry Presbyterian Church, at a cost of about £3,000. The design adopted by the building committee, which bore the motto "Mitchelburne," was selected from amongst those of fourteen competitors. Accommodation is provided for 460 children. The ground floor is occupied by the infants' schoolroom, classrooms, &c., covered playground, cellarage, latrines, and other conveniences, and on a mezzanine floor are apartments for the caretaker. The first floor is devoted to boys' and girls' schoolrooms, classrooms, &c. Advantage has been taken of a rapid fall in the ground to obtain separate access for each department with a reduced number of steps. The two schoolrooms on the first floor are separated by sliding shutters, so that they can be thrown into one large hall when desired, for purposes of lectures, meetings, and entertainments. The materials used for the exterior are Bridgwater brick and concrete. The general contract was performed by Mr. Joseph Ballantine, builder, and the plumbing and gasfitting work by Mr. W. Shannon. Mr. W. E. Pinkerton, M R.I.A.I., of 8, Diamond, Londonderry, was the architect.

FIRST AND SECOND PRIZE DESIGNS FOR DAIRIES.—(THE BRITISH DAIRY FARMERS' ASSOCIATION.)

These buildings have been planned to meet the requirements of modern scientific dairy farming. The chief points are convenience and compactness of arrangement combined with economy of construction and working, due regard being given to a plain but pleasing exterior. In both plans the arrangement is similar, and the aim has been to make them as convenient as possible for the proper treatment of the milk. They consist of butter- and cheese-making rooms, with milk-setting room adjoining; also a large scullery, boiler-house, and coal-store. The larger dairy is arranged either for working by steam or hand-power, but the smaller for hand-power only. The buildings generally are constructed of red brick with tile roofs, the floors being laid with tiles, and in the boiler-house and scullery with cement. The butter, cheese-making, and milk-rooms have glazed brick dadoes. In these rooms are disposed the various dairy appliances, such as the milk-separator, churn and butter-drying machine, cheese-tub and presses, curd-mill, and other necessary machines. The milk-room is is fitted with slate or marble shelves on which are placed the setting-pans. On the first floor is the cheese-room, fitted movable revolving cheese-racks, and a tank-room containing a cistern supplied with filtered water for all purposes. The cost of the smaller dairy is estimated at £450, and of the larger at £650, fitted with machinery complete. The architect is Mr. Chas. A. Callon, A.R.I.B.A., of 2, Prince's Mansions, Victoria-street, S.W., and Aylesbury, Bucks, who was awarded the first and second prizes for these identical plans in the recent competition at the Agricultural Hall, to which we lately drew attention.

BUTTER AND CHEESE DAIRY.

This design for a dairy was also submitted in the competition held by the British Dairy Farmers' Association, held at the Dairy Show at Islington, and these plans received the "commendation" of the judges. The main point to be considered was that the arrangement should admit of expeditious working, and special attention was to be paid to the ventilation, warming, sanitation, cleanliness, &c. The materials proposed are red brick and rough-cast, with tiled roof; the lower part of the internal walls to be glazed bricks, with cement above; the floors granolithic, having glazed earthenware channels where shown. The curing-room in the roof to be lined throughout with wood. The author of these plans is Mr. Charles W. Battie, of Hornsey-road, N.

CHIPS.

The Duke of Newcastle claimed £2,360 from the Manchester, Sheffield, and Lincolnshire Railway Company as compensation for the subsoil and minerals extracted from his property in Nottingham through tunnelling operations. Mr. Cripps, Q.C., M.P., who arbitrated, has allowed in his award £198.

It is proposed to fill the windows of the ancient and interesting parish church of All Hallows Barking with stained glass.

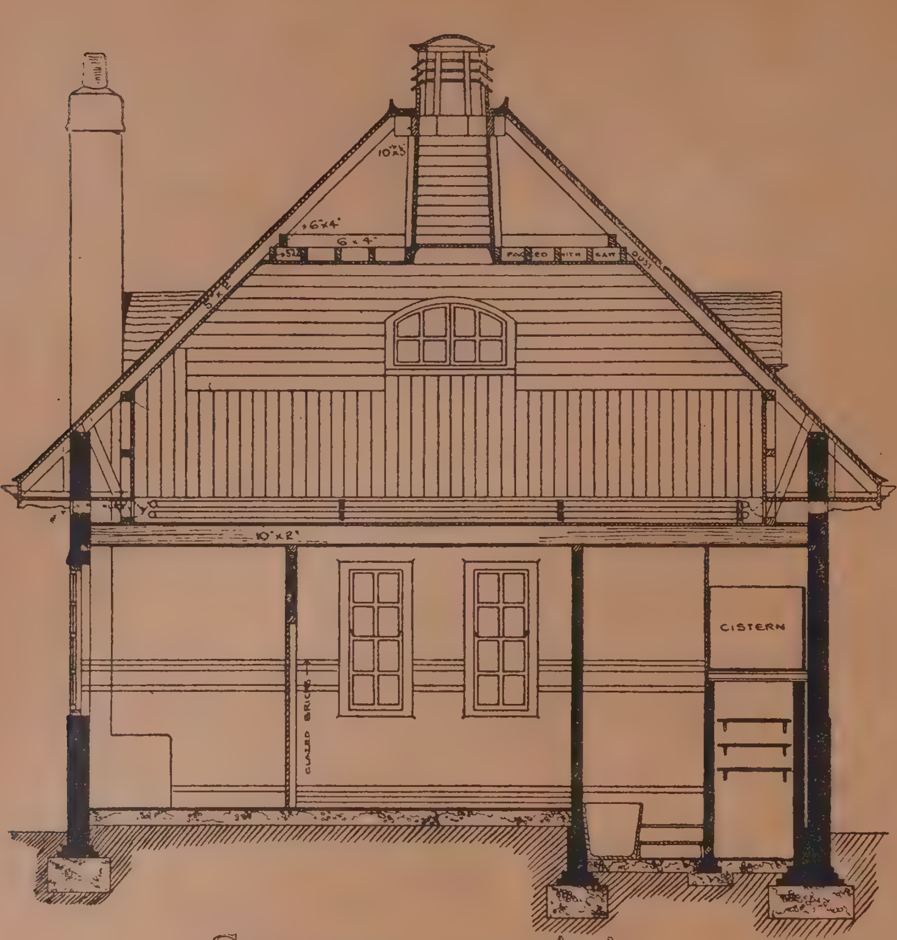
In the application for discharge from bankruptcy made on behalf of Herbert Hutley Billing, Rose Villa, Dollis-road, Church End, Finchley, N., builder, the order has been suspended for six months, ending Feb. 14, 1896.

A new block for idiots has just been completed at the Hants County Asylum at Knowle, near Fareham. It is already occupied by thirty-seven patients. During the past year a committee of the Hants County Council have had under consideration the question of installing a water-softening apparatus to deal with the hard water which is obtained from the new pumping-station, and scheme for the carrying out of the work is promised for the next meeting of the county council.

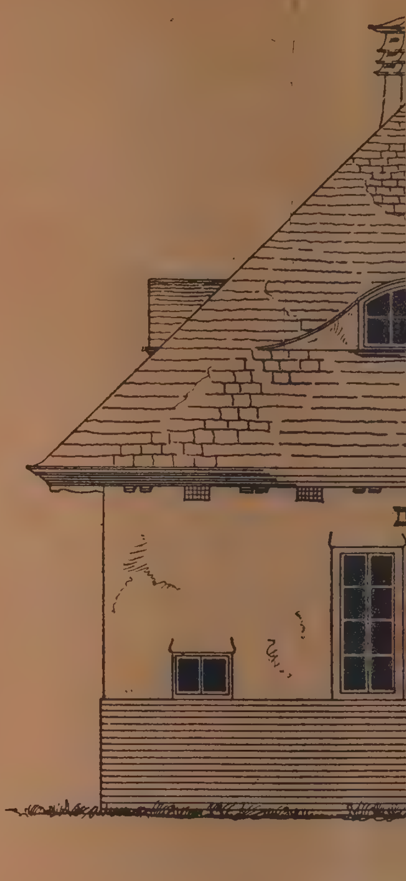
Col. J. Ord Hasted, Local Government inspector, held an inquiry at St. Austell on Tuesday week relative to the application of the urban district council for permission to borrow £1,200 for works for water supply. Originally, sanction was given to borrow £3,000 in respect of the Carne Stentee water scheme, and the present application was for another £1,200 additional.

DESIGN FOR A BUTTER &

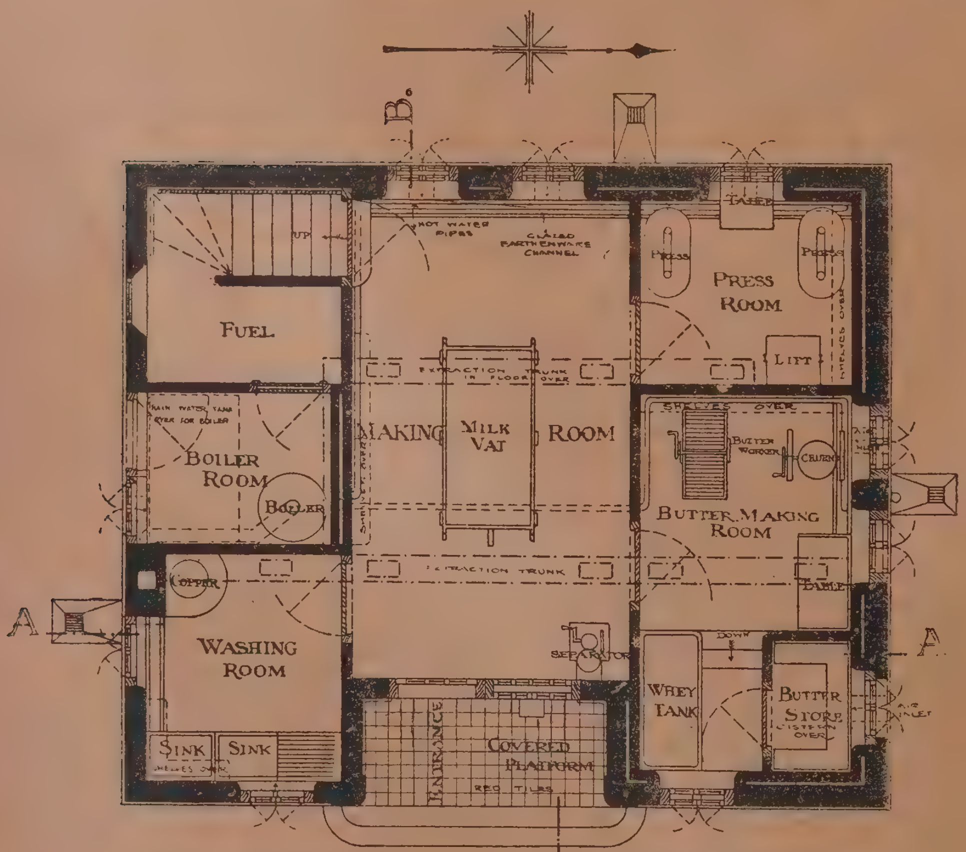
FOR DEALING WITH M



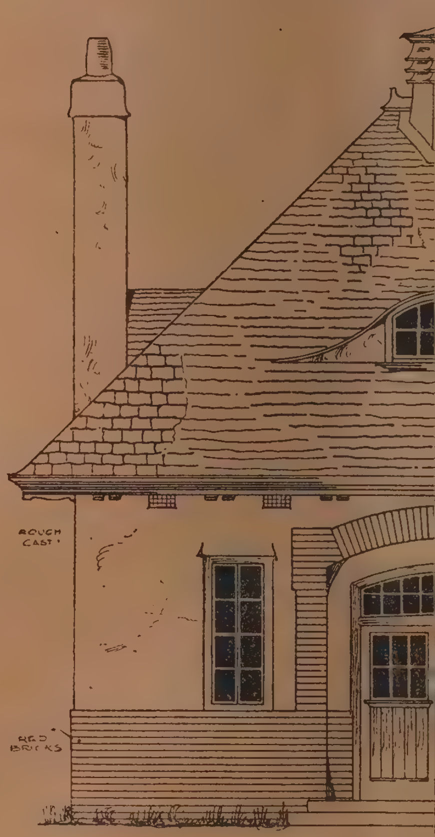
SECTION ON LINE A.A.



NORTH E



GROUND FLOOR PLAN

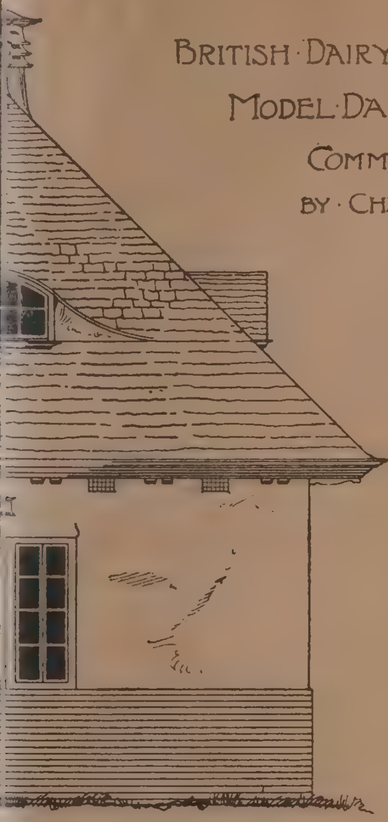


EAST E

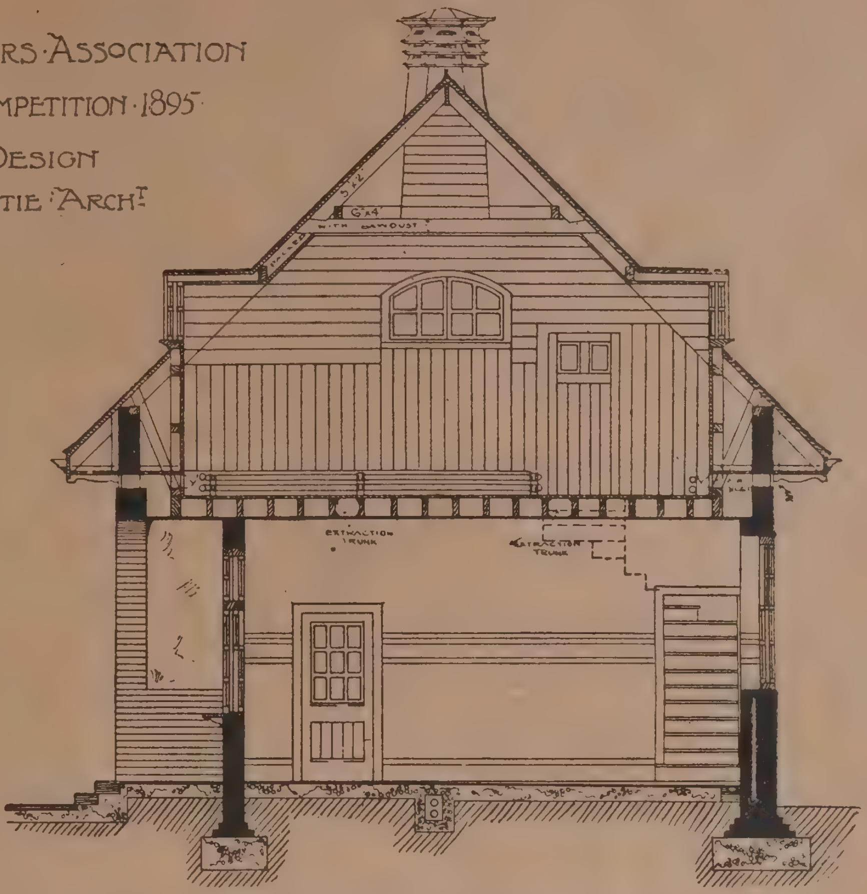
CHEDDAR CHEESE DAIRY

LK FROM 50 COWS

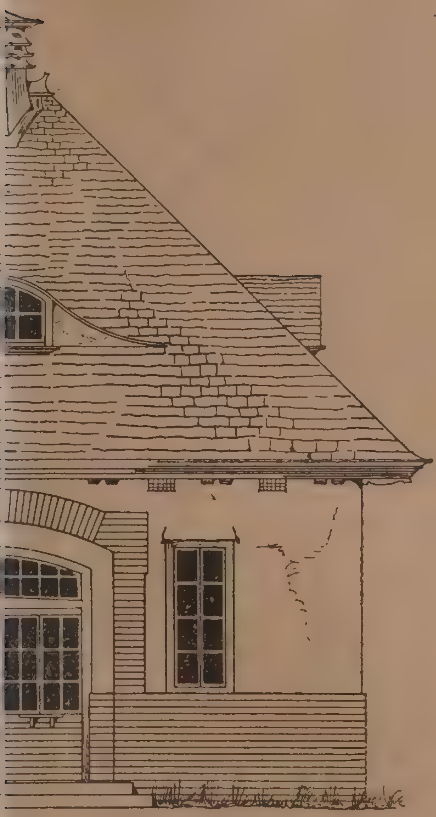
BRITISH·DAIRY FARMERS·ASSOCIATION
MODEL·DAIRIES'·COMPETITION·1895·
COMMENDED·DESIGN
BY·CHAS·A·BATTIE·ARCHT.



LEVATION

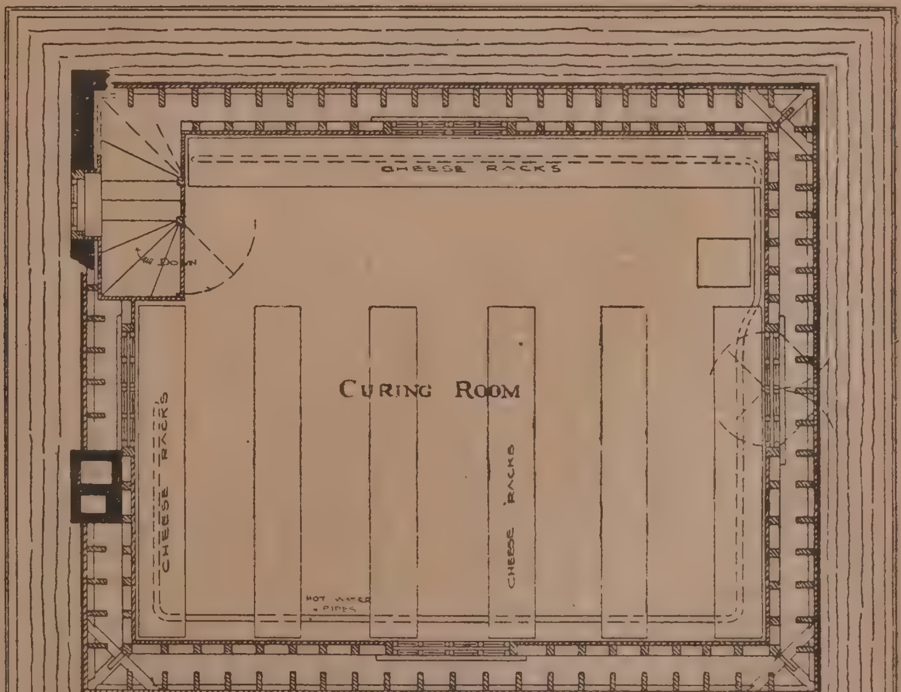


SECTION ON LINE B.B.



LEVATION

10
30 Feet.



FIRST FLOOR PLA

Charles A. Battie
Architect

Building Intelligence.

Bamber Bridge, Preston.—At Bamber Bridge, Dr. Moorhouse, Bishop of Manchester, consecrated on Tuesday the newly-erected church of St. Aidan, on which about £4,000 has been expended. The building consists of a chancel, north and south transepts, and side chapel, two eastern bays of the nave, organ chamber, and choir and clergy vestries. The west end has been left for future extension. The church, when complete, will consist of a wide and lofty nave, with side arcades, the aisles being used as passages only. The north chancel aisle is arranged as a chapel, the vestries and organ-chamber being placed on the south side of the chancel. Externally the building has been faced with Yorkshire stone parpoints, red Rainhill stone being used for all dressed work. The roofs are covered with North-country green slates, with red ridges, and the gable over the chancel arch is surmounted by a bell turret. Internally the walls are faced with red brick; but those of the chancel are plastered. The woodwork throughout is of pitch pine unvarnished. The portions now erected provide seating accommodation for 450 worshippers. The style adopted is Late Decorated. The building has been carried out from the designs and under the superintendence of Mr. R. Knill-Freeman, F.R.I.B.A., of Bolton and Manchester, whose design was selected in open competition. The contractors for the work were Messrs. Moore Brothers, of Rawtenstall, and Mr. J. Yates, of Bamber Bridge, has acted as clerk of works. The church was illustrated by perspective, elevation, section, and plan in our issue of Feb. 23, 1894.

London County Council.—At Tuesday's meeting of the Council a report by the Parks and Open Spaces Committee, to the effect that the Council could not legally make a contribution towards the cost of purchasing Churchyard-bottom Wood, Highgate, without further Parliamentary authority, was approved after some discussion. The Asylums Committee reported that they had approved the plans prepared by their architect, Mr. G. T. Hine, for the New Heath Asylum at Bexley, the cost of which might exceed the sum of £350,000, exclusive of site and equipment, sanctioned by the Council. The main building would provide for 1,845 patients, and in addition there would be provided a villa for 35 farm workers on the male side, and two villas each for 35 women and a special hospital villa for 50 women, making a total of 1,100 women and 900 men. Their action was approved. The Works Committee submitted a detailed account of the works they had completed, in which they showed that of the total value of 27 works completed and certified since 31st March, 1895, the final estimate was £122,561, and the actual cost £119,166, the estimates having been exceeded in only three cases, and that of the total of 62 works, previously certified, which had been reported to the Council the final estimate was £175,732, and the actual cost £178,454; the totals being—final estimate, £298,294; actual cost, £297,621. They set out that on estimated works the net profit was £673; on jobbing works, £376—total net profit, £1,049.

Opera Comique Theatre.—Messrs. Fowler and Hall have reconstructed the Opera Comique Theatre, which was reopened on Saturday last. The old balcony has been entirely removed, and in place thereof is a spacious and lofty pit. Two of the old stage-boxes have been removed, and the stalls enlarged thereby. Upstairs the old pit circle has been brought forward on steel cantilevers, forming the new dress circle. The cost has been about £2,000, including the redecoration and upholstering of the theatre. The contractors are Messrs. Patman and Fotheringham, and the whole was done in two days less than the contract time of five weeks. The steel work is by Messrs. Young and Co., Pimlico.

Plymouth.—At Plymouth, on Friday, a new chapel was opened at the South Devon and East Cornwall Hospital. The chapel is cruciform in plan, and consists of nave, transepts, and chancel. The style is Early English, and the external walls are of wrought limestone with Portland stone dressings, and the internal arches, jambs, and sills of Bath stone. The windows are of the lancet form, and are three-light. Each window has marble shafts, with carved capitals between the lights internally. The holy table, of oak, with a reredos of red and green marble, is approached from the nave by three steps, also of local polished marble. The benches, reading-desk, and choir seats are of oak, and the visible timbers of the roofs, with the carved bosses at the intersections, are of the same material. The floors under the benches are wood block, and the passages and chancel are laid with encaustic tiles. A bell turret of Portland stone is erected on the gable of the north transept. The work has been carried out from the designs and details of Messrs. Hine and Odgers, architects, Plymouth. The contractor was Mr. Lapthorn: Messrs. Goad did the marble work, and Messrs. Jones and Willis the wrought-iron and brass altar-rail standards, from the architects' drawings. The wood and stone carving is chiefly by Mr. S. Trevenen, of Plymouth. Mr. C. Perkins was the clerk of the works.

Sheffield.—The new town-hall, in course of erection from plans by Mr. E. W. Mountford, F.R.I.B.A., of London, will be opened next summer. It occupies a commanding site in the centre of the city, with long frontages to Pinstone-street, Surrey-street, Norfolk-street, and Cheney-row, and is faced with Grindleford stone. The main entrance is in Pinstone-street, and it will lead to the grand staircase, the council-chamber, and the mayoral reception-rooms. The latter, which face Pinstone-street, consist of three state apartments, and when required can be thrown into one, forming a hall 157ft. long and 35ft. wide. The council chamber is 60ft. by 40ft., and will seat 72 members. A public gallery on one side will accommodate 60 people. All these rooms are wainscoted in oak. Spacious corridors communicate with the departmental offices, to which there are also entrances from each of the other streets. The style is Modern Renaissance, and the bold sky-line is strongly marked by the high-pitched gables, filled with sculpture and carving. The tower, rising to a height of 180ft., will be a land-mark in all the country round. It will be crowned with a copper-dome lantern, terminating at its apex with a bronze statue of Vulcan, 7ft. high, typical of Sheffield's industries. The carving and sculpture—which have been executed by Mr. F. W. Pomeroy—are in low relief and concentrated in masses. "At first," says a local journal, "it was intended that the interior should be plainness itself, but little by little the council have yielded, and agreed to oak panelling, marble floors, and so forth, more in keeping with the character of the building." The principal contractor is Mr. E. Gabbutt, of Liverpool. We illustrated Mr. Mountford's original design, as selected in competition by Mr. Waterhouse, R.A., in our issue of June 27, 1890.

Stafford.—The new hall and offices erected for the Staffordshire County Council were opened recently. The buildings form an addition to the group of county properties, consisting of the Shire Hall, the Judges' House (two pseudo-Classic buildings erected at the beginning of the present century), and an old 17th century red-brick mansion, known as Eastgate House, used as Constabulary offices. In the new buildings the style is 18th-century Renaissance. The main entrance is from St. Martin's-place, formed by three groined stone arches added on to the old arcade of the Judges' House. The principal frontage is towards Martin-street. The building is faced with small old-style sand-faced red bricks 2in. thick, with Hollington stone dressings, and the roof is covered with rough cleft-stone slates, and the skyline is broken by two oak flêches with domical terminations. In the vestibule, which is 21ft. by 10ft., the walls, arches, and chimney-piece are of Hopton Wood marble. The main entrance hall is 36ft. by 20ft., and has a dado and doors of Burmese teak. The walls above the panelling are of Ancaster stone. The hall is lighted by a dome in the ceiling, filled with stained glass. The principal staircase is 12ft. wide, and of Hopton Wood marble. The hand-rail and its supports are of silver (polished). On the first floor is the council chamber, 42ft. by 42ft., exclusive of platform and gallery, and is seated for 100 members and officials. The walls are 35ft. high to the top of the dome, and are panelled to a height of 5ft. in Spanish mahogany. The walls above the dado are panelled in plaster. Four circular niches contain life-size figures illustrating the chief industries of the county—Agriculture, Pottery, Ironwork, and Mining—and under the east window is a figure of Justice. The ceiling is in plaster, and groined. The hall will seat 100 members, composing the full council and their officials. There are also a large committee room, 50ft. by 28ft., a smaller one, 32ft. by 23ft., and a chairman's parlour. The business hall on the ground floor is 28ft. by 20ft. The architect is Mr. H. T. Hare, A.R.I.B.A., 1, York Buildings, Adelphi, W.C., whose design was selected in competition, Mr. MacVicar Anderson being the assessor. The clerk of works was Mr. James Trill, 11, Tredegar-square, Bow, E. The contractor was Mr. H. Lovatt, of Wolverhampton, and the building has been superintended by Mr. Wilson Lovatt, assisted by Mr. J. M. Tildesley. The carving in wood and stone has been executed by Mr. W. Aumonier, of 1, New Inn-yard, Tottenham Court-road, W. The modelling and plaster enrichments are by Mr. F. E. E. Schenck, West-street, Pimlico, S.W.; leaded lights by Messrs. Pearce; lifts by Messrs. Waygood; iron-work construction and fireproof flooring by Messrs. Lindsay and Co., Westminster; and the entrance-gates and ironwork by Messrs. Starkie, Gardner, and Co., 29, Albert Embankment, S.E. The lavatories throughout have been fitted by Messrs. Shanks and Co., of London and Glasgow.

◆

CHIPS.

The Lanarkshire and Dumbartonshire Railway is to be opened early next year.

The name of Mr. Joseph Jeffery, house furnisher, at Northampton, has been placed on the commission of the peace for Northamptonshire.

The Superior Commission of the Grand Universal Exhibition in Paris of 1900 met on Monday, and unanimously approved of the financial scheme. Of the one hundred million francs required for the Great World's Show twenty million francs are to be provided by the State, twenty million francs are to be contributed by the Paris Municipality, and the sixty million francs remaining will be furnished by means of the issue of Exhibition lottery bonds.

Messrs. Dunn and Findlay, of Edinburgh, have been appointed architects of the Unionist Club-house, which is about to be built in Hanover-street, Edinburgh, on the site now occupied by the Albert Hotel.

A site has been acquired by Mr. Walter Reynolds, of the Leeds Theatre Royal, for the immediate erection thereon of a new and large theatre. The price paid for the property was £20,000, and Mr. Reynolds proposes to surround his theatre with a ring of shops. Building operations will commence almost immediately.

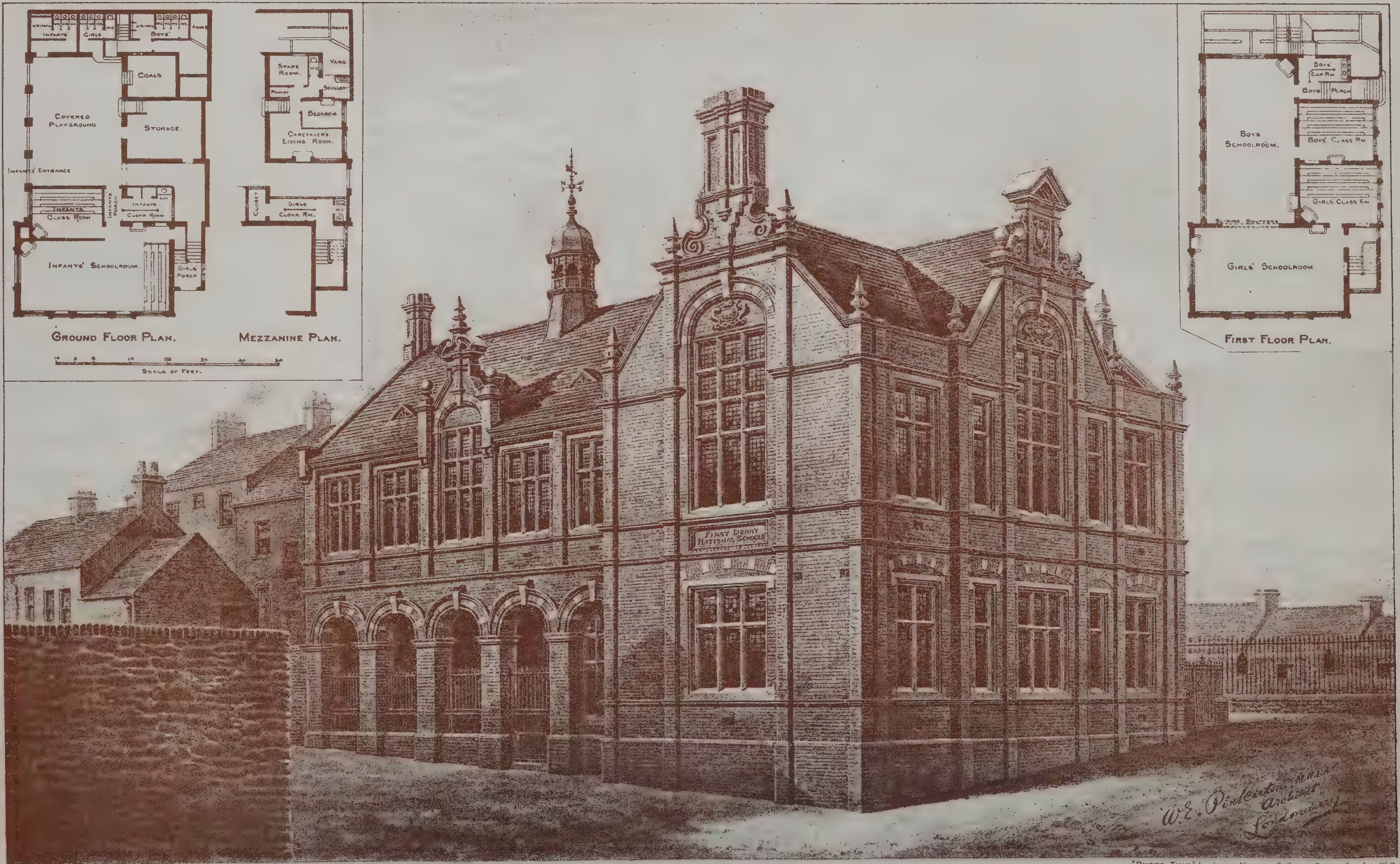
The contracts for the building of Mar Lodge, the new residence of the Duke of Fife and H.R.H. the Duchess of Fife, have now been settled. The cost of the new residence will be between £15,000 and £20,000. Mr. M. A. Marshall MacKenzie, A.R.S.A., of Aberdeen, is the architect.

The North Union railway bridge across the Ribble, at Preston, on the London and North-Western Railway, is about to be widened to the extent of one-half its present width. This bridge, of stone, has five arches, each having an elliptical sweep of 120ft. It was built by Messrs. Mullin and Co., of Dublin, and was opened in 1838, with the railway from Wigan to Preston; and it was enlarged to double its width in 1879-80, when a Government inspector pronounced it one of the finest pieces of masonry he had ever seen. The intention is still further to enlarge it to the extent of one-half its present width, at an estimated cost of about £100,000. At the same time the difficult north entrance to the Preston station is to be widened.

The departmental committee appointed by the Board of Agriculture to consider and report upon the steps which it is desirable to take for the better distribution and sale of Ordnance Survey maps held their first meeting on Thursday in last week, all the members being present. The committee propose to hold their next meeting on the 4th December, when it is intended to proceed with the examination of witnesses.

The parish church of Cranham has been opened after enlargement and restoration from plans by Mr. Gambier Parry. The large basso-rilievo sculptured panel under the exterior of the east window, representing the Crucifixion, and also the choir-stalls, and other wood and stone carving to the church, were executed under the architect's direction by Mr. Henry Frith, of Gloucester, who also supplied the carved oak altar-table and super-altar. The old chancel screen, which was in a dilapidated condition, has also been renovated, and Mr. Frith has erected a new carved oak screen between the chancel and organ-chamber.

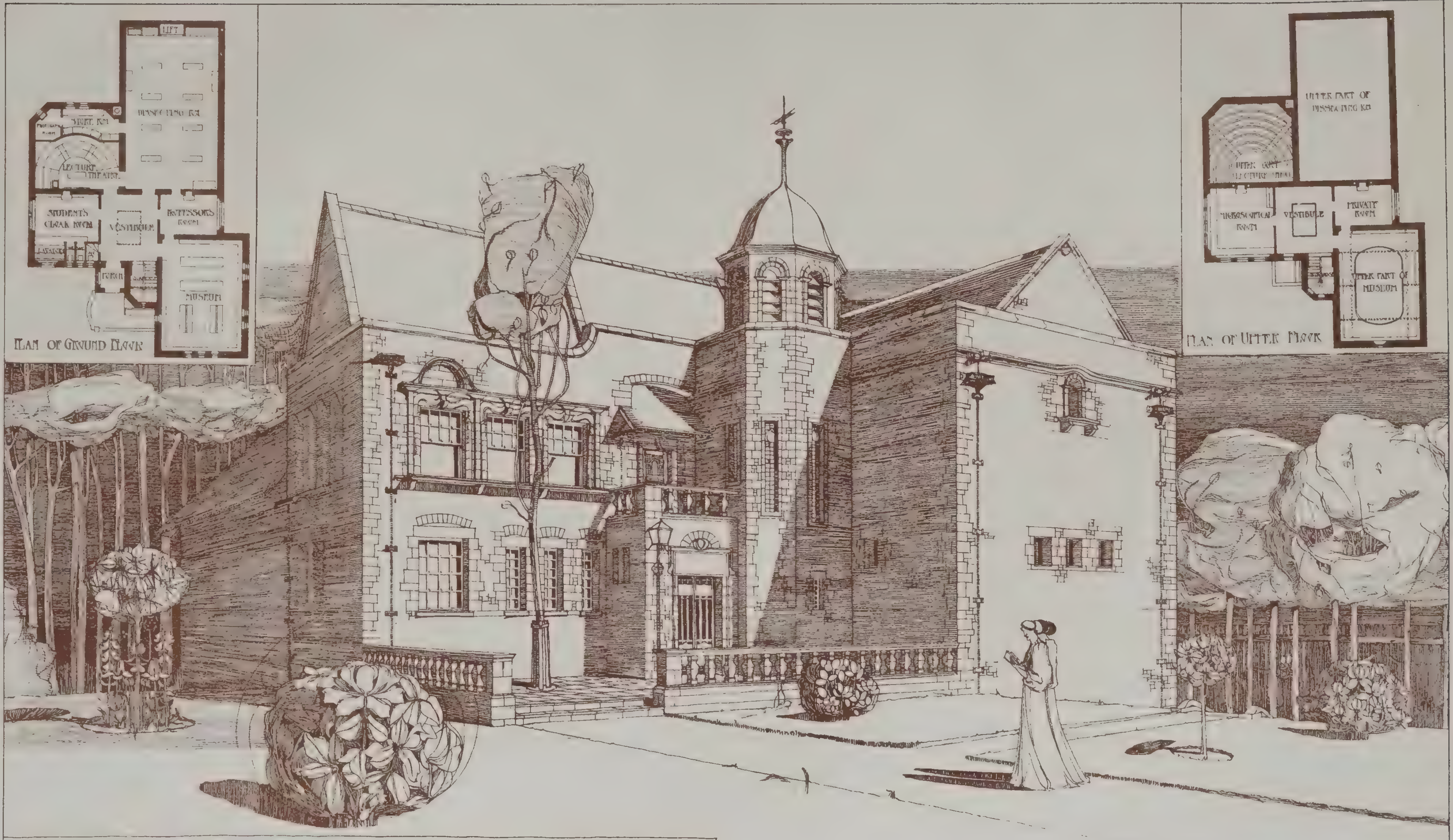
Adjudications in bankruptcy have been made in the cases of William Coker, Farringdon-street, E.C., now or late Lower Kennington-lane, S.E., surveyor; William Thomas Ellis (trading as Ellis and Co.), Cambridge-road, Bethnal Green, N.E., builder; and also Alexander M'Clymont, Cathcart-road, South Kensington, S.W., builder.



W. E. PINKERTON, *Architect*, LONDONDERRY.

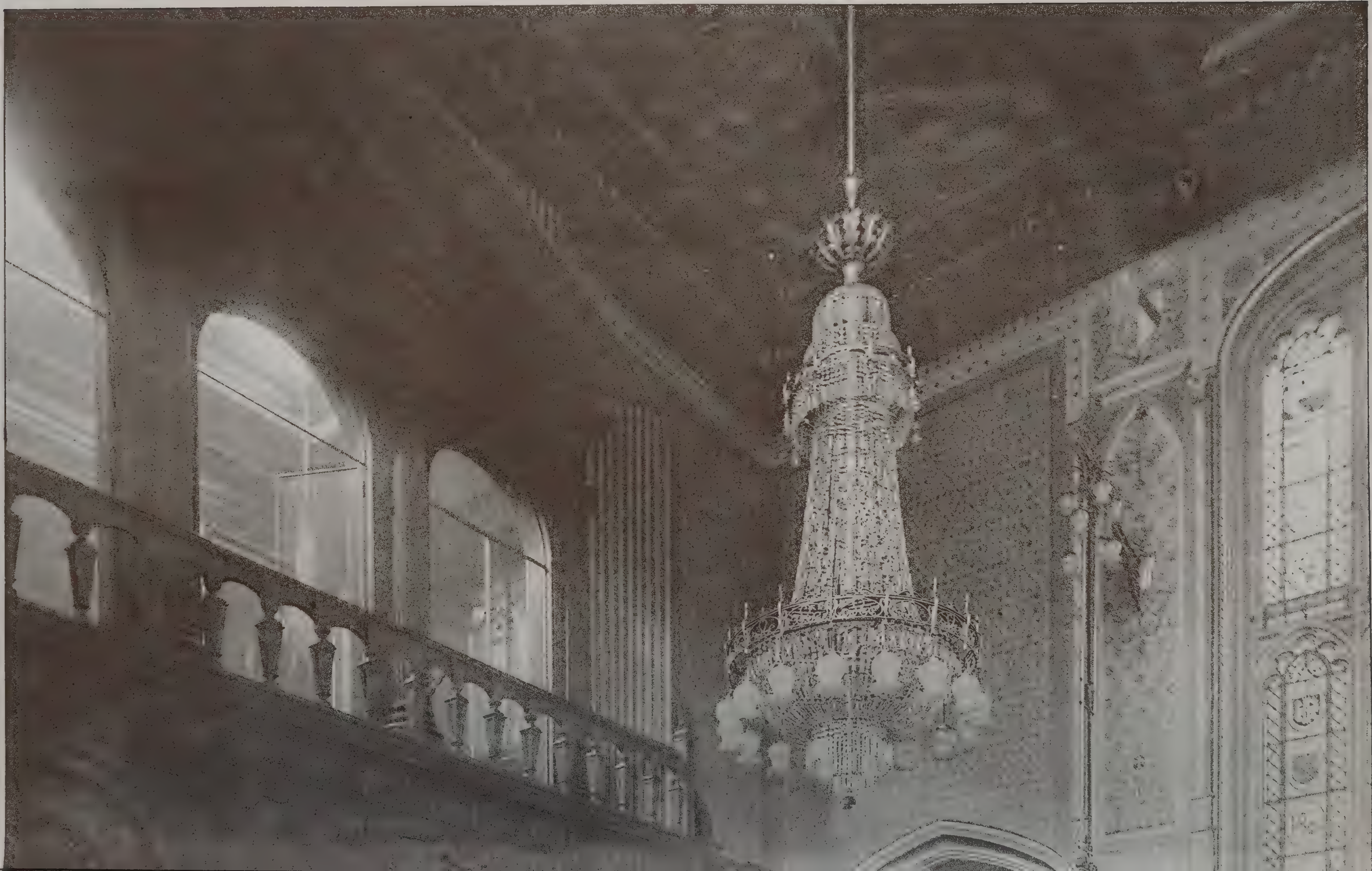
"PHOTO-TINT," by James Akerman, 6, Queen Square London W.C.

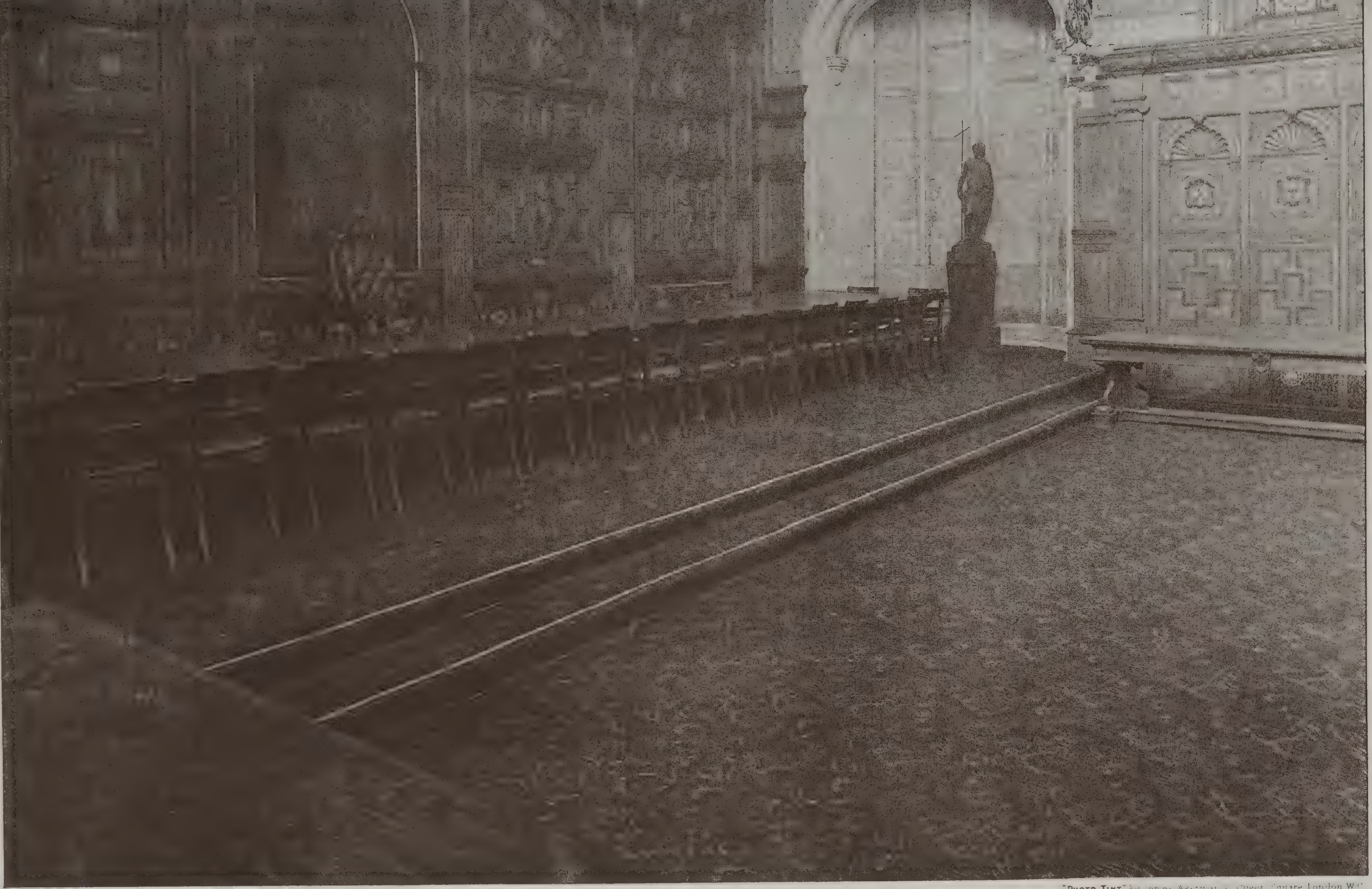
NEW SCHOOLS IN CONNECTION WITH FIRST DERRY PRESBYTERIAN CHURCH.
SELECTED DESIGN.



UNIVERSITY OF GLASGOW — MEDICAL
QUEEN MARGARET COLLEGE DEPRT^{T}

JOHN HONEYMAN
AND KEPPIE
ARCHITECTS.





·PHOTOGRAPHED·WITH·A·SANDELL·PLATE·

"PHOTO-TINT" by James Akerman, Queen Square London W.C.

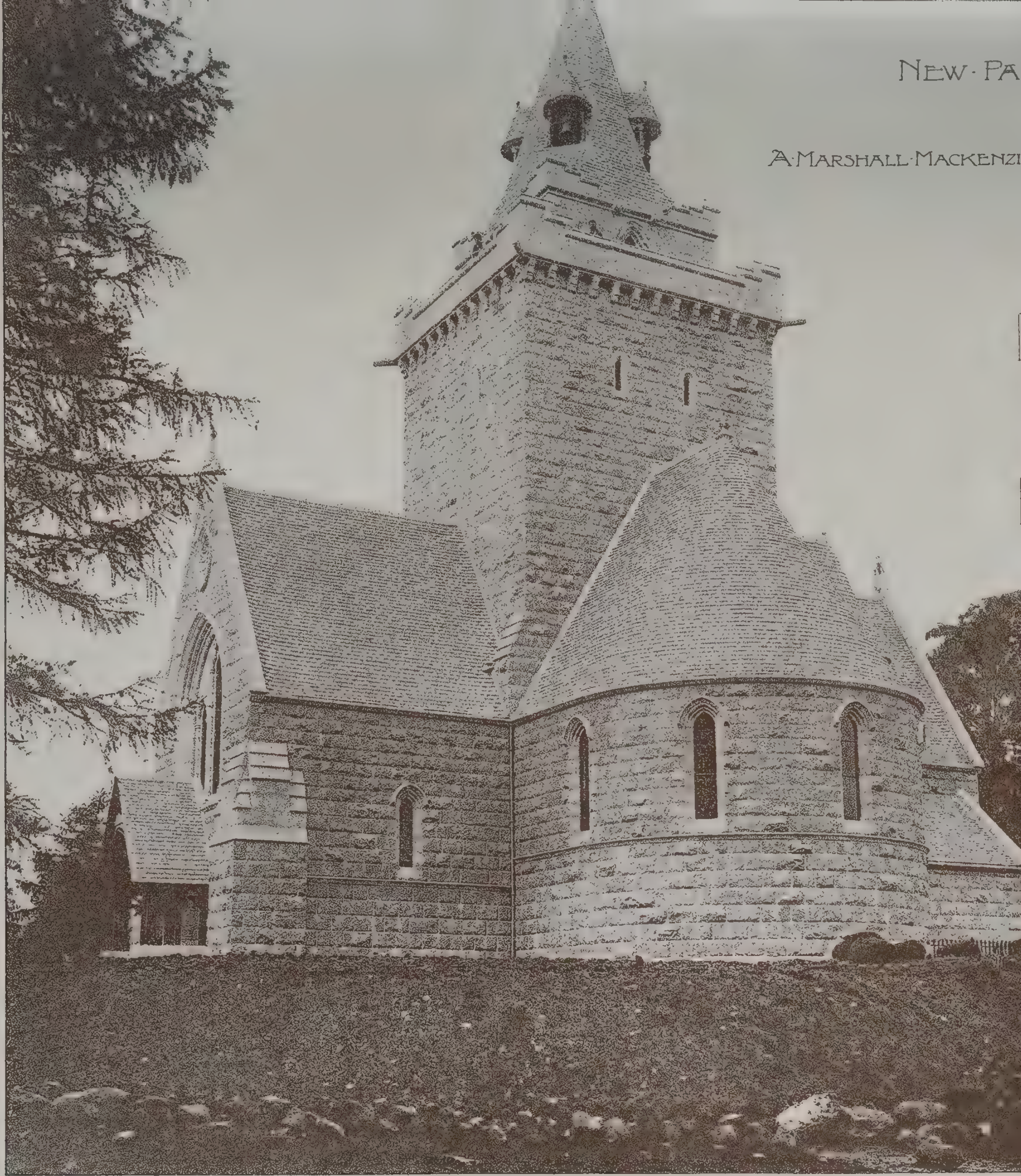
THE·CITY·GUILDS·Nº13·

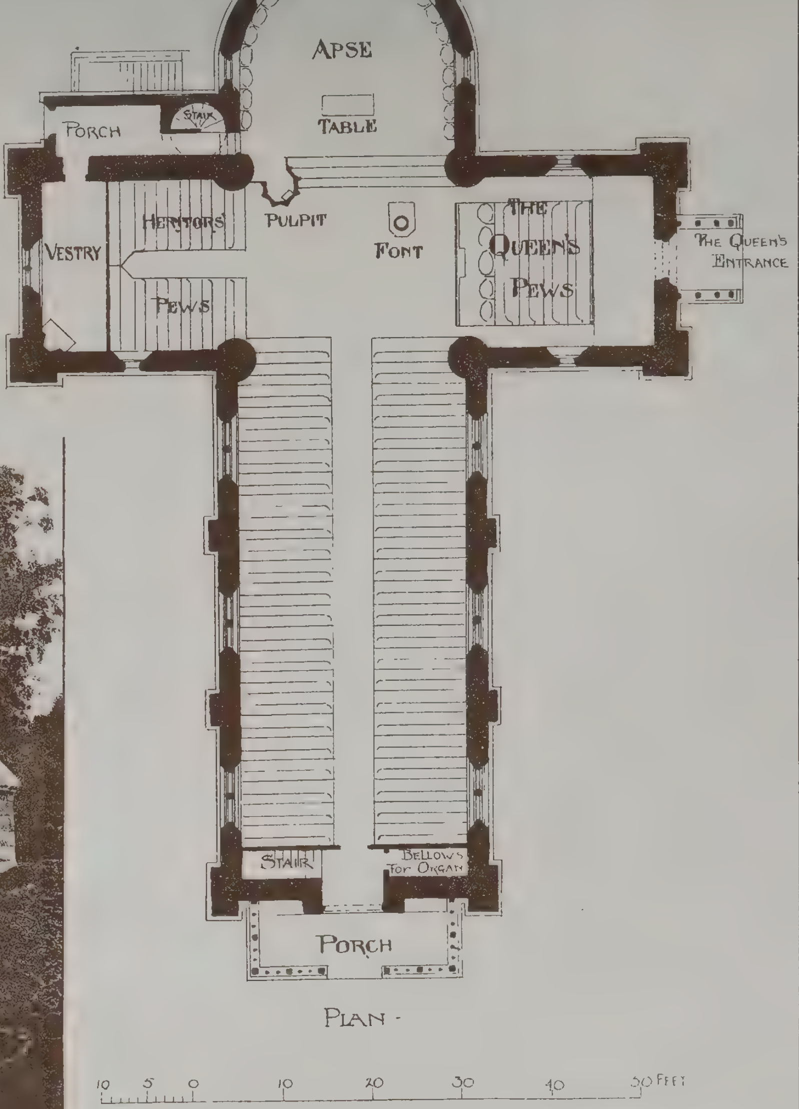
THE·HALL OF THE·MERCHANT-TAYLORS'·COMPANY· THE·GREAT·HALL

THE · QUEEN'S · PEW ·

NEW · PARISH · CHURCH · AT · CRATHIE · ABERDEENSHIRE ·

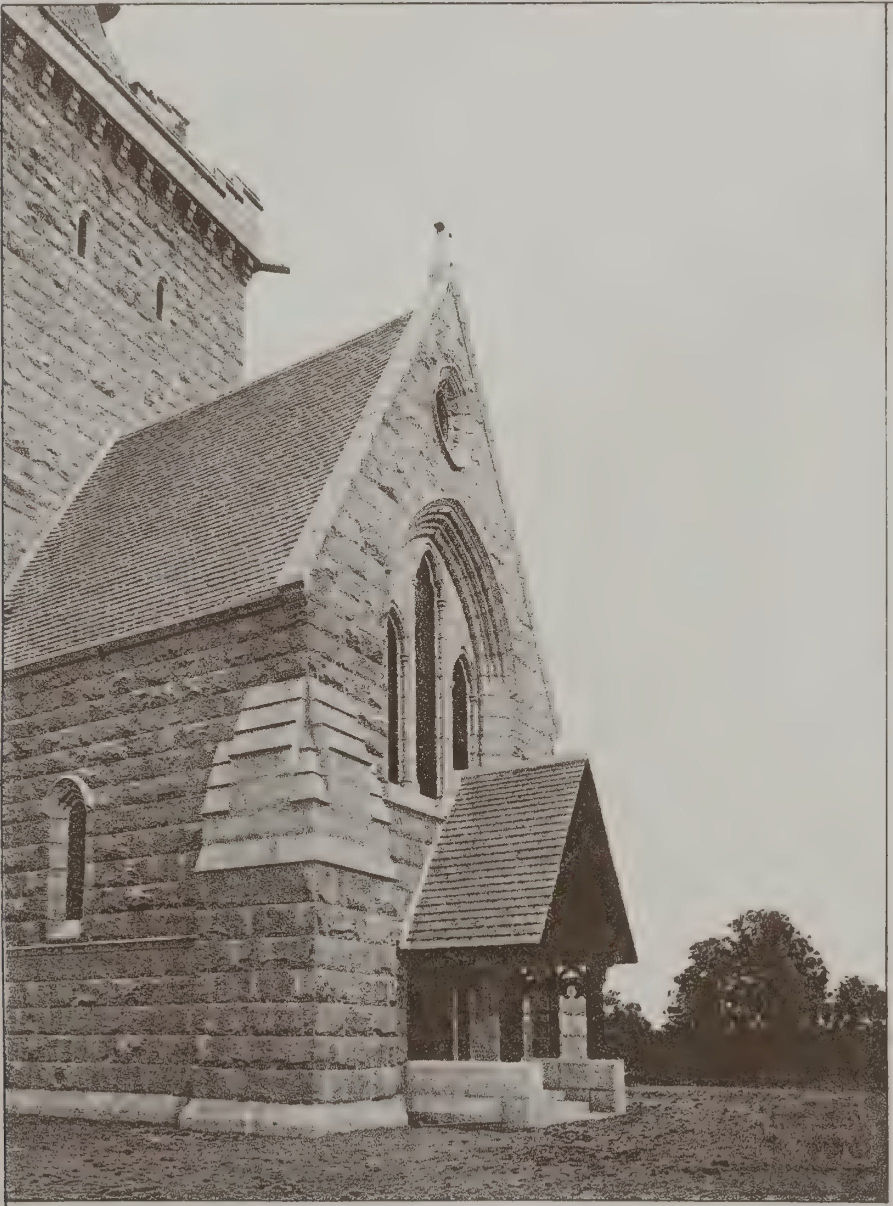
A · MARSHALL · MACKENZIE · A.R.S.A · ARCH^T



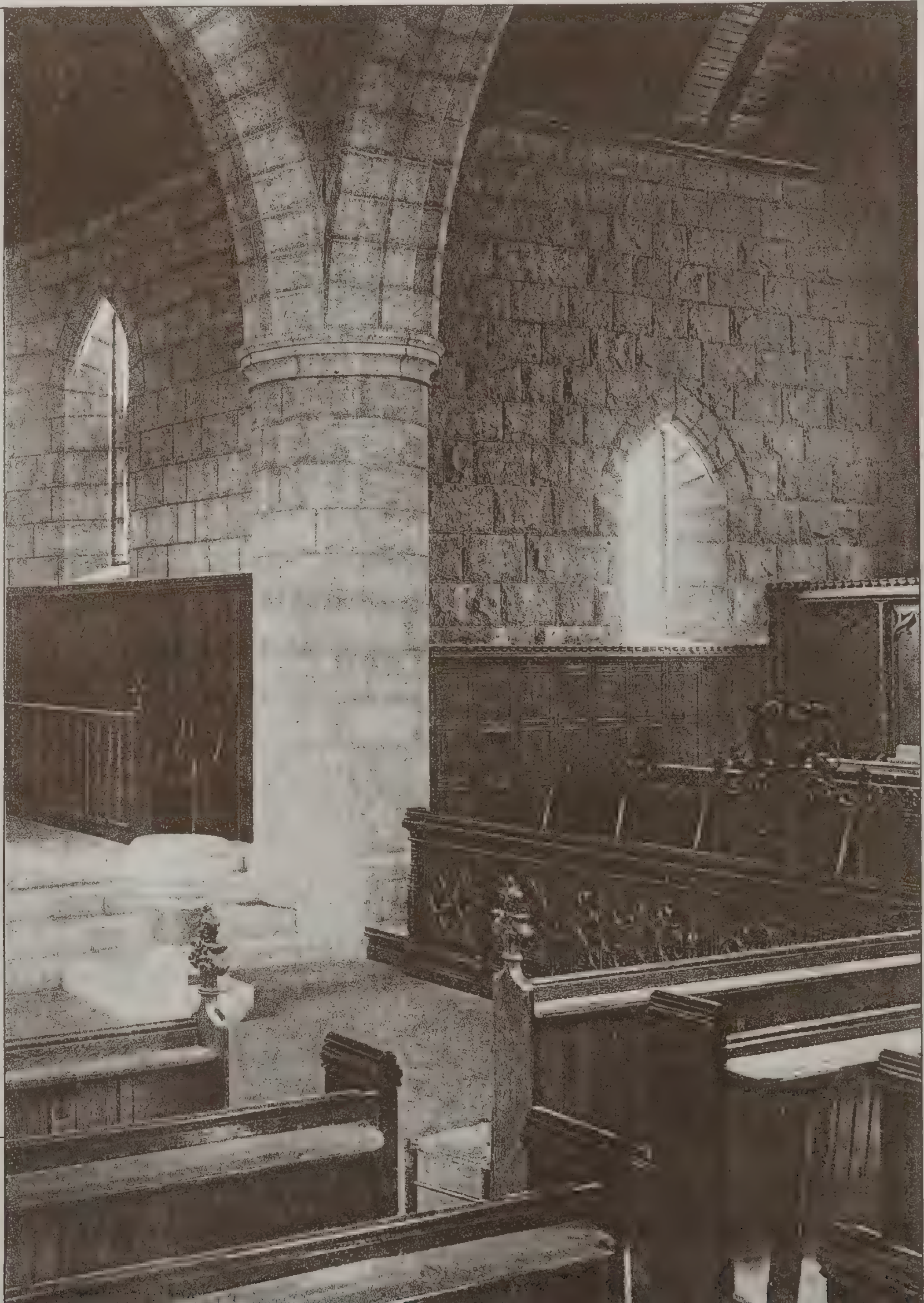


PLAN ·

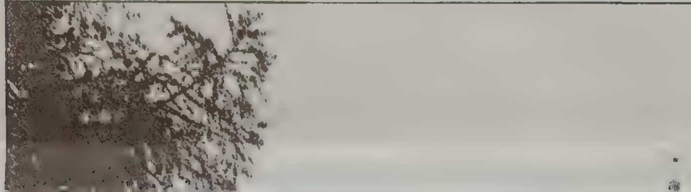
"PHOTO-TINT," by James Akerman, 6, Queen Square London, W.



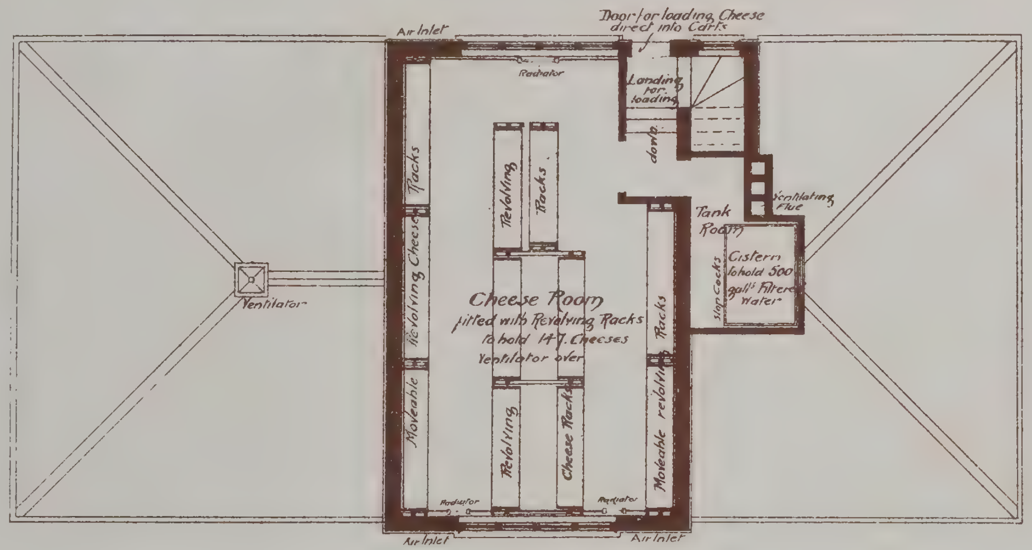
THE QUEEN'S PORCH



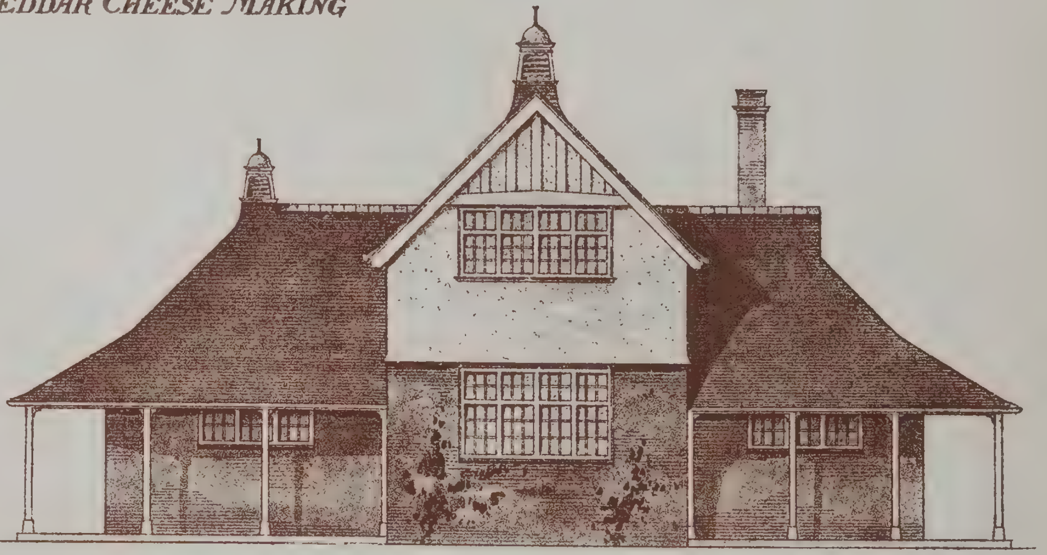
VIEW



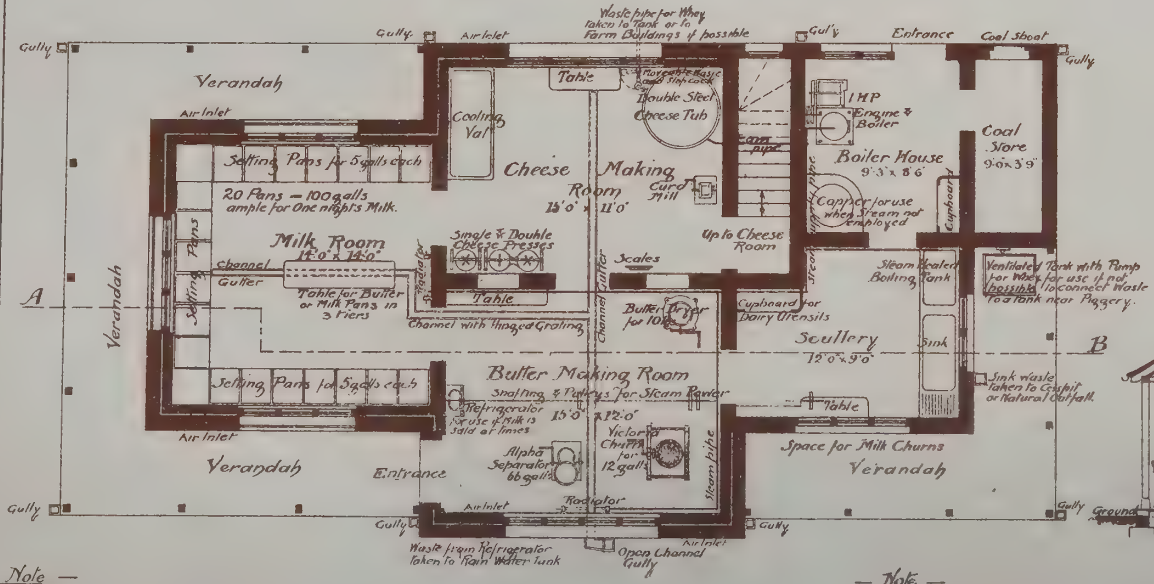
DAIRY FOR 50 COWS
FOR BUTTER AND CHEDDAR CHEESE MAKING



Plan of Upper Floor

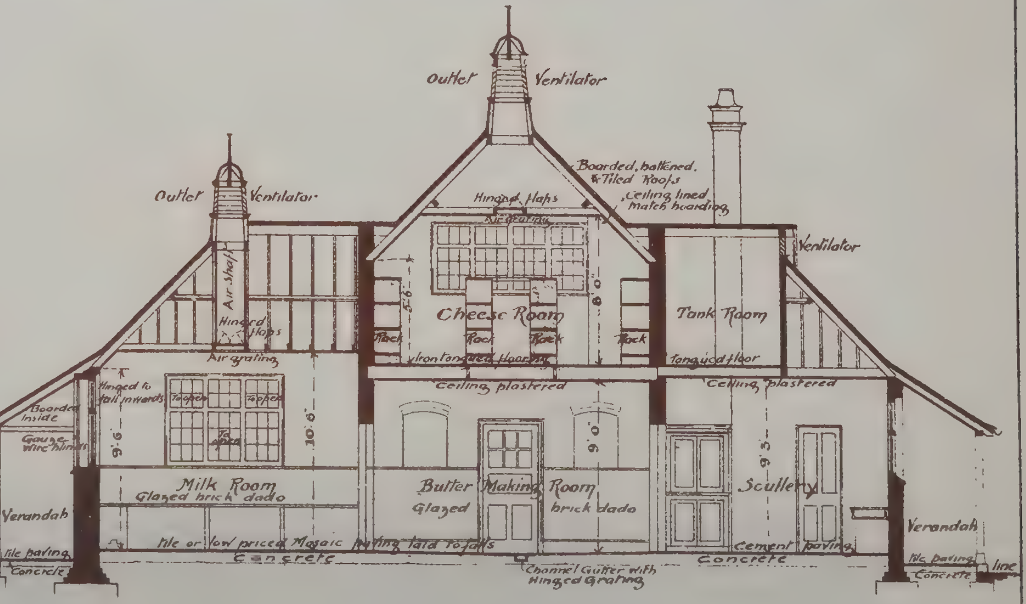


Front Elevation


Gully
Air Inlet
Waste pipe for Whey taken to Tank or to Farm Buildings if possible
Entrance
Coal Shoot
Verandah
Setting Pans for 5 galls each
20 Pans = 100 galls ample for One night's Milk.
Cooling Vat
Table
Moveable Basic and Slop cock
Double Steel Cheese Tub
Cheese Making Room 15'0" x 11'0"
Curd Mill
1 HP Engine & Boiler
Boiler House 9'3" x 8'6"
Coal Store 9'0" x 3'9"
Copper for use when Steam not employed
Cupboard
Up to Cheese Room
Steam pipe
Milk Room 14'0" x 14'0"
Channel Gutter
Table for Butter or Milk Pans in 3 Tiers
Single & Double Cheese Presses
Radiator
Table
Scales
Channel Gutter
Butter Dryer for 10lb
Cupboard for Dairy Utensils
Steam Heated Boiling Tank
Ventilated Tank with Pump for Whey for use if not possible to connect Waste to a tank near Piggery.
Channel with Hinged Grating
Scullery 12'0" x 9'0"
Sink
A
B
Sink waste taken to Cesspit or Natural Outfall.
Setting Pans for 5 galls each
Butter Making Room
Shafting & Pulleys for Steam Power
15'0" x 12'0"
Refrigerator for use if Milk is sold at times
Alpha Separator 66 galls
Victoria Churn for 12 galls
Steam pipe
Table
Space for Milk Churns
Verandah
Entrance
Radiator
Waste from Refrigerator taken to Rain Water Tank
Open Channel Gully

Plan of Ground Floor

Roadway all round Dairy



Section on line A.B.

Note —
Water is all supplied from Cistern in Tank Room, filled with water pumped through an Atkins & Co's patent Filter. Filtered water only being used for Dairy.

Rain Water all taken to a Tank near building, Waste Water taken to Natural Outfall or Cesspit

— Note —
This Dairy is arranged to be worked either by Hand or Steam power Engine and Shafting being provided.

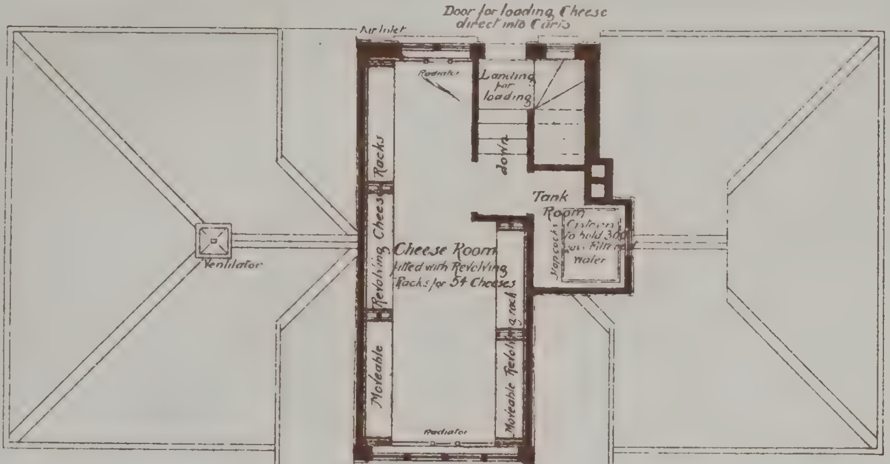
Air Inlets are placed in suitable positions but windows chiefly depended on for Ventilation.

Low pressure Steam Radiators are placed in Milk and Butter Making Rooms to keep

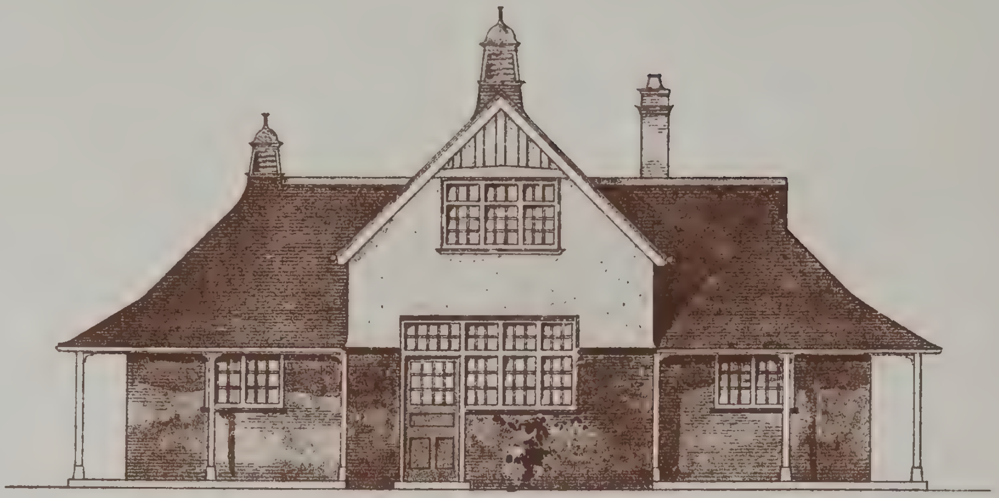
CHAS. A. CALLON. A.R.I.B.A. ARCHT.

THE·BRITISH·DAIRY·FARMERS' ASSOCIATION· 1ST & 2ND PRIZE·DESIGNS·FOR·MODEL·DAIRIES·1895·

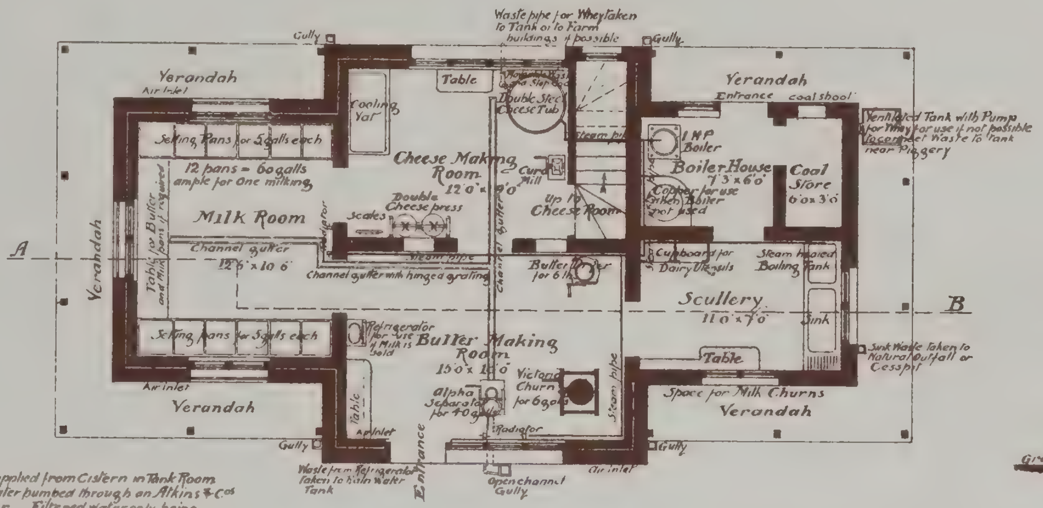
DAIRY FOR 25 COWS
FOR BUTTER AND CHEDDAR CHEESE MAKING


Door for loading Cheese direct into Carts
Air Inlet
Radiator
Landing for loading
down
Tank Room
Cistern to hold 300 … Filtered water
Stopcocks
Ventilator
Cheese Room fitted with Revolving Racks for 54 Cheeses
Revolving Cheese Racks
Moveable
Revolving rack
Moveable
Radiator

Plan of Upper Floor



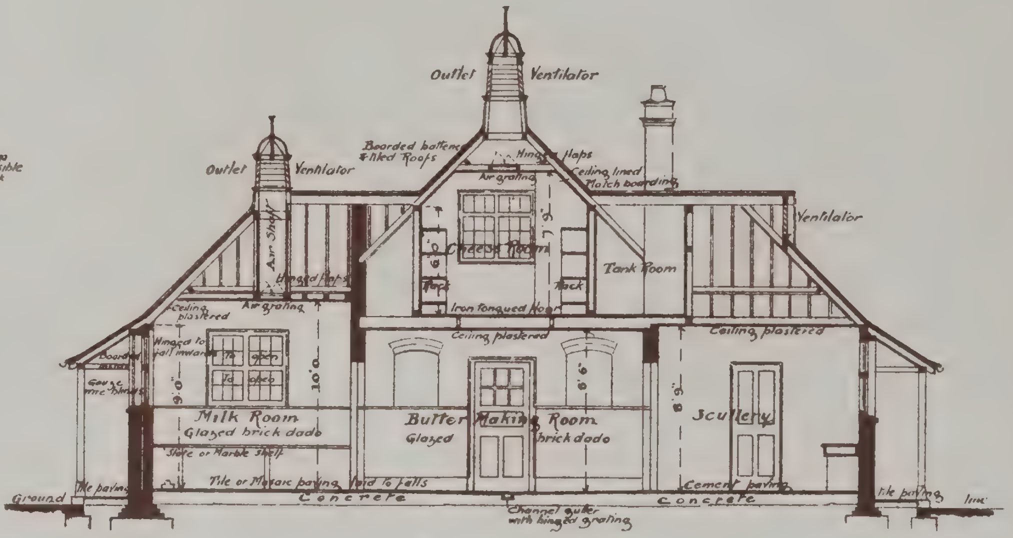
Front Elevation


Waste pipe for Whey taken to Tank or to Farm buildings if possible
Gully
Gully
Verandah
Air Inlet
Table
Cooling Vat
Double Steel Cheese Tub
Steam pipe
Verandah
Entrance
coal shoot
Ventilated Tank with Pump for Whey for use if not possible to connect Waste to Tank near Piggery
Setting Pans for 5galls each
12 pans = 60galls ample for one milking
Cheese Making Room 12'0" x 9'0"
Curd Mill
IMP Boiler
Boiler House 7'3" x 6'0"
Coal Store 6'0" x 3'0"
Copper for use when Boiler not used
Table for Butter and Milk pans if required
Milk Room
Radiator
Scales
Double Cheese press
Up to Cheese Room
Channel gutter
12'6" x 10'6"
Steam pipe
Channel gutter with hinged grating
Channel gutter
Butter Dryer for 6 lbs
Cupboard for Dairy Utensils
Steam heated Boiling Tank
A
Verandah
Scullery 11'0" x 7'0"
B
Sink
Setting Pans for 5galls each
Refrigerator for use if Milk is sold
Butter Making Room 15'0" x 10'0"
Table
Sink Waste taken to Natural Outfall or Cesspit
Alpha Separator for 40galls
Victoria Churn for 6galls
Steam pipe
Space for Milk Churns
Air Inlet
Verandah
Table
Verandah
Air Inlet
Radiator
Gully
Gully
Waste from Refrigerator taken to Rain Water Tank
Entrance
Open channel Gully
Air inlet

Notes —
Water is all supplied from Cistern in Tank Room filled with Water pumped through an Atkins & Co's patent Filter. Filtered water only being used for Dairy.
Rain Water all taken to a Tank near building.
Waste Water taken to Natural Outfall or Cesspit.
Air Inlets placed in suitable positions but Windows chiefly depended on for Ventilation.
Low pressure Steam Radiators placed in Milk & Butter Making Rooms for use in very Severe weather.

Plan of Ground Floor

Roadway all round Dairy.



Section on line A.B.

LIBRARY
OF THE
UNIVERSITY

CAST IRON IN BUILDER'S AND CONTRACTOR'S WORK.—IX.

By Joseph Horner.

OWING to the marked difference in the strength of cast iron in tension and compression, it is usual, when practicable, to cast those portions of work which are to be in tension in the bottom of the mould. All the advantage to be derived from closer metal is thus secured. This is practicable in the case of girders subject to uniform stress in any one direction only. But it is not applicable to columns on which the stresses are either uniform, or, if variable, acting in all directions indifferently at different times. Thus, for instance, in columns sustaining the girders of a bridge subject to side wind pressure, the opposite sides of the columns will in turn be in compression and tension. This will be due to the varying directions of the wind against the girders, producing bending of the columns to one side or the other. Such columns should in theory be cast upright, with heads. But it is seldom done, because more costly than the usual method of casting horizontally. Horizontal casting, as we have seen, is prolific of several evils, unless very great care is exercised in moulding, coring up, and pouring, and in subsequent testing and inspection. A test-bar will give the strength of the iron in the column, but it tells nothing at all about the evils above alluded to.

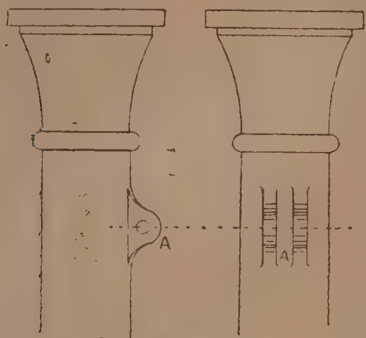


Fig. 29.

We have seen the reason why more porous metal occurs at the upper part of a casting than at the bottom, being simply because it is subject to little pressure, while that in the bottom is subjected to a considerable liquid pressure, which pressure effects its consolidation, making it closer and stronger. The deeper the mould the greater the pressure, and the sounder the lower parts of the casting. This is the chief reason why the supplementary metal termed "head" is cast upon much work that has to be tooled, such as engine cylinders, hydraulic cylinders and rams. All the spongy metal is in the head, and when this is turned or sawn off, the casting below is uniformly sound at top as well as at bottom. This sponginess is always present in some degree on the top part of all castings, and that is why founders always try to cast parts which have to be planed or otherwise machined bright down in the bottom. If the top part of a casting is machined, it almost always turns out spongy unless special precautions are taken, such as running through a skimming chamber, or allowing an extra thickness to be machined off, or casting several risers or flow-off gates. The first-named consists of a circular chamber set right in the way of the course of the metal, and which is arranged to impart a swirling motion to the metal, sending the lighter matters upwards into a riser above, and leaving only clean metal to pass on into the mould. The third named means that there is a slight flow through of metal in the mould permitted, the lighter matters passing out into vertical channels or risers. But these devices do not wholly prevent sponginess. They do, however, effect removal of the scurf, and that is something, since the presence of this is a fruitful source of sponginess. But the greater natural porosity of the metal on the top of a casting cannot be wholly removed.

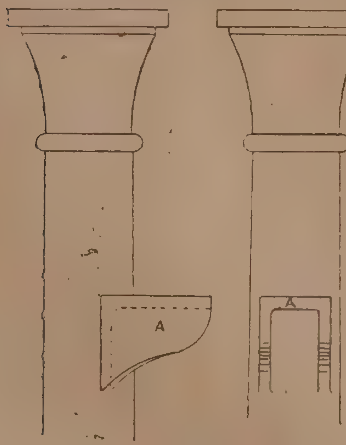


Fig. 30.

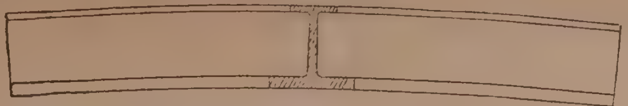


Fig. 33.

Because the lighter, more open metal always remains in the upper portions of a casting, it is always advisable, when practicable, to cast small projections and attachments as lugs, or snugs, Fig. 29, A; brackets, Fig. 30, A, flanges, &c., in the bottom. Such parts are often subjected to stresses more direct than those which occur in the body of the casting, and fracture of these spoils the whole job. When these cannot be cast in the bottom, the next best plan is to cast them on one side. When they must of necessity be cast in the top, then invariably a riser should be brought up from them to receive the sullage, and it is generally desirable also that the runner and ingate should be kept at some little distance away from them.

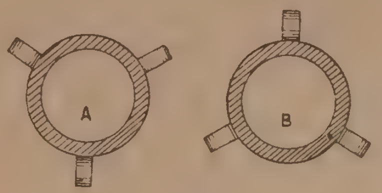


Fig. 31.

Another point is that cores ought not to be inserted in small projections, as lugs, especially in the top. They are liable to generate gas, and so increase the evil of porous metal.

If there are three lugs on a column they should be cast as at A, Fig. 31, and not as at B. At B, one lug comes at the highest part of the mould, the worst position; at A two lugs are high up, but not higher than the top of the body of the column; B would sure to come out faintly, A would be good.

Since in the case of columns the nature of the stresses is variable, so that every side may in turn be in compression, or in tension, due to the varying action of live loads, no difference, therefore, can be made in thickness as in a girder. But a slight difference is sometimes made by moulders giving a $\frac{1}{8}$in. or $\frac{1}{4}$in. more metal in the top than in the bottom (Fig. 32), to compensnte for the diminution of density in the top, as compared with the bottom. Then, if the core happens to rise $\frac{1}{8}$in., or more, which it is likely to do, the result is a curved column, which is dangerous. The side which cools the quicker in the mould will be concave, generally the thin side.

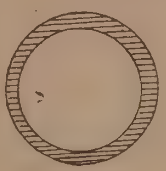


Fig. 32.

The evil of bad proportioning, pointed out in the last article, is often seen in quite different ways. Castings may be sound in the sense of being free from local massing of metal and from fractures due to sharp angles, and yet give trouble, in consequence of being crooked. Crooked castings are not only unsightly, but often unsafe; yet work may be so designed, and patterns so made, that no moulder in the world could turn out a straight casting therefrom. Something may often be done in the foundry to minimise the evil; but as often as not matters are made worse. The only thing a moulder can do is to uncover certain portions of the mould, and allow the casting to cool locally; but there are several objections to this too numerous to go into here. They may be summed up in the general remark, that castings are sounder, more homogeneous, softer, and keep their form better when allowed to cool down in the sand than when doctored by local and partial cooling. There are cases when the moulder finds it necessary to uncover and cool some portion first; but that is because he has a badly-designed job, which, if not thus treated, would almost certainly fracture.

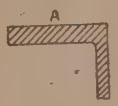


Fig. 34.

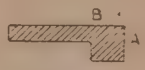


Fig. 35.

If a girder is made of the section in Fig. 33—that is, with a very unequal section, and straight lengthwise in the pattern—then the casting will come out curved, as shown exaggerated in the figure. To what extent it will curve depends on the amount of disproportion in the flanges, on the depth of the web, and on the length of the casting. It might be anything between $\frac{3}{8}$in. and $\frac{3}{4}$in. The nearer the flanges approach in cross-sectional area to each other, and the shorter the girder, the less will be the amount of the camber; so that it is easy to proportion a girder that it shall not curve at all, or at least not to any sensible extent. But if a certain design has to be adhered to—a design involving disproportion—then the pattern must be cambered to the same extent, and in the opposite direction to the casting, and the opinion of a pattern-maker or a moulder must be taken thereon. A sill like Fig. 34, with flanges of unequal thickness, will curve, going concave at A; so will a casting like Fig. 35, going concave at both A and B; so will a casting like Fig. 36 go concave at both A and B. A gutter, Fig. 37, will also go concave at A. In each of these cases the patterns must be made convex on the sides indicated, or the proportions must be altered. The latter method is far preferable whenever practicable. Of course, the metal need not be of absolutely equal thickness throughout; but there should not be any great disparity. In a massive casting there may be much greater differences in thickness than in a light one. Light castings are very sensitive to shrinkage stresses, having little metal to resist them, resembling, in this

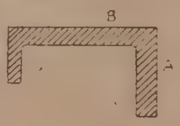


Fig. 36.

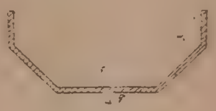


Fig. 37.

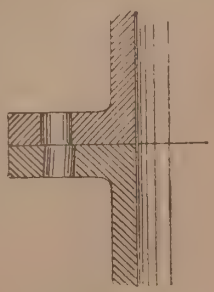


Fig. 38.

respect, sheet metals, which take a buckle so readily.

Another fault often found in castings is the inaccuracy of bolt-holes. Bolt-holes can be cast very accurately—sufficiently true for all the requirements of builders' work, if proper care is taken; but when they come as shown in Fig. 38, that means the insertion of smaller bolts, or else the straining and possible fracture of a flange by hard driving of the bolts.

BOOKS RECEIVED.

Portraits from the Plymouth Comet (published at 7, Whimple-street, Plymouth).—A series of a hundred portraits of well-known Devonians and Cornishmen has been reprinted as a sixpenny folio, with succinct biographies of the subjects. Among the many we recognise—and all admirable likenesses—are Mr. Sylvanus Trevail, F.R.I.B.A., M.S.A., who is just completing a hardworking year as mayor of Truro, a work into which he has thrown all his accustomed energy, and our vivacious correspondent, Mr. Harry Hems, the Exeter sculptor.——*Practical Trigonometry for the Use of Engineers, Architects, and Surveyors*, by HENRY ADAMS, M.Inst.C.E., M.I.M.E., F.S.I., &c. (London: Whittaker and Co.), is just what is wanted by young students, and especially for those preparing for examinations such as those of the Surveyors' Institution, where trigonometry is only incidentally required. Professor Adams has the gift of being able to put into popular language much that many other people leave incomprehensible, and not a few make confusion worse confounded of by attempts to be lucid which are merely commonplace.——Vols. V. and VI. of the *New Technical Educator* (London: Cassell and Co., Limited) are fully up to the high standard of previous numbers.——*The Cavendish Lecture, on Dreamy Mental States*, by Sir JAMES CRICHTON-BROWNE, M.D., LL.D., F.R.S. (London: Baillière, Tindall, and Cox), is an interesting little brochure to all who have studied this by-path of pathology, or take any interest in psychological subjects. Many remarkable psychical phenomena are cited. The "dreamy mental state," as it is called, is a sense of reminiscence which has occurred to many great writers—some very gifted. It is really an impression suddenly taking place in the mind that the passing moment or objects have been experienced or seen before. Thus the author quotes Rossetti's fine verse in "Sudden Light," which exemplifies this mysterious impression:—

> I have been here before,
> But when or how I cannot tell;
> I know the grass beyond the door,
> The keen, sweet smell,
> The sighing sound, the lights around the shore.
>
> You have been mine before,
> How long ago I may not know;
> But just when at that swallow's soar
> Your neck turned so,
> Some veil did fall—I know it all of yore.

The author also quotes Sir Walter Scott, Dickens, and other great authors to illustrate this dreamy mental state as experienced by masters of the literary craft. He thinks it is allied to epilepsy and other brain diseases, and that well-ordered education and mental discipline may do much to cure it. The book is worth reading by all brain-workers.——*Indian Engineering* (Sept. 28) reviews the question of narrow-gauge lines discussed at the last International Railway Congress at St. Petersburg. The meeting "finally adopted without any special reference to gauge the conclusion that a ratio of 3 : 1 for width of body to gauge appeared admissible, subject to conditions of speed and centre of gravity and of mode of suspension." As to floor space per passenger, no definite conclusion was arrived at, as the habits of different countries and the nature of traffic and length of journeys varied. Generally, for passengers standing, 1·6sq.ft. to 2·26sq.ft. each, and for passengers sitting, 2·5sq.ft. to 6·1sq.ft. were mentioned, including passages. A mean of 18in. square was stated to be necessary for comfort. In another article, the proposal to light the city of Calcutta with the electric light is discussed, and the writer advocates the support of a well-devised scheme of electrical distribution, and the selection of one system of lighting rather than two or more. Articles of mathematical interest appear. One is on the construction of trigonometrical tables, the writer showing that the sines and cosines of an unlimited number of angles, great and small, may be carried to any required number of places of decimals with little labour by means of some very simple theorems discovered by him. A well-known mathematical contributor (A. Ewbank) has another article on "Ship Lights," of some interest.——*The Antiquary* for November (Elliot Stock) contains, as usual, some interesting articles. Miss Florence Peacock has an entertaining paper on "Traditions and Customs Relating to Death and Burial in Lincolnshire," and from the number of premonitions or signs of death which she gives, Lincolnshire must be a rather superstitious county. The traditionary beliefs and customs in this county are interesting, at least, to many. Dr. Alleyne Walter continues his examples of Irish plate. A two-handled cup of vase shape with repoussé work (1769), and a censer and ship for incense, preserved in St. Nicholas, Dublin, are illustrated. They are good examples of Irish silversmiths' work. A fine monstrance, bearing London hall marks 1693, is also engraved of elegant design in the stem and base. "Coningsby Hospital, Hereford," is described and illustrated by W. John Burns. "Notes on Folklore," and other articles appear.——*The Law Relating to Building*, third edition, by His Honour JUDGE EMDEN, assisted by HENRY JOHNSTON (London: Knight and Co., Fleet-street), is a new and remodelled edition of a book we have before reviewed, which has been found very helpful to the profession. Comparing the volume with the last edition, we find the work has been recast and condensed. The classification has been considerably altered if we look at the table of contents. In the old volume, Chapter II., on "What Building Leases and Agreements may be Made," was a very comprehensive chapter; the new edition condenses the whole under a few heads. The third chapter of the new edition treats of bills of quantities, specifications, tenders, and sureties; the next chapter on forms of contract, duty independently of contract, corporation contracts, divided contracts. The architect's duties and liabilities, advances to builders, time and penalties, property in building materials, extras, building covenants, easements, and other questions are fully discussed. The precedents of building leases and contracts, and the statute law relating to building are invaluable additions to Judge Emden's work. Equally useful are the notes of cases appended; the Acts regulating gas and water. The London Building Act is fully given amongst the other statutes, and the whole is well printed with marginal headings. As a general handbook of the law relating to building, the work is very complete.——*Archæologia Oxoniensis*, Part VI. (London: Henry Frowde, Amen-corner, E.C.), contains an article on "Phœnician Characters from Sumatra," which will be of interest to Oriental scholars. In another article a detailed account is given of the marble monument found in a wall during the restoration of Oxford Cathedral in 1875. The marble fragments found, it is conjectured, belonged to the shrine or the base that supported the shrine of St. Frideswide, known to have been erected in 1270 to take the place of the coffin in which her relics were deposited in 1180. The illustration of the carved spandrel shows a very beautiful adaptation of celandine. The fragments found were put together and placed in position with great care on the remains of the fragment of plinth, and measurements enabled a restoration of the monument to be made, from which it was found that the monument comprised two trefoiled arches, each 3ft. in diameter, with a single arch at each end. The total height was 6ft., and the total length 7ft., and width of monument 3ft. 6in. The particulars of other researches are of interest. Another contribution is on the architecture of the Bodleian Library and the Old Schools.——*Statically Indeterminate Structures*, by HAROLD MEDWAY MARTIN, Wh. Sc. (London: Offices of *Engineering*, Bedford-street, Strand), is a reprint from the pages of *Engineering*. The author applies the "principle of least work" to determining the stresses in structures with superfluous parts. Very few writers have considered the subject of statically indeterminate structures, though for solid beams, trusses, arches, continuous girders, and stiffened suspension bridges the method of least work is very usefully applied to determine the stresses. The author deals with arches, and shows how the method can be applied to a semicircular arch by a simple process which determines the bending stresses on both sides of the arch unequally loaded. Two hinged arches are treated by reference to the Washington Bridge over the Harlem River, New York, the span of which is 510ft. between the hinges, and the rise 90ft., each rib is 13ft. deep, and is of I section. The various stresses acting on the rib are divided under three heads—that due to bending, that due to direct compression, and that due to shearing forces, and these are severally discussed. Rigid arches are next considered; also suspension bridges, continuous girders, and trough floors. The investigations are of interest to the engineer and mathematical student.——*Programme of the City and Guilds Technical Institution, Finsbury.* Session 1895-96.—This useful programme of day and evening classes of the Technical College, Finsbury, contains an almanac and all particulars as to the courses of instruction, arrangements of the session, fees, prizes, scholarships, &c. The courses of instruction on mechanical engineering, applied mathematics, applied physics, applied art, special trade classes are fully detailed.——*The Tallerman-Sheffield Patent Localised Hot-Air Bath* (London: Baillière, Tindall, and Cox, King William-street, Strand) is a pamphlet descriptive of this hot-air bath and its remarkable success in cases of rheumatic arthritis of long standing in gout and sprains. The system is a local application of super-heated dry air. The particulars of cases treated at St. Bartholomew's Hospital, North-West London Hospital, Charing Cross Hospital, St. Mary's Hospital, and other establishments are of interest. To those suffering from rheumatism in its many forms the pamphlet is worth perusal.——*Ceramics: National Art Library, South Kensington* (London: Eyre and Spottiswoode).—This is a classified catalogue of printed books on the subject of ceramics, and is the first of a new series, with the object of enabling every reader to ascertain with the least trouble what works the National Art Library contains on any particular branch of art. The order followed in subdivisions of each section is chronological, which is a useful feature. The catalogue is very comprehensive. It comprises works on the manufacture of bricks, tiles, and terracotta, stoneware, porcelain, and glazes; on style and ornament, architectural decoration, many of them well known and valuable. Oriental, Prehistoric, Antique Greek, Etruscan, and Old Latin, Roman, Early Christian and Byzantine, Mediæval, Renaissance, Modern, are classified, each section comprising treatises of every important country. Thus under the head of Modern we get Burmantofts, Doulton ware, and other books and illustrated catalogues. To all collectors and students of ceramics and the many allied industries this classed catalogue will be of much service.——*The Reliquary and Illustrated Archæologist*, New Series, Vol. I. (London: Bemrose and Sons, Ltd., Old Bailey), is a handsomely-bound volume of this quarterly journal and review, which is devoted to Early Pagan and Christian antiquities in Great Britain, ecclesiology, and other kindred subjects, edited by J. Romilly Allen, F.S.A. (Scot.) The plates and photo-process illustrations are excellent. The frontispiece is a monumental effigy in the south aisle of a church in Denbigh, said to have been transferred from the Cistercian abbey of Valle Crucis, and illustrates a paper by Stephen W. Williams, F.S.A. "Wall-Painting at Kirkby Hall," by H. Swainson Cowper, F.S.A., is the title of an interesting description of wall-paintings found in the chapel of an old manor-house, built about the 15th century, and added to in the time of Henry VIII. The chapel is in the last portion, and is 26ft. by 14ft., open to roof, and divided into two bays by a truss. The paintings are on the plastered walls. Photo illustrations are given of these singular paintings, which represent, in one of them, a tree trunk, from which peacock plumes spread—strange birds with tails. The other is similar in design, and beneath a dragon. Those interested in Transitional Norman and Early English will welcome Mr. Walter Brook's article on the existing remains of the Priory Church of the Holy Trinity, Micklegate, York. Illustrations of the very elegant piscina found in the excavations are given; this shows an octagonal basin with interlaced stems of capital-like form. The sketches given of the arches and pillars (octagonal) of one of the bays, triforium and other features are interesting examples of Early English of Transitional character. In the Illustrated Notes is an illustration of the Egyptian tomb on the Island of Elephantina, discovered by H.R.H. the Crown Princess of Sweden and Norway, also of the preaching cross at Leighton Buzzard, foundations of Roman Villa at Darenth. The papers, "On Deneholes," by Miller Christy, and the "Old Stone Crosses of Somersetshire," by Alex Gordon, are worth perusal. The latter include market and village crosses, churchyard crosses, wayside crosses, and memorial or boundary crosses. Good illustrations are given of the market crosses of Glastonbury, Cheddar, Taunton, and Dunster. An illustrated paper on the Church of Sta. Maria dei Miracoli, Venice, is also given, and several items of antiquarian interest. ——*Photography: Its Materials and Appliances* (London: John Birch and Co., Ltd., Queen-street-place, E.C.) is an illustrated manual and catalogue for circulation in the Colonies and foreign countries. The work is written for beginners in the art, and is intended to assist them over the first stumbling-blocks, and as an introduction to more advanced textbooks. Part I. contains descriptive articles on a variety of subjects, such as the choice of cameras and lenses, hints on lighting, on exposures, developers, printing processes, the platinotype process, enlarging, application of the art to architecture, &c. Dr. Cograve's article on the latter is worth attention, and several reproductions in photography of architectural examples are given. Speaking of that very difficult point, the light, it is advised, "Never take against the light. In the northern hemisphere, do the east end in the morning, the south side about noontide, and the west front towards evening." Many other suggestions are given. Part II. is an illustrated catalogue of photographic apparatus and appliances, each article being well illustrated and described with prices. Instructions, formulæ, and everything the amateur photographer wants are to be found in this comprehensive work of Messrs. Birch and Co.

* * *

At Perranzabuloe, West Cornwall, a new vicarage has just been built near the church, from plans by Mr. Silvanus Trevail, V.P.S.A., Truro.

The harbour works at Mullion, West Cornwall, are being commenced. Mr. Parkinson, the contractor, is getting all the necessary plant in readiness, and from thirty to forty men are already at work. The engineers have also arrived. This important undertaking will make Mullion rather lively for some time to come.

On Wednesday, December 4, the centenary of Carlyle's birth, a special loan collection of portraits, pictures, MSS., and other memorials will be opened at Carlyle's House, Cheyne-row, Chelsea, and will remain open for about a month. A meeting will be held at Chelsea Town-hall, King's-road, at five o'clock, when the keys and title-deeds of the house will be handed over by the committee to the trust. Mr. John Morley will preside, and Mr. Augustine Birrell, M.P., and others will also speak.

Mr. Rienzi Walton, one of the inspectors of the Local Government Board, held an inquiry on Friday at the town hall, Leigh, into the application of the Leigh Urban District Council for sanction to borrow £100,283 for purposes of public and private street improvements, and £26,464 for the execution of their improvement scheme and the erection of dwellings under the Housing of the Working Classes Act, and £5,904 for works of sewerage. Mr. J. H. Stephen, engineer to the council, stated that £60,705 was required for public street improvements, and £39,578 for private street improvements. The whole of the west side of Market-street, the chief street in Leigh, would be taken down in order to make the street, which was extremely narrow at present, 56ft. wide. The main streets, Chapel-street and Bradshaw-gate, would also be widened. Under the Housing of the Working Classes Act the Council proposed themselves to build 20 cottages, the cost being estimated at £5,147. The works of sewerage would cost £5,904.

With a view to the opening up for building purposes of various sites in the Edinburgh district of which the Heriot Trustees are the superiors, the feus of a number of building lots have been disposed of by auction. Ground at Wester Coates, fronting the new villa streets being opened up in that district, was sold at the rate of £50 per acre of feu-duty; six out of twenty-three building lots at Denham Green, Trinity, on which are to be erected two-story terrace houses, were sold at the upset of £5 feu-duty per lot, and four lots in Carson-street, Leith Walk, and intended for the erection of four-story flatted houses, were disposed of at the upset price of 10s. 6d. per foot of frontage feu-duty.

The Lord Chief Justice tried, on Friday, an action, "Alexander v. Fonnereau," in the Queen's Bench Division, in which an agent, Samuel Alexander, claimed £250 of William Neale Fonnereau, as the commission promised to him in the event of his finding a purchaser of the defendant's property, Christ Church-park, Ipswich. The jury found for the plaintiff, and judgment was given accordingly. In the course of his summing up the Lord Chief Justice made some strong remarks upon the practice of agents receiving commissions from both sides in a bargain.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Birmingham Architectural Association.—Mr. William Henman delivered his presidential address to the members of this association on Friday evening, the 15th inst. He observed that in several recent addresses that had been delivered in other parts of the country there had been shown a unity of feeling on matters architectural, spiced though they might be by a diversity of views on points of minor importance. If the influence of the R.I.B.A. was to be properly extended, much greater consideration must be given to the views of those whose lot it was to reside in the provinces; and if the roll of Fellows was to be largely increased from outside, it was chiefly from the provinces that the increase must come. The present scanty attendance of provincial members at the Council Board of the Institute was undoubtedly the cause of the neglect shown to the interests of non-Metropolitan members, and the question arose—Could not something be done to bring at least some of the large number of practising architects in Staffordshire, Shropshire, Warwickshire, Worcestershire, and Herefordshire within the ranks of the Institute? Although he was not prepared with a cut-and-dried scheme for bringing about an imperial federation of architects, he would suggest that the Institute should obtain the necessary powers to enable architects with the required qualifications to be admitted to the class of Fellows without having to undergo the form of election at present essential. A few newly-fledged Fellows and Associates blackballed provincial men, and even their respected past-president, Mr. Jethro A. Cossins, had been declined admission, while others were elected whose sole merit was that they had slipped into the Associateship before examinations were compulsory. He did not agree with Mr. Penrose in advocating the total abolition of competitions, for his own experience had been that by competition his energies were excited, and he exerted himself by study and observance, not only to secure success, but to be capable of undertaking work when success came. If competitions were abolished, a greater evil to architecture—monopoly—would reign. The competitions recently organised by the Birmingham Corporation, although not all that could be desired, had resulted in the erection of one public building of which the city had reason to be proud—namely, the Technical School; and another was in course of erection—namely, the Meat Market, which it was hoped might be equally successful; and a more liberal distribution of the work executed for the Birmingham School Board would tend to improve architectural treatment and arrangement of school buildings, and probably result in more reasonable economy of construction.

* * *

After a controversy extending over four years, the Urban District Council of Penrith has in committee carried a scheme for a new water supply to the town which is expected to cost over £20,000. The scheme adopted is one of gravitation from Melmerby.

Mr. G. W. Willocks, one of the inspectors of the Local Government Board, held an adjourned inquiry on the 14th inst. at Bacup, relative to an application by the corporation for sanction to borrow £14,009 for the erection of new municipal buildings, £1,600 for new fire-station and appliances, and £770 for caretaker's house and refreshment-room at the Maden Recreation Grounds. Strenuous opposition was offered to the item of £14,000 by members of the council and the public, the chief ground of opposition being that urgent work in the shape of water supply and sewering ought to be undertaken before spending such a large amount on ornamental buildings. Councillor B. Smith estimated the sum that would be required to be spent on drainage at £70,000, but the surveyor only estimated it at £10,000. Mr. Diggle, the engineer called in by the waterworks committee to consult as to the present and future supply of the borough, estimated that £50,000 would supply the town with adequate water supply for many years to come.

A memorial to the late Bishop of Colchester, who died on Nov. 5, 1894, is being erected in the north transept of the cathedral at St. Alban's. The monument is of stone, and representations of the Four Evangelists will be placed in niches in the front, and carved panels will be fixed between them. On the top, a cross of black marble will be affixed, and the inscription upon the memorial will be as follows: "In loving memory of Alfred Blomfield, D.D., Bishop of Colchester, first suffragan of St. Alban's; born August 31st, 1833; died November 5th, 1894." Mr. Thomas Nicholls, of Kennington, S.E., has the work in hand.

COMPETITIONS.

East Riding Asylum Extension.—The committee of the East Riding Asylum, at a meeting on Monday, unanimously adopted the report of the professional referee, Mr. G. T. Hine, 35, Parliament-street, Westminster, S.W., awarding the premiums as follows:—1st, £50, to design under motto "Ebor," Mr. C. H. Hebblewaite, Hopwood Hall, Halifax; 2nd, £25, "Star," Messrs. Crisp, Otley, and Skinner, Bristol; 3rd, £10, "Labour Omnia Vincit," Mr. H. Harper, Market-street, Nottingham. Twenty sets of plans were submitted in competition by seventeen architects, and were described by the referee as, on the whole, very creditable, and as having shown that much care and consideration had been given in their preparation.

Minneapolis. — The competition for the Minnesota State Capitol has been decided in favour of Mr. Cass Gilbert, of St. Paul; Mr. George R. Mann, of St. Louis, being placed second; Messrs. E. P. Bassford, of St. Paul, and Traphagen and Fitzpatrick, of Duluth, third; Mr. Clarence H. Johnston, of St. Paul, fourth, and Mr. Harry W. Jones, of Minneapolis, fifth. Mr. E. M. Wheelwright, of Boston, was the expert adviser of the Commission, and his recommendations seem to have been, in the main, followed.

CHIPS.

Fairly good business was done last week at the auction mart in Tokenhouse-yard, the aggregate being £62,240.

As Lord Warden of the Cinque Ports, the Marquess of Salisbury has been invited to formally open the new Municipal School of Science, Art, and Technology at Dover.

A lecture was delivered on Tuesday evening at Liverpool University by Professor F. M. Simpsom, who holds the Roscoe chair of art in Liverpool University College, his subject being "Old Architecture in Liverpool."

At a meeting of the Council of Ministers at Cairo on Friday, the Khedive presiding, the proposals of Mr. W. E. Garstin, C.M.G., Under Secretary of State to the Ministry of Public Works, for the execution of the Geological Survey of Egypt, were sanctioned. The survey, which will be carried out under the direction of Captain Lyons, R.E., will cost £24,000, and is expected to give important results.

The Slade Professor of Fine Art at Oxford University (Mr. H. Ellis Wooldridge) will deliver two lectures in the lecture theatre of the University Museum, on Wednesday next and the following Wednesday, at 4 p.m. each day. Subject: "The Theoretical Basis of Art." Part I., "The Greek Theory"; Part II., "The Modern or Hegelian Theory."

The opening meeting of the Architectural Section of the Glasgow Philosophical Society was held on Monday night, when the president, Mr. T. L. Watson, F.R.I.B.A., delivered an address on "Glasgow Cathedral: a Contribution to the History of the Structure." He put forward evidence to show that the building had not been constructed at one period, but that there were traces in the choir which showed that some of the work was two centuries apart.

The Court of Appeal gave judgment on Tuesday in the action brought by Messrs. Clutton, the well-known surveyors and estate agents of Whitehall, to make Messrs. George Attenborough and Son liable for £3,558, the proceeds of forged cheques they had cashed for a former clerk in the employ of the plaintiffs. Mr. Justice Wills had decided in favour of the defendants, and his decision was now upheld by the Master of the Rolls and Lords Justices Lopes and Kay.

The memorial to the Rev. P. Bowden Smith, for forty-three years a master in Rugby School, will take the form, should funds permit, of a reconstruction of the western portion of the college chapel.

The district council of St. Germains have just completed the construction of a reservoir at Milbrook. Mr. H. Masterton, C.E., was the engineer, and Mr. Weldon the contractor.

The death has occurred, at his residence, Newport, of ex-Bailie James Thomson, Dundee. Deceased, who was a native of Auchterarder, carried on a successful business in Dundee as an architect until twenty years ago, when he retired. In 1876 he was elected a member of the town council, and he held a seat on that board for six years, during a portion of which time he acted as a magistrate. He also took a keen interest in Newport affairs, and was elected a member of the first Burgh Commission.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to THE STRAND NEWSPAPER COMPANY, LIMITED.

TERMS OF SUBSCRIPTION.

One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India, £1 6s. 0d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front-page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No Front-page or Paragraph Advertisement inserted for less than 5s.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page Advertisements and alterations in serial advertisements must reach the office by Tuesday morning to secure insertion.

SITUATIONS.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is ONE SHILLING FOR TWENTY-FOUR WORDS, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., LI., LIII., LIV., LVIII., LIX., LX., LXI., LXII., LXIII., LXIV., and LXV. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

RECEIVED.—S. B. and Co.—Essayist.—F. Wilkinson.—E. J. S. (Bath).—Cestus.—F. W. L. and Co.

"BUILDING NEWS" DESIGNING CLUB.

LA CIGALE, ONCE MORE, AND OTHERS. (The particulars as to the swimming-bath being used as a hall for meetings are perfectly clear. Of course, the swimming-pond would have a floor over it when the building is used as a public hall.)

DRAWINGS RECEIVED. — "Ovolo," "Queen Anne," "Ilex," "Kaffir," "Mac," "Once More," "Dunelm," "Venus," "E," "Balbus," "Taffy," "Snap-shot," "Leemo," "Monster," "The Owl," "Drawde," "Tyke," "Shafston," "Twitty," "Avis," "M in a circle," "Mandalay," "Dessinateur," "Country Cousin," "Cester," "Red Lion," "Worcester," "Cygnette," "Valhalla," "Demetrius," "Veller," "Giles," "Rex," "Bloggs." An addressed label without a drawing attached to it also came to hand, marked "Found in Bedford-street Post-office," but with no marks by which any identification as to its sender could be obtained.

Correspondence.

PROPOSED NATIONAL AND PROVINCIAL UNION OF BRITISH ARCHITECTS.

To the Editor of the BUILDING NEWS.

SIR,—In common, no doubt, with many more, I have been interested in Mr. George Ord's letter in your last issue, and, if such a society as he suggests can be established, I will gladly send to it my annual crown or so. At the same time, I fear the evils which it is desired to check are unlikely to be cured by any available means. The only plan I can think of as probably effective would be the establishment of a wise and resolute professional dictator, aided by a strong assassination committee! The mischief is too deeply rooted within us for milder treatment to avail. After more than a quarter of a century of experience of the works and ways of architects in many parts of the country, I am compelled to own that I know almost no calling, save that of jockey, for the members of which, as a body, I have less respect (I refer, of course, to the common rout, not to the exceptions here and there). Pretentious and trumpery design, devoid of all principle and thought, stinted and scamped working drawings and specifications, ignorance and unscrupulousness in regard to quantities and other matters bearing on cost, are characteristic of many more than a bare majority, and are of one piece of moral stuff with the suicidal stupidity which makes so many eager to advertise the want of value in their work by offering it for an off-chance of payment which the dullest despised tradesman or craftsman would reject with contempt. It is very curious to consider how wholly ignorant the general public are of all that belongs to the art and duty of the architect—how foolish all their talk about it and him invariably is!—and yet how thoroughly the average architect deserves the low estimate which the general public forms of his value;—deserves it in many ways, but perhaps most of all by his eagerness to pander and truckle to the meanest and most ignoble propensities of said public. Such as we are, no association can help us much. Nor, I fear, can any Act of Parliament, by incorporation or otherwise. Lawyers, we know, are all honourable men; judges have indignantly asserted it from the Bench, and *they* are incorporated long since; yet going to law is not a profitable business to clients, whatever it may be to lawyers. And any similar "improvement of the position of architects," which consisted of raising our wages without mending our work would not, to my thinking, be much worth fighting for. Still, if we begin by resolving that the public shall not wrong us, nor by our aid wrong our rivals, we may end by resolving further that we will not wrong ourselves nor the public—that as workmen we will not only have fair wages, but earn them; and on the chance that something may result towards producing at least the former resolve on a wider scale than now obtains, I wish Mr. Ord may meet with extensive support.—I am, &c.,

ONE IN A MOB.

SIR,—Many of us must have been highly pleased to see such a sensible and powerful letter upon this all-important subject in last week's BUILDING NEWS, the suggestions of which were so eminently practicable.

It is curious that, with all its crying abuses, the architectural profession should remain, with respect to its general and personal interest, in a state of utter apathy. The fact of the matter is that we have all been so entirely taken up with what we falsely considered our own good, that we have really neglected it and the welfare of the whole architectural community. Going helter-skelter, everyone for himself, we would have, and let, the devil take the hindmost, only that gentleman, not satisfied with this, goes for the lot.

We all know what happens to the house divided against itself, and we are now experiencing that catastrophe. Where is there another important body that so sadly lacks organisation, or an unimportant one which is not doing its best to join forces? Do we want protection from the pseudo-architect, the competition fiend, justice in legal administration, adequate remuneration for public exaction?

Judging from our present attitude of indifference, we answer: No. We prefer to scheme and worry over our clients' plans, take the responsibility after spokeshaving our quantities, fritter away our time on competitions, and be begrudged our paltry remuneration. And as for honour and glory, no one thinks any the better of us, and we become a by-word. If anything's wrong, "It's the architect."

All this might be more bearable if there were any hope of redress; but, alas! at present there is none. If we don't want to alter this, we shall remain in our present state of lethargy—leave it to others to put right, or be content with the "Institute" and the "Societies." These have done and are doing good work; but it always seems to me that they have begun at the wrong end: they attend to the flower of the profession, but neglect the roots, forgetting that the lowlier parts well tended will benefit the bloom.

If we are to look to legislation for help, we must have power; and to have power, we must have numbers. In short, we must have union. If the limited federation projected some years ago had been extended to the entire profession as it then stood, and all these years which have fruitlessly fled had been given to organisation of the whole, what a splendid position we should have now occupied—what power ours would have been!

Everything human must have a beginning, and the poorest is potential. Let us unite to assert and defend our just rights.

Mr. Geo. Ord, of Durham, asks for the names of all in sympathy with the movement to be sent to him, and I hope that the number will be so great that the matter cannot but immediately proceed. Thanking you, Mr. Editor, in anticipation—I am, &c.,

W. F. S.

PROPOSED ASSOCIATION OF WATER-WORKS ENGINEERS.

SIR,—We are again reminded that "there is no institution wholly given up to water engineering questions in England, although such questions are occasionally treated of by the Institution of Civil Engineers." That is, I am led to understand, the opinion of many engineers, managers, and others interested in waterworks undertakings. The exceptional and severe winter of 1894-5 itself was a subject-lesson to those interested in waterworks. The controversy between the use of two-gallon and three-gallon cisterns for w.c. purposes, the question of employment of registered plumbers only for waterworks purposes, the better control of fittings for the prevention of waste, misuse, and the contamination of public supplies are points, amongst others, which might usefully engage the attention and call for combined action from those engaged in this important branch of engineering.

My object in writing is to initiate a discussion from those interested, with a view of ascertaining what support is likely to be given to such an association.—I am, &c.,

D. M. F. GASKIN, Engineer.

THE "SCIENTIA" WATER-CLOSET APPARATUS.

SIR,—In reply to the letter of "A London Architect," which appeared in the BUILDING NEWS, Nov. 8th, and to the many others who have written to us directly, we may say that when there is a window behind the apparatus the woodwork will be terminated at the height of the top of the urinal stage, and the shaft carried in a side direction, the design being altered to suit the position.

As regards a series of closets one over the other, there is no difficulty whatever, for when the current is taken through the outside wall it may be left there, or, if thought better, it may be connected into a pipe ventilating to the top of the house, and common to all the closets.

The whole apparatus is extremely simple. The closet seat is on strong spring hinges, and so is the door, which closes in the urinal and tap chamber, the seat rising automatically on being relieved of weight, thus permitting of the urinal door being freely opened or closed, so that everything works independently of any neglect the apparatus may be subjected to. Behind the door there is a free space passing upwards from the w.c. basin in front of the curved urinal slab, and through the tap chamber into the ventilating shaft. When the door is opened the urinal is flushed, and continues to be flushed until it has run the quantity of water allotted to each flush. If it is desired to use the water cocks, the door is fixed in an open position, and the method of fixing puts a termination to the flushing of the urinal, so that water is not unnecessarily wasted.

Your correspondent very aptly says that the air from the w.c. window serves but to dilute the odours of the closet, and drive them into every nook of the house. Our houses, we should bear in mind, are but huge "suction-pumps," through which the air is constantly being drawn, and as we *must* have a supply of air from some source, we should see that the odours of the closet do not form any part of such supply. The arrangement of the "Scientia" is such that the direction of the air is *from the house to the closet*, and not, as in other closets, from the w.c. to the house.

We will be pleased to give your readers any further information about an apparatus which we are prepared to say will work satisfactorily in any conceivable position.—We are, &c.,

BURGH CABINET WORKS CO.

Easter-road, Edinburgh.

◆

Messrs. John Barker and Co., Ltd., are rebuilding a large portion of their premises butting on to Ball-street. Mr. F. G. Vigor has prepared the drawings, and the company are carrying out all the work with their own staff, with the exception of the fireproof floors, which are being constructed by Messrs. Mark Fawcett and Co. on the Mark Fawcett system.

Intercommunication.

QUESTIONS.

[11452.]—**Colour on Parchment.**—Is it possible to get colour to lie as nicely on parchment as on drawing-paper, and how should it be put on? Is there anything to put on the parchment to prevent it going through, as it will on some skins? A learned solicitor (?) says I should put acid in the colour.—James S. Fitzpatrick.

[11453.]—**Prices, &c.**—(1) Will any reader kindly give names, qualities, appearance, position in which used, and prices, laid in mortar per yard of bricks commonly used in London? (2) If any quantity surveyors depart from standard, and give 1 brick thick yards instead of 1½ brick thick rods? (3) If, instead of giving timber cubed, they give it in quantities as super. and lineal? (4) If such innovation would inconvenience or be objected to by contractors tendering?—Provincial.

[11454.]—**Skittle Alley.**—Will any reader kindly say what is the general length and width for skittle alley? Also the best method of laying the floor?—Skittles.

[11455.]—**Lime in Water.**—I should be obliged if any reader would tell me, or refer me to a book, stating at what temperature the lime contained in the ordinary drinking water precipitates, and commences to coat the interior of the vessel in which it may be heated with the hard substance commonly known as "fur"?—W. W. R.

[11456.]—**Extras.**—What are the correct architectural charges to make (1) on contract and extras, also deductions; (2) on contract and extras only; (3) on contract and extras, after deducting bill of deductions?—J. W. C.

REPLIES.

[11445.]—**Ivy on Walls.**—The conflicting statements heard by "Oberon" as to the effects of ivy on stone and brick walls in keeping them dry and wet are both right. If ivy-covered walls are somewhat protected from driving rain, no doubt it acts as a kind of thatch; but, on the other hand, if ivy-covered walls are exposed to the force of winter's storms, where the rain is driven by the wind right through the ivy into the wall, then, no doubt, the wall is liable to be almost permanently damp, as the ivy excludes the sun and air, which are required to bring it out again. Ivy is not able to weaken or destroy a well-built wall, but be sure to keep it away from jerry-builders' mortar.—H. Preston.

[11450.]—**Concrete Floors.**—I prefer to use broken brick (in pieces not more than 1in. any way), mixed with enough fine, but dust-free, coke breeze to fill up the interstices. Sand is too heavy, and the particles are commonly too smooth, and make brittle work. For the same reason, only more so, gravel and ballast are fatal. Coke breeze without brick is (in most urban localities) cheaper, and it is also lighter, but not so strong—does very well for ordinary house-floors. I have put up extensive floors of each kind, the iron consisting of light flat bars set on edge, and having their ends threaded with ¾in. continuous rods, lying 4½in. on the walls, and built into them in cement courses. But best of all, I believe, is the plan (common in America, but only lately introduced here) of using small, square cold-twisted bars. They should have three or four turns per foot, bear a few inches on the walls at ends, and lie an inch above the soffit of the concrete. Half-inch square bars are large enough for spans up to 16ft., the distance between being reduced as the span increases. For 10ft. spans the intervals should be 9in., and the thickness of concrete 5in.; for 12ft. spans, 7in. intervals and 6in. concrete; for 14ft. spans, 6in. intervals and 7½in. concrete; for 16ft. spans, 5in. intervals and 8½in. concrete. The cold-twisting not only prevents the bars from drawing, and so renders keying the ends needless, but also actually increases the tensile strength of the metal. The use of "joists" in concrete is a very crude, unscientific, not to say senseless, method, both extravagant and ineffective, and has done more than anything to hinder the use of concrete floors and roofs, which ought long since to have become universal. They will do so whenever architects begin to study sound and sensible building, and to base their style on that, instead seeking first after superficial gewgaw effects, which result in houses that look—and are—as trumpery as birdcages, whereas they should appear—and be—as solid and stable as rocks.—W. S.

[11451.]—**Dry-Rot.**—In answer to "Dry Rot," if "Grange-over-Sands" had been experimentally seeking a method of setting up dry-rot (so called) to his basement floors, he could not possibly have adopted any method more uniquely successful. His broken stone, coke breeze, and cement, are all absorbent materials. Instead of repelling the dampness, as so many people (who ought to know better) suppose, they greatly encourage it. The capillary action of the material has a tendency to suck up every drop of moisture from the earth, and bring it to the surface, almost as readily as a knob of sugar takes in the moisture from the dregs of a cup of tea. "Grange-over-Sands" should have put down a cheap wood-block floor in pitch, not forgetting to pitch the edge of the blocks where they come next to walls, or, if he would rather prefer boards, he should have pitched the concrete all over on the surface, setting a few iron bolts in the concrete previous for fixing bonds.—H. Preston.

◆

Two miles south-west of Totnes, in the hamlet of Luscombe and parish of Harberton, at the junction of four roads and situated on the highest ground in the manor of Dundridge, are the 15th-century remains of a wayside cross. Only the base and part of the upright pillar remain to testify to what was once there. These are hewn out of grey granite from Dartmoor. Under the direction of Mr. W. M. Tollit, architect, of Totnes, the missing portions have now been made good. The new work is also of Dartmoor granite, and on the top of the shaft is a circular head carved in facsimile of the famous cross at St. Columb Major. The restoration has been carried out by Messrs. Harry Hems and Sons, of Exeter.

Legal.

CONTRACTS AND COMMITTEES.

BUILDERS who make contracts with corporations should always take care to have this done in writing and under seal, for in no other way can they get a valid and enforcible contract, if objection is taken to its legality. Yet although this is so, and is well known to those whom it concerns, we do occasionally come across a case in which a merely verbal promise, and that, too, by a committee of a corporation, has been enforced. This occurred quite recently in an action against the Huddersfield Corporation, which went to the Court of Appeal (*Times*, Nov. 13), and which was reported in our last issue of Nov. 15. The plaintiffs had been employed to do certain sewerage works under the corporation, and in course of construction it was found necessary to tunnel through a mass of rock, which the plaintiffs considered should be treated as extras. The borough surveyor, however, refused to do this on his own authority, and referred plaintiffs to the Health Committee; and this body gave them a verbal promise that they should receive proper remuneration for the work in question. At the trial plaintiffs relied, firstly, upon an alleged certificate of the surveyor, on which they failed; and, secondly, upon the parole contract made by the Health Committee on behalf of the Corporation, upon which point the jury gave them a verdict. After this, the defendant's counsel objected, firstly, that the contract relied upon was not under seal, and therefore not binding; and, in the next place, that by Section 200 of the Public Health Act, 1875, such a committee could not enter into a contract of this kind so as to bind the Corporation. Mr. Justice Mathew, however, refused to entertain these points, because they were not taken until after the verdict, instead of being raised before.

Upon appeal, it was argued for the corporation that they were entitled to judgment, notwithstanding the verdict, on the ground that the contract, not being under seal, was legally void, and so could not support a judgment. But the Court held that it was now too late to raise that objection. By allowing the case to go to the jury upon the one point of fact, whether or not the promise was given by the committee, the corporation had waived the objection they should have taken before. It was the same thing as if they had fought the case upon the ground that no certificate had been given, and had afterwards sought to object that the original contract was void for want of a seal. The corporation had no merits to go upon, and now they must pay in accordance with this very informal promise of their committee.

Fred. Wetherfield, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

Six-inch.—Lessees.—Drains.—A., having only an ordinary three years' agreement, would not be liable to contribute to cost of repairing drains; but probably his landlord holds under a similar lease to that of adjoining lessees, and if so, he could be made responsible.

Puzzled.—Lease.—Covenants to Repair.—This seems an unusual form of lease. But, at all events, the separate covenants to paint within specified times would, I should say, be enforcible, apart from the covenant as to general repairs.

◆

Parliamentary notice has been published for the projected light railway from Forsinnard to Portskerra, on the north coast of Sutherland. The Duke of Sutherland is proprietor of all the land through which the line passes, and in addition to a free grant of the land, he has promised all the wood for the sleepers. All the crofters and other tenants of the land have signed agreements in favour of the construction of the railway, so that the scheme, which is estimated to cost £40,000, is quite unopposed.

The new Workhouse Infirmary, Guildford, is now being erected for the guardians of the poor of the Guildford Union, from the designs and under the superintendence of Messrs. Peak and Lunn, architects, of Guildford. All the wards are being warmed and ventilated by means of Shorland's patent open fireplace Manchester stoves, with ornamental tiled sides, the same being supplied by Messrs. E. H. Shorland and Brother, of Manchester.

LEGAL INTELLIGENCE.

What is a Main Road?—In re an Arbitration between the Mayor of Burslem and the County Council of Staffordshire.—In the Court of Appeal, on Monday, before the Master of the Rolls and Lords Justices Kay and Rigby, an appeal was heard from an order of Mr. Justice Grantham and Mr. Justice Wright, which was against the Staffordshire County Council. The Council objected to contribute to the repair and maintenance of certain paved ways on main roads passing through districts in the county. By the Local Government Act, 1888, these roads were to be wholly maintained by the County Council, but the District Council might claim to repair them, subject to the County Council contributing an annual sum to be arrived at by arbitration. The arbitration took place, and the County Council sought to set aside the award on the ground that they were not liable for the repair of the paved footpaths, but the Divisional Court decided against this contention. Hence the present appeal. The Master of the Rolls, in giving judgment, said the question in dispute was: What was a main road? It was one leading from one large town to another, like the Great West of England-road, or the great North-road, some parts of which, passing through towns or villages, might have pavements on each side for the convenience of pedestrians. The County Council objected to pay for these pavements; but, in his opinion, they formed part of the main road, and came within the words of the Act. He entirely concurred in the previous decision on the point, and the appeal would be dismissed. The other Lords Justices concurred. The appeal was accordingly dismissed. It was intimated there would be an appeal to the House of Lords.

Light and Air Case at Plymouth.—Before his Honour Judge Edge, at Stonehouse, on Nov. 12 and 13, Richard Pearse, owner of a house at 11, Prospect-place, Plymouth, claimed £50 damages from William Lapthorn, contractor, Plymouth, for erecting a workshop upon a wall alleged to belong solely to plaintiff, and thus causing an obstruction to light and air. Plaintiff also asked for an injunction to restrain defendant from continuing the trespass and obstruction. The wall was claimed to be plaintiff's on the ground that his father had always executed all necessary repairs to it, and no one else. Defendant had erected a workshop of corrugated iron and wood on the wall, with the result that necessary air and light to plaintiff's premises were seriously interfered with. Messrs. A. W. Dobnam, E. M. Leest, and H. G. Luff (architects and surveyors), and plaintiff bore out counsel's statement, and the tenants spoke of the baneful effect upon the light and air in the rooms and courtyard. For the defence Mr. Pearce called Mr. A. Corderoy, M.S.A., who gave his reasons for considering the wall a party-wall. With regard to air, there were 248 superficial feet of air in the courtyard before defendant put up his building. There were now 172 superficial feet of air; amply sufficient, the usual expert allowance being a half a foot for every superficial foot of curtilage. The erection had rather increased than decreased the current of air, on the mine principle that a higher funnel increased draught. After viewing the premises, his Honour reserved judgment for a month.

Riparian Property.—In the Chancery Division, on Friday, Mr. Justice Romer declared in favour of the plaintiff in the curious trespass action of "Hindson v. Ashby." The parties are owners of adjoining riparian properties in Buckinghamshire, and the question at issue between them was whether a strip of land which the water had gradually ceased to cover, and upon which the defendant had made a concrete path for the use of his tenants, belonged to the plaintiff or formed part of the original bed of the river. Mr. Justice Romer decided that, as the river receded, the portion of its former bed which was left dry became the property of the owner of the land adjacent to it.

The Height of Corner Buildings.—At West London Police-court on Friday, a fresh summons against Mr. R. J. Worley was heard at the instance of the London County Council, in respect of Kensington-court, which continued beyond the regulated height. Mr. Chilvers, on behalf of the Council, said on the last occasion Mr. Poole, who represented the defendant, complained of the frequency of the proceedings. Mr. Chilvers brought the matter under the notice of the Building Acts Committee, and Mr. Poole and he had come to an agreement that if the magistrate would inflict the full penalty for a certain number of days he (Mr. Chilvers) would give an undertaking not to take any further proceedings. The committee, taking into consideration the fines inflicted by Mr. Curtis Bennett and the magistrate (Mr. Rose), and the costs which had been paid by the defendant, thought that would meet the requirements of the case. Mr. Rose, who could not agree to that arrangement, suggested that the case should be proved. Mr. Poole then pleaded guilty, for the purposes of the summons, and said the defendant was quite willing to adopt the arrangement of the committee. Mr. Chilvers pressed for penalties for fifty days at 40s. a day. Mr. Rose then ordered the defendant to pay £100, with 2s. costs.

CHIPS.

Wreight's Charity School at Faversham is about to be extended by the addition of technical classrooms. Mr. E. Power is the architect, and Mr. Walter Histed, of Faversham, the contractor.

The old church of St. Peter's, Derby, is to be improved and enlarged. The work will include the repairing of the nave, roof, and north aisle, the rebuilding of the tower, and the addition of two bays to the nave and aisle, westward. The work is expected to cost about £5,000.

A new Baptist School-chapel will be opened at Chesham on Tuesday, Dec. 3, by the President of the Baptist Union. It has been built by Messrs. Thompson and Brierley, at a cost of £3,000.

At Monday's meeting of the School Board for Newcastle-on-Tyne, a debate and division took place on the appointment of an architect or firm of architects for the proposed school in Elswick-road. The vote resulted in Messrs. Dunn and Hansom receiving the appointment on the usual terms and conditions.

The Heckmondwike Urban Council decided on Monday to apply to the Local Government Board for sanction to borrow £15,323 for sewage farm expenses, street paving, and other public improvements.

At Aby, near Alford, a new Wesleyan Chapel was opened last week. It is Gothic in style, and is built of Mablethorpe red bricks, with Ancaster stone dressings, and is seated for 150 persons. The cost of the chapel and schoolroom has been £700. The architect is Mr. John Thompson, of Grimolby, and the work has been carried out by Mr. Askew Wood, of Alford.

A Local Government Board inquiry was held at Torquay on Friday, touching the application of the Town Council for leave to borrow £4,500 for extending the water-supply. Mr. T. S. Weeks, waterworks engineer, explained the plans. There was no opposition.

Mr. D. W. Powell, of Kingswood, Bristol, who was, at a recent meeting of the Swindon and Highworth Rural District Council, selected as surveyor and inspector of nuisances, at a salary of £160 a year, in the place of Mr. C. Law-Green, resigned, has decided not to accept the position.

A new Wesleyan Church at Alphington was opened on Saturday. Mr. Herbert, of Exeter, was the builder, and Mr. Frank Chorley prepared the designs.

New Wesleyan schools are about to be formally opened at Mawdesley, near Ormskirk. Land adjoining has also been secured as a site for a chapel. The main school will accommodate 60 children, and the infant schools 24, the rooms being separated by a patent swivel partition. The structure is faced outside with pitched face stones, the inside lining being of brick. The works will cost about £500. The whole has been designed and erected under the superintendence of Mr. H. E. Peach, architect, Southport.

At the last meeting of the Torquay Town Council it was reported that the new promenade pier had been completed, and that the total cost had been £10,500. Mr. A. Thorpe was the contractor.

The *Quarry* is the name of a new monthy journal which is shortly to appear as a medium of communication between the stone, slate, marble, lime, and cement trades and those who supply their needs. It will be conducted under the same auspices as the *British Clayworker*, and will, no doubt, prove as successful. Mr. Montgomery has always struck out new ground, and not wasted his efforts on producing imitations of already existing journals, as some good people seem fond of wasting their own—or other people's—money in doing!

One of the finest freehold building sites in Westminster is to be offered at the Mart on the 4th of next month, by Messrs. Edmund Richardson and Son, of 50, Finsbury-square. It comprises Nos. 15, 16, and 17, St. Ann's-street, and 34 and 35, Old Pye-street, Victoria-street, and is only a few yards from the Westminster Palace Hotel. The superficial area is about 4,400ft., and early possession of the whole can be had.

The Local Government Board inquiry into the application of the Wimbledon Urban District Council for sanction to borrow £32,000 for purposes of electric lighting took place at the district council offices on Friday, before Major-General Phipps Carey, R.E.

An oak eagle lectern has been placed in the parish church of St. Petrock, Trevalga. It has been executed by Messrs. Harry Hems and Sons, of Exeter.

WATER SUPPLY AND SANITARY MATTERS.

ALTON.—A Local Government Board inquiry was held at Alton, Hants, on the 19th inst., by Col. Coke, M.Inst.C.E., for the purpose of considering an application from the Urban District Council for a loan of about £11,000 for sewage disposal works, the plans of which had been prepared by Messrs. R. B. Grantham and Son, Northumberland-avenue. The inspector first examined the land up to and upon which the sewage was to be pumped and distributed, and then held the inquiry. There was a good deal of opposition to the application.

NEWPORT, MON.—The scheme of the Newport Corporation to obtain a supply of water from Wentwood has been most unfortunate. The report of the two geological experts, Messrs. Hill and Hawkesley, C.E., upon the site just presented to the committee, recommends the abandonment of the scheme. The amount of the contract was £92,000, but the committee were recently given powers to borrow as much as £250,000. If the works are abandoned, the contractor, Mr. Young, of Glasgow, will probably have to be compensated for loss of contract.

◆

Messrs. Wm. Godwin and Son, Lugwardine Works, Withington, Hereford, have recently supplied the tile pavements in the chancels of the following churches:—St. Mark's, Reigate; Tong-street, Bradford; St. Cuthbert's, Clungunford; Brent Knoll, Somerset; and St. Michael's, Garway.

Mr. E. Roscoe Mullins, sculptor, has been commissioned to execute, in Bath stone, the large group of sculpture representing "Engineering," to be placed on the central gable of the new Bombay, Baroda, and Central India Railway Administrative Offices, Bombay, now being erected from the designs of Mr. F. W. Stevens, C.I.E., F.R.I.B.A., of Bombay. Mr. Mullins has also received instructions to execute two large medallion heads of the late Colonels French and Kennedy, the pioneers of this railway, which will be placed in circular panels over the exterior arches of the principal carriage-porch of the railway.

In referring to the outcry that has been made against the repairs recently executed at Rochester Castle, the *South Eastern Gazette* reports: "The cheapest way of repairing old walls was that adopted by the late Lord Romney at Allington Castle. When the stones got loose there, a couple of men were sent round with crowbars, with which they prised the loose stones into the moat."

Mr. Geo. W. Willcocks, M.Inst. C.E., a Local Government Board inspector, attended at the district council offices, Milnrow, on Wednesday week, for the purpose of making inquiry into the application of the council to borrow £16,000 for sewage works and sewage disposal.

In the erection of extensive residential flats near Child's Hill Station, Hendon, for Mr. G. F. Kalber, Messrs. Fambrini and Daniels, architectural concrete workers, Lincoln, have secured the contract for supplying the whole of the moulded sills and heads, stringcourses, cornices, caps, label moulds, elliptic arch moulds, &c., in their grey concrete masonry. This firm have recently appointed Messrs. Butson and Roberts, 67, Chancery-lane, as their town agents, where can be seen full-sized sections of mouldings, &c., as actually used in many public buildings.

In last Friday's issue of the BUILDING NEWS there appeared a notice of the competition for Bangor County Schools for girls, and in it Mr. J. H. Phillips, M.S.A., was referred to as the author of the designs placed first in the Tate Intermediate School competition. Mr. Phillips writes us that at that time Mr. J. T. Holdgate, now of London, was in partnership with him, and they were jointly the authors of the design placed first.

The Ramsey Town Commissioners (Isle of Man) have decided to erect a hospital for infectious diseases at Cronk Ruagh, distant about one and a half mile from the town of Ramsey. The site is admirably adapted for the purpose, and comprises about two and a half acres of ground. The hospital will contain 14 beds, and provision for administration, laundry, and disinfecting purposes. A caretaker's lodge will also be erected at the entrance gate. The total cost, including the site, buildings, furnishing, disinfecting apparatus, water supply, and drainage, is not expected to be over £4,000. The hospital has been designed by Mr. John T. Boyde, architect, of Ramsey, whose plans were selected in competition about two years ago. One-third of the cost will be defrayed by the Government of the Isle of Man.

The funeral took place on Monday, at Smithdown-road Cemetery, Liverpool, of Mr. George Morton, who, like his father before him, was a noted builder of houses in the south-end of Liverpool. "A genial and large-hearted man, Mr. Morton's life was," says a local journal, "full of acts of charity."

Our Office Table.

THE fourteenth annual fine art exhibition opened at Dundee on Saturday is one of the best of the series, and affords an excellent representation of contemporary Scottish art. Among the local exhibits are "A Rainy Day," by G. F. Watts; Sir F. Leighton's "Greek Girls playing at Ball"; Whistler's portrait of Carlyle, lent by the Glasgow Corporation; W. Q. Orchardson's "Napoleon at St. Helena" and "George Wishart." The seascapes include works by Colin Hunter, Hugh Cameron, Napier Hemy, and David Muirhead: the landscapes, works by Peter Graham, J. McWhirter, A. J. Kirkpatrick, A. Maure, Wellwood Rastrick, and J. McTaggart; Stacy Marks, J. R. Reid, and Thorburn Ross contribute *genre* works, and Professor Herkomer, as usual, is the foremost exhibitor of portraits.

IT has been stated that, with the decline of public interest in Gothic work, the practice of making rubbings of ancient memorial brasses has diminished in popularity. The process of getting a rubbing is a slow and dusty one, and, when obtained, a collection of facsimiles needs much space. It seems, however, that the Oxford University Brass Rubbing Society is in a flourishing condition. The "O.U.B.R.S." has just completed its second academical year, having been founded by some twenty undergraduate brass-rubbers in May, 1893, with Mr. H. F. Haines, B.A., son of the famous authority on brasses, as its first vice-president. The society has since more than doubled its roll of members. The society has a two-fold object: during term, to complete and revise the register, first of all brasses, then of all sepulchral monuments in the county and diocese of Oxford; and, during vacation, to promote the study and preservation of brasses elsewhere, as its members may find opportunity. The society has held two ordinary meetings in each of the last three terms, at all of which recent rubbings taken by members have been exhibited. Papers have been read on "Symbolism in Brasses," by H. M. Conacher; "The Problems of a Brass Engraver," by J. W. Crowfoot; "Heraldry," by A. R. Pinel; "Canopies in Brasses," by J. L. Myres; and "The Parish Church and Monuments of Minster in Sheppey," by W. H. Draper. At the last meeting, in Lent term, several members discussed the brasses which they had lately studied, and exhibited their rubbings. At a public meeting, held in November, in the Ashmolean Lecture Room, Viscount Dillon gave a lecture upon "Ancient Armour," and has since become an honorary member of the society. With its present programme and organisation, and with so many active brass-rubbers in its ranks, there is reason to hope that the society will continue to progress as rapidly as it has hitherto done during its brief existence.

THE City Commissioners of Sewers have had under consideration an application by the Central London and Waterloo and City Railway Companies to make modifications in the design of the subways leading to the central station about to be constructed at the Mansion House. The commission, two years ago, approved the plans and specifications, reserving, however, the right to alter or modify the details. The modifications now suggested by Sir Benjamin Baker and the other engineers to the railway companies, to be made in the general arrangement of the station, are principally to avoid interference with adjacent buildings. One of the alterations is to connect the platforms of the Waterloo and City Railway by inclined subways with the system of foot-passenger subways to be formed in front of the Mansion House. Another modification has reference to the proposed staircase at the corner of Princes-street, opposite the Mansion House. Owing to the vaults of the Union Bank projecting further beneath the public way than was originally allowed for and to the railway company being prohibited by their Act from interfering with those vaults, they desire to alter the plans of the staircase in such a way as to involve a further absorption of the carriage-way. The Commission consider this alteration highly objectionable, and have refused their sanction to it. Another suggestion which they have vetoed is to substitute a single for a double staircase at the east end of the Mansion House, and they have further declined to sanction an alteration in the line of kerb at the junction of Queen Victoria-street and the Poultry. In regard to the whole scheme, the Commission, before giving permission to commence any of the works, are requiring the Central London Railway Company to satisfy them as to their ability in every respect to complete the station, subways, and approaches in conformity with their Act. Further negotiations are, therefore, in progress between the Commissioners and the company.

The Commissioners of her Majesty's Works and Public Buildings are seeking Parliamentary powers next session to acquire, by compulsory purchase or otherwise, "all the land, houses, buildings, streets, roads, and premises situate within the area bounded on the north by Charles-street, on the east by Parliament-street, on the south by Great George-street, up to and including No. 23 in that street, and by Boar's Head-yard, and on the west by the building of the Institution of Civil Engineers and Delahay-street." The Act will empower the Commissioners, so far as may be necessary, "to stop up, remove, alter, or divert all or part of Charles-street, Parliament-street, King-street, Great George-street, Boar's Head-yard, Little Boar's Head-yard, Gardener's-lane, Delahay-street, Delahay-mews," and all other streets, sewers, mains, and works within the area described above, and to appropriate the site for the purpose of erecting thereon public offices.

The 142nd session of the Society of Arts was opened on Wednesday evening, when an address was delivered by Major-General Sir John Donnelly, K.C.B., chairman of the council, who took as his subject the present position of technical instruction in this country. He reviewed what is being done as a preparation for it in elementary schools, and to promote it through the Science and Art Department, and urged that the suspicion of wasted funds should be met by concerted action and more systematic inspection and examination. Next Wednesday a paper on "Locomotive Carriages for Common Roads" will be read by Mr. H. H. Cunynghame; and the subsequent lectures before Christmas include "Mural Painting, with the Aid of Metallic Oxides and Soluble Silicates," by Mrs. Anna Lea-Merritt and Professor W. C. Roberts-Austen, C.B., F.R.S.; and "Water Purification by Means of Iron," by Mr. F. A. Anderson. The first course of Cantor Lectures will be by Mr. W. Worby Beaumont, M.Inst.C.E., on "Mechanical Road Carriages." The other courses for the session will be by Dr. J. A. Fleming, F.R.S., on "Alternate Current Transformers"; by Professor J. M. Thomson, F.R.S E., on "The Chemistry of Building Materials," a series of three lectures to be given on Feb. 17 and 24, and March 2, 1896; by Mr. H. Graham Harris, M.Inst.C.E., on "Refrigeration"; by Mr. Henry A. Miers, M.A., on "Precious Stones"; by Mr. James Swinburne, on "Applied Electro-Chemistry."

The trustees of the late Earl of Dysart have, after prolonged negotiations, drafted a Bill for introduction into Parliament next session with a view to settling numerous questions that have arisen with the public authorities in their endeavour to develop the Dysart estate in Surrey. Under this Bill the Corporation of Richmond will, in consideration of concessions made by them, receive as a gift from the trustees the whole of Petersham Meadows as a recreation ground for the public. The trustees also propose to maintain as open pasture land for ever, other meadows adjoining the proposed recreation ground, and also to obtain leave from the Court of Chancery to transfer to the corporation the wooded slope behind the Star and Garter Hotel, known as Petersham Common. By these concessions on the part of the trustees the Corporation of Richmond will preserve the famous view from Richmond-hill, and in consideration of these gifts the corporation undertake to support the passage of the Bill through Parliament. The Bill will also deal with the vexed question as to the ownership of the towing-path on the Surrey side of the river Thames between Richmond and Teddington Lock, and proposes to vest Ham Common in the hands of the Ham District Council as an open space.

A deputation of trade-unionists waited, on Friday, on Mr. Hanbury, the financial secretary to the Treasury, to urge him to do all in his power to carry out the fair contracts resolution passed by the House of Commons in 1891. Mr. George Dew, organising delegate of the Amalgamated Society of Carpenters and Joiners, mentioned instances which had come under his personal cognisance, in which the War Office had given out contracts to employers who were paying a halfpenny per hour less than the trade-union wages prevalent in the district. In reply, Mr. Hanbury promised to do all he could towards the carrying out of the House of Commons resolution as to the payment of trade-union rates of wages and the practice of sub-letting contracts. He also declared himself in favour of publicity being given to the names of firms contracting for Government work, but protested strongly against the unsupported suggestion that Government officials were sometimes personally interested in contracts.

CHIPS.

At the Museum of Practical Geology, in Jermyn-street, W., a commencement has been made in the formation of a collection of the principal bricks made in this country, showing in each case samples of the clay or clays employed in the manufacture.

The school board for Sedgley adopted on Tuesday plans by Mr. Brevitt, for new schools to be built in Bilston-street. Accommodation will be provided for 900 children, at an estimated cost of £7 per head.

The public park at Duns, N.B., some 13 acres in extent, has now been completed. Seven acres of the park have been laid down in grass, surrounded by plots filled with hardy flowering shrubs, while the eastern part is entirely devoted to flower plots and lawn, studded with trees. A walk of nearly half a mile in length encircles the grounds, and at convenient points are a bowling-green, tennis-court, and quoiting pitch. The work has been executed by Messrs. Dickson and Co., of Edinburgh.

An examination has been held in the Court of Bankruptcy of James H. Bryett, builder, Romford-road, Forest Gate, who commenced business in September, 1893, with a capital of £75. The accounts show liabilities £7,232, of which £2,082 is unsecured, and an estimated surplus of £57.

The Great Ferris Wheel at Chicago, which was the *clou* of the World's Fair in 1893, and the original of the structure at Earl's Court, has been removed from Midway-walk at Jackson Park, to the northern part of the city, and was re-completed and made its first revolution on the new site a fortnight ago.

A new church, dedicated to St. James-the-Great, was opened by the Bishop of Ely on Saturday week, in the fen district of the large agricultural parish of Mildenhall, Suffolk. It replaces an iron structure which was wrecked in the great storm of last March. The present building of flint and stone, with a small tower, porch, and vestry, will accommodate about 120 people.

On Wednesday the old parish church at Ashampstead, Berks, was reopened after restoration. Mr. Alfred Waterhouse, R.A., LL.D., in addition to giving a handsome subscription, has also acted as honorary architect. The old unsafe nave-roof has been entirely renewed, and the original oak roof inside revealed, and much sham lath and plaster-work about the church removed, bringing to light again the old oak supports to the towerlet, which has also been renewed. The vicar is now raising additional funds for a vestry and for two bells to take the place of those sold in 1809-10 by the then vicar and wardens.

A stained-glass window has just been put up in the north aisle of the parish church of Berkeley, to the memory of Elton Vivian Gifford, by his mother, Lady Gifford, and his brothers and sisters. The window is the work of Messrs Burlison and Grylls, of London, and the subject is "The Peacemaker."

The first portion of the new municipal buildings at Oxford, now in course of erection from designs by, and under the superintendence of, Mr. H. T. Hare, A R.I.B.A., York Buildings, Adelphi, W.C., was opened on Friday by the mayor of the city. It consists of the public reading-room, being a section of the free library. Messrs. J. Parnell and Son, of Rugby, are the builders. Mr. Stanford being the local manager, and Mr. Evans is the clerk of works.

Mr. P. N. Russell, the original founder of the engineering firm of Russell and Co., has given the sum of £50,000 to endow a school of engineering in connection with the Sydney University.

The celebrated picture of "Calais Gate," by William Hogarth, which was presented by the Duke of Westminster to the National Gallery in July last, is now hung in the gallery in Room XVII. The picture, which is numbered 1464, has been until recently at an exhibition at Chester.

By arrangement with the Trustees of the Peabody Donation Fund, the Vestry of St. Mary, Islington, some years ago carried out sewerage works for the Peabody Buildings in Greenman-street, and when these were afterwards found to be defective, the vestry called upon the trustees to abate the nuisance. The question who was responsible for the expense thereby entailed came on Wednesday before the Lord Chief Justice and a special jury, when a decision was given against the vestry on all the main points in dispute.

MEETINGS FOR THE ENSUING WEEK.

Monday.—Surveyors' Institution. "Landlords and Tenants in Ireland," by R. M. D. Saunders. 8 p.m.
Tuesday.—Auctioneers' Institute. "Compulsory Purchase," by H. Logan, M.S.B.L. 8 p.m.
Institution of Civil Engineers. Discussion on "Subaqueous Tunnelling." 8 p.m.
Wednesday.—Carpenters' Hall Free Lectures. "Setting Out Work and By-Laws," by James Bartlett. 8 p.m.
Society of Arts. "Locomotive Carriages for Common Roads," by H. H. Cunynghame. 8 p.m.

At Wednesfield, a new board school accommodating 300 children, and built at a cost of £2,200, was opened on Monday.

The marriage took place at St. Michael's, Shrewsbury, on Tuesday, of Mr. Arthur Edward Lloyd-Oswell, A.R I.B.A, Shrewsbury, second son of the late Rev. Henry Lloyd-Oswell, rector of Llandinabo, and Mabel Frances, youngest daughter of the late Rev. Charles Amphlett.

The town council of Edinburgh adopted on Wednesday, by 18 votes to 9, a proposal to erect four tenements of workmen's houses on property belonging to the city at Tynecastle.

The President of the Royal Academy has pronounced judgment in the statuette competition instituted by the Art Union of London. Sir Frederic Leighton's award is given to a model for a statuette representing "Hero," by Miss Margaret Giles, of Bristol, who gains the premium of £150 offered by the Society.

The parish church of Wainfleet has just been restored from plans by Mr. J. B. Corby, of Stamford. The works include reseating in oak, and new floors of pitch-pine wood blocks on concrete. An oak chancel screen has been added—the lower part filled with open tracery, the upper part having tracery heads, moulded cornice. The new pulpit, of oak, is fixed on a carved Ketton stone base. The hot-water service has been rearranged. The cost has been £700. The works have been executed by Mr. J. T. Turner, Wainfleet, and the carving by Mr. W. Hilliam, of Stamford.

A new boys' school has been built in Cambridge-road, Devonport, adjoining an existing school for girls. The building is of two stories, and is constructed of brick. It is planned on the central hall principle, and has eight classrooms, accommodating 528 children, each classroom opening directly out of the hall. Cloakrooms and lavatories are provided at the hall entrances, from which granite staircases in duplicate lead to the upper floor. The foul air is drawn off by Boyle's ventilators on the roof. The central halls and the upper floor rooms are lined with brick above dados of Robinson's cement, whilst the plastered rooms have pitch-pine dadoes. The building is heated throughout by a low-pressure hot-water apparatus. The general contractors were Messrs. A. R. Lethbridge and Sons, and the architects Messrs. Hine and Odgers. It has been completed within the contract sum of £5,280. Mr. Hoskyn has been the clerk of works.

The Hay Urban District Council have decided to purchase from the local waterworks company their undertaking, and by an agreement entered into between the parties the price to be paid for it, as well as the amount of compensation to be allowed to the secretary of the company, has been referred to the sole arbitration of Mr. Edward Pritchard, M.Inst.C.E., of Birmingham and Westminster. The arbitration proceedings were commenced on Monday in Hay, when the arbitrator made an inspection of the undertakings to be acquired by council.

The lending, reference, and technical libraries formed in connection with St. Bride's Institute, Bride-lane, Fleet-street, E C., were opened by Sir Walter Besant on Wednesday. The institute, which has been erected from designs of Mr. R. C. Murray, by Messrs. W. Brass and Sons, was illustrated in our issue of Nov. 17, 1893, and on Nov. 2, 1894, we gave reproductions of the medallion portraits by George Tinworth of Mr. J. Passmore Edwards and the late Mr. William Blades, both liberal donors to the library.

An action brought by certain inhabitants of the Guildford Rural Sanitary District, to restrain the Guildford, Godalming, and Woking Joint Hospital Board from using a plot of land on Whitemoor Common, Guildford, consisting of two acres, and a cottage thereon, for a small-pox hospital, and from erecting a small-pox hospital on the said plot of land, was heard by Mr. Justice Kekewich, in the Chancery Division, on Monday, Tuesday, and Wednesday. The learned judge considered that the existing cottage was not a suitable place for small-pox patients, but there would be no objection to erecting a fresh building for such a purpose on the site, and no well-founded apprehension of danger.

PADDINGTON UNION. — SANITARY WORKS AND ALTERATIONS.—QUANTITIES for this work, prepared by an experienced Quantity Surveyor, can be obtained on speculative terms from — SURVEYOR, 57, Porchester-road, Paddington.

W. H. LASCELLES and Co.,
121, Bunhill Row, London, E.C.

TELEPHONE No. 270.

HIGH-CLASS JOINERY.
LASCELLES' CONCRETE.
Conservatories & Greenhouses.
WOODEN BUILDINGS.
BANK, OFFICE, & SHOP FITTINGS.
CHURCH BENCHES & PULPITS.

ESTIMATES GIVEN ON APPLICATION.

HAM HILL STONE.

The attention of Architects is specially invited to the Durability and beautiful COLOUR of this material.

Quarries Well Opened; Quick Despatch Guaranteed; Stonework Delivered and Fixed Complete. Samples and Estimates Free.

Address:—
THE HAM HILL STONE COMPANY,
NORTON, STOKE-UNDER-HAM, SOMERSET.
London Agent:—
Mr. E. A. WILLIAMS, 16, Craven-street, Strand, W.C.

WM. OLIVER & SONS,
MAHOGANY, WAINSCOT, WALNUT, TEAK, VENEER, and FANCYWOOD MERCHANTS,
120, BUNHILL ROW, LONDON, E.C.

The most extensive Stock of every kind of Wood in Planks and Boards, dry and fit for immediate use.

TENDERS.

⁂ Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender; it adds to the value of the information.

COTFORD.—For the completion of the lunatic asylum at Cotford, for the Devonshire County Council:—

Willcocks and Co., Wolverhampton £75,350 0 0
Accepted.

[Owing to failure of previous contractor, new tenders were invited.]

FINSBURY PARK, N.—For enlarging the lodge at Finsbury Park, for the London County Council. Mr. T. Blashill, superintending architect:—

Wallis, A.	£282	0	0
Britton, F.	273	0	0
Hart, P.	270	16	0
Lapthorne, T., and Co.	246	0	0
Harding, R., and Son	243	2	5
Wells, W.	230	0	0
Williamson and Sons	219	15	5
Pancy, W.	216	0	0
Thorne, W.	212	8	4
Jeffries, G. E. (accepted)	193	10	0

(Architect's estimate, £226.)

GATESHEAD-ON-TYNE.—For erection of bakery at Low Fell, for the Gateshead Industrial Co-operative Society, Ltd. Mr. E. Bowman, 62, Grainger-street, Newcastle-on-Tyne, architect. Quantities by the architect:—

Lunn, J., Newcastle	£1,757	0	0
Lamb, T. and R., Gateshead	1,709	0	0
Tyrie, W. C., Gateshead	1,693	0	0
Hunter and Co., Low Fell	1,688	0	0
Raven and Hitcham, Gateshead	1,656	0	0
George, E. and T., Newcastle	1,627	0	0
Draper and Sons, Leamside	1,618	0	0
Wakefield & Henderson, Low Fell*	1,573	0	0

* Accepted.

GOFF'S OAK.—For the erection of two cottages at Goff's Oak, for the Receiver for the Metropolitan Police District. Mr. John Butler, F.R.I.B.A., architect. Quantities by Mr. W. H. Thurgood:—

Higgs and Hill	£1,784	0	0
Lawrence and Sons	1,745	0	0
Gardener	1,650	0	0
Richardson	1,625	0	0
Waterman	1,620	0	0
Wilmott and Sons	1,595	0	0
Bunce	1,590	0	0
Almond and Son	1,488	0	0

LEEDS.—For heating the enlarged portion of Green-lane Board School:—

Newsum, Roberts, and Co. (accepted).

HEXHAM.—For the erection of a branch bank, for Messrs. Lambton and Co., bankers, Newcastle-on-Tyne. Mr. John W. Dyson, M.S.A., Grey-street, architect. Quantities by Mr. J. P. Allen, P.A.S.I., Grainger-street, West Newcastle:—

Weatheritt, T., Newcastle	£5,267	10	3
Middlemiss Bros., Newcastle	5,243	13	6
Tyril, W. C., Gateshead	5,180	0	0
Darlington, W. and J., Hexham*	5,016	13	4

* Accepted.

LEICESTER.—For the erection of a new factory, South Bond-street, for Mr. H. J. Creese. Mr. J. Smith, Briton-street, Leicester, architect:—

Gretton and Woolley	£449	0	0
Cooke, J. R.	442	7	0
Clayton, J. H.	440	0	0
Hill, J. N.	426	0	0
Mason and Sons	413	0	0
Gurney, U.	401	0	0
Elliott, F. (accepted)	396	0	0

All of Leicester.

LONDON.—For electric-light wiring and fittings at the Cancer Hospital, Brompton, S.W., for the committee of the Hospital. Mr. Morgan Williams, Assoc.M.Inst.C.E., consulting engineer:—

	A.	B.	C.	D.
Crompton and Co.—	£668 0 0	£45 0 0	£107 8 0	£820 8 0
Rashleigh Phipps and Co.—	523 0 0	20 0 0	115 5 6	658 5 6
Leaf, H. M.—	330 0 0	25 0 0	99 11 6	454 11 6
Drake and Gorham (accepted)—	309 0 0	25 0 0	86 19 0	420 19 0
Sotheby and Co.—	293 10 0	26 10 0	77 14 0	397 14 0

A.—Wiring. B.—Cutting away and making good. C.—Fittings, exclusive of lamps. D.—Total.

LONDON.—For the supply and erection of three centrifugal pumps at the Heathwall pumping-station, for the London County Council:—

Warner, R., and Co.	£3,330	0	0
Cornes, Martin, and Co.	2,770	0	0
Drysdale and Co.	2,680	0	0
Tangyes, Limited	2,675	0	0
Entwisle and Glass, Limited	2,570	0	0
Blakeborough, J., and Sons	2,556	0	0
Gwynne and Co.	2,272	0	0
Cochrane, J.	2,200	0	0
Beaumont, W. (irregular)	1,925	4	0
Renshaw, W. R., and Co.	1,839	0	0

LONDON, W.C.—For finishing the Hotel Cecil, Salisbury-street, Strand:—

Waring, S. J. and Sons, London and Liverpool (accepted).

MITCHAM.—For erection of a lightning conductor on the water tower at Mitcham workhouse, for the Holborn Board of Guardians:—

Gray and Son, Leadenhall-street (accepted).

BURMANTOFTS SPECIALTIES

TERRA COTTA
Buff. Tawny red. Red & GREY COLORS.
FAIENCE
Constructional & Applique for Exterior and Interior Decorations.
TILES
for all Purposes

GLAZED BRICKS
Burmantofts Ivory White & Good Selection of Colors.
SANITARY WARE
HOLROYD'S PATENT TROUGH CLOSET
POTTERY
Pedestals. Vases. Flower Pots. &c. in Majolica. Paté Sur Paté. ETC ETC

Produced at the Burmantofts Works of the LEEDS FIRECLAY Co. LTD: Burmantofts. LEEDS.

LONDON offices and Showrooms
16 Charterhouse St. E.C.

TELEGRAPHIC ADDRESS
BURMANTOFTS LEEDS and BURMANTOFTS LONDON.

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXIX.—No. 2134.
FRIDAY, NOVEMBER 29, 1895.

PROVINCIAL ARCHITECTS.

THE addresses delivered to architectural societies in the provinces deserve more general notice than perhaps they are accustomed to get. They are important in many ways. Especially do they show, just now, that the evils which architects have to fight against, and the wants they feel, in one part of the kingdom, are pretty much the same as those in all other parts. The more this is perceived, the more hope is there that architects everywhere will unite in struggling with them. The essential weakness of the profession is its disintegrated state. There seems to be a sort of mutual repulsion between its members, and nothing but gross ill-treatment from outsiders can bring them together. Even this is not always enough. The architectural turnspit is still with us, and still ready, in the Law Courts or out of them, to assist in the roasting of a brother architect. Nor has he always poverty to plead as an excuse. It must be rather love of the occupation than need for the fees which tempts vice-presidents and F.S.A.'s to exhibit themselves, as they have been known to do, in this inglorious attitude—an attitude doubly ignominious when they fail to gain the sympathies either of the judge or the jury. But, even when less virulent, antipathies and jealousies do mischief enough. If it happens, for instance, that some unfortunate competitor has been ill-treated, and an effort is being made, under infinite difficulties, to get substantial justice for him, a good-natured friend is pretty sure to make the hard harder, by raking up old stories against him. The stories may be true, or they may, as is more likely, be only "founded on fact," but that is scarcely the time to make them public. They have their effect; the world believes them, but it is not likely to respect a profession which encourages them to be told. Turnspits and tell-tales are not the people that the public will ever look up to.

We welcome every increase in the strength and activity of provincial societies, because it implies an increase in the *esprit de corps* of architects generally. They are more isolated in country than in town, and so more tempted to consider each his own immediate advantage. But we do not for a moment imply that, at the lowest, they are more unscrupulous than the least honourable of so-called architects in London. They would find it hard, perhaps, to beat such a case as the following, which happened in a suburban district (we do not say when, or where). A large Sunday-school was to be built, adapted also, as such schools often are, for use as a public hall and concert-room. Three or four architects were invited to compete, a design was adopted, and instructions were given to prepare the working drawings. They were made and approved, and the committee were in the usual hurry to obtain tenders. Suddenly they interposed a mysterious delay. Nothing was done for months. Then the architect was summoned to meet them, and was informed that it had been decided to reduce the cost originally stipulated for, and that, unless he would make a new design without charging anything for the previous working drawings, the work would at once be taken away from him. While ready to sacrifice something for a philanthropic object, he was hardly prepared to be forced into it in this "money-or-your-life" style. He was removed next day from the appointment which he had secured by competition, and every pretext which ingenuity could devise was brought up to prevent his charges from being paid. At last he received the greater part of them, after threatening the committee with an action and an exposure. Then the work went on swimmingly, and the secret of the delay came out. A firm of "architects" who had already honoured him by copying one of his plans at a much-advertised building of theirs in the neighbourhood, had worked on the lowest motives of the promoters, and had wriggled themselves into his place. They adopted all his competition drawings, merely changing their architectural details into the "vernacular" of the small suburban builder. The cost was scarcely reduced at all; but the committee were satisfied. They had a grand opening and unctuous speeches. Everybody congratulated everybody else on the noble way in which this great work had been done. It was a triumph of principle, they said; a step towards the enlightenment of the neighbourhood. And the parting advice of their leading divine was, "Build your characters, my friends, *as you have built your schools!*"

However hotly reputable architects may contend in actual competitions, they do at least refrain from robbing others in this way of appointments for which they themselves never even competed. But as the architectural pirate exists, and sometimes flourishes, there ought to be means of covering him with the disgrace he deserves. It is rarely, perhaps, that he is a member of any professional body. He is safe, therefore, from expulsion; but he need not be secure from general contempt, and when architects are as united as they ought to be, they will be able to visit him with a penalty more proportionate than this to his deserts. But it is not only the presence of our worst foes—those of our own household—which should make us draw more closely together; it is also the pressure of the outside public. Turnspit, tell-tale, and pirate alike effect their nefarious ends by acting on clients and committees. Oftener than not, one or other of them, though modestly hiding himself in obscurity, is at the bottom of the mischief-making and fault-finding which the most capable of us suffer from. But it is not always so. The shabby man knows how to act shabbily even when there is nobody to set him on. "A churl does a churl's deed," as Chaucer puts it, by mere innate impulse. This is notoriously apt to be the case with committees. Just as the strength of a chain is that of its weakest link, so the honesty of a committee is commonly that of its shadiest member. The shady member—sometimes a lawyer and sometimes not—inserts a clause in the conditions, which gives the committee the power of doing most unjust and arbitrary things. Competitors fancy that a body of men, some of them of high standing—will never really avail themselves of the powers they reserve. Lookers-on know better. If the assessor's award goes to some local favourite, somebody with powerful friends—somebody, in fact, whom a great part of the committee want to appoint, whether he deserves the appointment or not—the arbitrary clauses will never be heard of. But if the successful competitor is an outsider—a young man, say, with no patrons and no influence—he has a fair prospect of being visited with the utmost rigour of the law. It matters nothing that his design was the best; it matters nothing that, in honour and fairness and equity, he deserves the appointment; it matters nothing that he spent weeks or months in hard work, relying entirely on the good faith of the promoters. "Let us kick him out," says the shady member; "we have got a clause that empowers us to do it, and so he cannot complain." The shady member gets a majority on his side, and the dishonest deed is done. The people who voted for it congratulate themselves that nobody can call them to account, and walk home with their heads in the air, every one of them posing for a picture of "the righteous man."

"Legal rights," as the President of the Northern Association truly says, "are often moral wrongs." But as there are multitudes of people—and of people making the highest pretentions to morality and conscience and religion—for whom "the law of their country is the limit of their honesty," the only safe course for architects is to decline having anything to do with those who reserve to themselves the power of arbitrary and unfair action. Assessors, above all, should refuse to let such powers be provided for in the competition conditions with which they are concerned. Such clauses could be ended to-morrow if architects everywhere were as true and loyal to each other as they should be. But, unfortunately, anybody, from an R.A. to a broken-down jerry builder can call himself an architect; and this wise world of ours too often takes him at his own valuation. Provincial societies, like London ones, may do much to prevent their members from walking blindly into traps; but they have little influence over the architects, and still less over the sham architects, who do not belong to them. To increase their own membership, and to put down the sham architect, who is the favourite tool of the shady committee-man, are two obvious aims which they have to keep in view. We should be glad, in particular, to see their thoughts more exercised than they have been, on the best way of effecting the second of these objects. It may be a slow process, whether it is done by examination or legislation, or both combined; but that is only a reason for setting about it with the more energy and determination.

We think Mr. Henman was right when desiring, in his address at Birmingham, that provincial architects should have more influence at the Institute. But if they do not, it is largely their own fault. Comparing the number of voting papers annually received with the number of Fellows and Associates entitled to vote, it is clear that a great proportion of the members do not interest themselves in the elections at all. Considering how many Metropolitan candidates are returned, it would seem that it must be the provincial architects mainly who thus fail to vote. If they voted, they could easily return their own men, and gain the influence they deserve. There is no prejudice against them in London, as they sometimes seem to fancy. The Metropolis, unlike some provincial towns, never seeks to exclude outsiders. If Mr. Henman settled in London, he would not be called a "foreigner," as a London architect is when he happens to obtain a commission in Birmingham. In fact, the best-known London architects are, or were, outsiders, and London is rather a gathering-place for provincials than a city with any strong individuality of its own. Still, those who have gathered here come to know each other, and naturally, in many cases, to vote for each other. But this is done with no set purpose of keeping down their brethren who have not yet arrived, or who never will arrive, from other towns. It is largely the result of accident, and it could easily be kept within bounds if provincial architects would vote, and would lean a little towards voting for each other.

MASKED ROTTENNESS.

TWO classes of dilapidated or ruinous buildings confront the district surveyors of the Metropolis. One is the shored-up and openly dangerous structures which have been reported on and made secure; the other class those buildings which present a respectable exterior, but which are a mass of rottenness within—the merest shells, which are ready to collapse at the slightest opportunity. It is of the latter class we now speak. The premises incipiently affected are numerous and widely scattered. We can hardly pass through an old street, whose houses have been repaired and renovated, which does not possess such buildings to which we refer; but they escape notice altogether, because their owners have been shrewd enough to make trivial repairs when necessary, and to avoid coming into contact with the authorities by making such alterations or improvements as would bring them under the statutable clauses known as the "dangerous structures" clauses. The houses which fell the other day in the Westminster Bridge-road are presumably of the type we are referring to. They were externally so presentable and well cared for as not to have aroused the slightest suspicion. In the hands of painters and plasterers nothing could be suspected of them; they had apparently well-built, neat brick fronts, coloured and "tuck-pointed," a mode of external decoration which allays any feeling of alarm, and is at once one of the surest means of securing tenants. When the outer wall, without any warning, fell into the roadway, miraculously without doing any bodily harm to anybody, and the whole interior collapsed as a mere heap of rotten ruins, the unreliability of these external and superficial renovations was startlingly made evident. The cause of failure is at present not very clear, and the only conclusion we can draw is that from some obscure rottenness and want of internal tie, the wall gave way. The district surveyor never had any misgivings. How could he? The front had been retouched up and repointed, and there was nothing, it is alleged, that gave any doubt about the safety of the building. There are hundreds of such houses in London which have escaped the official eye. Many of them have suffered years of internal tinkering, partitions pulled down, chimney jambs cut through and supported to make shops and show-rooms, cross walls removed or cut through, floors tampered with, and timber beams and joists cut or weakened, while the external front wall has become a mere mask, touched up by paint or repointed at intervals, and intended to exclude from inspection all the alterations that have been going on interiorly. The old Building Act allowed such a condition of things to exist. Unless the council had intimation of the dangerous state of any structure, no survey or report could be made; the district surveyor was in many cases ignorant of these buildings, or had no information as to their condition internally, and it was the interest of property owners to keep such matters from the surveyor. The new Act is still inadequate to meet the requirements. Sections 207-209 cannot be made applicable to any premises such as those named. They are only operative when certain things are done, as where a party or external wall has been "taken down, burnt, or destroyed to the extent of one-half" where additions or alterations are made to buildings, except those "of necessary repair not affecting the construction of any external or party-wall." But the majority of repairs or alterations would come under this exception, and so would escape the attention of the surveyor. Yet as we desire to show, it is just this class of building which the building statutes cannot touch, and which are masked by fair façades, that require special attention. Their fronts are recoloured and the brickwork repointed, or the whole front may be stuccoed and repainted, concealing behind a rotten structure of floors and partitions, which hold together upon, perhaps, the rotten end of a wooden beam. The structural vicissitudes which the external front wall undergoes is not often taken into account. Generally the front of the house has been taken out for a shop-front, and a bressummer or girder to be inserted to carry the wall over, and this is not always above suspicion; it rests on party-walls which have been tampered with, or piers that are not substantially built in cement—perhaps the foundations have been shaken or interfered with. Then the wall itself has settled and cracked between the window openings: it has lost its bond, and has no direct tie. In this condition it is stuccoed over and painted, or the brickwork is stopped in and coloured with yellow ochre, or rubbed down and tuck-pointed, and the premises are made to look like new. Very few of the old brick-fronted houses have not been subjected to this treatment, and it is owing to this masking of the real condition of the wall that the risks are increased. Since the fall of the wall in Westminster Bridge-road other portions of adjoining houses have fallen. By the light of these facts, the London County Council will do well to make their surveys a little more thoroughly in the case of old premises which, though not outwardly dangerous in appearance, have been repointed or renovated. To discover them it may be difficult from a a casual survey of the exterior: an examination of the internal walls and floors is necessary. As we have said, the openly dangerous structures with overhanging or cracked walls are easily found out; but the neatly-pointed or stuccoed front may elude the surveyor for years. Excavations may have been made in the basements and cellars for drains which have undermined the walls without being discovered, or insufficient girders introduced to carry upper walls, all which and similar operations may have been carried out without arousing any suspicion. The danger of allowing unsuspected properties to pass unnoticed is increasing year by year, with the rapid growth of the Metropolis; but a register of all old properties, especially those which remain unlet, and which are pointed or stuccoed, ought to be made.

MISUSED MATERIALS.

RUSKIN, the apostle of colour and nature, speaks of the "nobleness and loveliness of colour"; in another place, that it is "the holiest, the most divine, the most solemn gift of God." "All good colour is in some degree pensive," he remarks. The builders of our great cathedrals, he says, "veiled their casements and wrapped their pillars with one robe of purple splendour." Though in a figurative sense, perhaps, all this is perfectly true to those who have eyes to see, yet it is strangely at variance with the ordinary builders' and architects' practice, who seem to think colour must be entirely sacrificed to other qualities—neatness, trimness, hardness, smartness, or violent contrast; and so they choose their materials because they think they are the best, without the slightest thought of environment. As the same authority tells us somewhere, the world is made up of "thinkers and seers," but the seers are the "greater of the two." "Hundreds of people can talk for one who can think, thousands can think for one who can see," and so it is in the choice of materials. There are plenty of theories and a redundancy of material at our disposal; but it is quite as often we select the worst, because we reject the sense of colour, and think that to be the most suited to our wants which is everywhere used, in town and country, hillside and moor alike, and which manufacturers and expert scientific writers catalogue and recommend. The artistic sense of colour, and the equally important ones of seeing and feeling, are disregarded in our purview.

There are two senses in which we now speak of misused materials: one is material not adapted for its purpose, and the second material put in the wrong place. In the first of these meanings we may include all materials which are not suited for a given use, as, for example, where stone is employed for resisting transverse strain, and timber for columns which have to carry great loads; where plastic materials are used for purposes for which they are not adapted. In the second sense, we chiefly dwell on the question of adaptation or the choice of material as it concerns artistic considerations, as, for example, when red brick is used in positions or localities which would be better served by stone or some local material. It is a question rather of harmony or contrast with the surroundings. Slate is equally as good, often better than, red tiles for roofing, and so is suitable in the first sense; but as a matter of harmony of texture or colour, it may be ill-adapted and inartistic. So, in short, we have physical unsuitability and artistic misapplication to deal with in all the materials we are called upon to use. They do not overlap. Practical treatises on materials mainly deal with the first of these: they tell us which are the best limestones and sandstones for resisting crushing and disintegrating forces, as those of water and atmospheric acids; which is the most brittle; what kinds of timber are best adapted for given purposes; the properties and strength of iron and steel, of cement, and so on. But if the architect only consulted these textbooks on materials, he would be often committing serious mistakes in an artistic point of view. We have proof of this in the advice often given by authors of books on building construction. In one of these—a recent handbook for students passing Institute and Technical examinations—the author describes how cement stucco-work can be lined out to imitate blocks of stone—a purpose that may be quite within the legitimate use of the material, but yet is flagrantly wrong in an architectural sense. So we read of wooden bressummers used to represent stone fascias, and iron columns made to carry fronts that would be better carried by stone or brick piers. We have no farther to go than to the designs of some of our engineers for examples of artistic misapplication, as when we see yards of painted ironwork doing duty where brick or stone are the natural materials, or the finely-chiselled and jointed masonry of the Tower Bridge casing a framework of steel. Mr. W. D. Caröe, in his presidential address the other day, referred to this structure and the turncock's shed which engineering enterprise had erected marring the natural beauty of the grassy slopes of great Helvellyn. Instead of the natural grey stone or boulders, which are plentiful, and harmonise with all the surroundings of lovely Thirlmere, the engineer introduces a "friable red stone" to face the dam, and other vagaries of material and style. We have plenty of such examples of misuse in London and other places—quite legitimate according to the scientific builder's creed, though completely at variance with the teachings of Nature. How many a humble and picturesque village or suburb of our metropolis is marred by the erection of buildings in red "tuck pointed" brickwork, with all the rigid lines and the fussy accessories of bays and gables of modern villadom. So far, then, it is quite possible for the scientific textbook of modern science to be closely followed without in one degree imparting the knowledge essential to choose material properly, or to give a truthful character to our buildings.

Of course, it is absolutely necessary to observe certain principles and physical laws in the use of materials. An architect could not be forgiven for using a friable or soft stone in any external position, such as soft limestone for weatherings or copings; for using a stone of little resistance to carry a great load; for employing iron in positions better filled by wood—mistakes made every day. Examples of misused materials in these senses are common enough. We have seen such things as iron girders and roofs resting on, and tied to, brick walls, without any means for expansion and contraction, iron columns used in conjunction with brick piers built in mortar, iron ties introduced in stonework. We are constantly seeing the misuse of iron in columns. Who has not seen a foliated capital with fluted shaft to imitate a stone column, or a deeply-undercut moulded capital, which is not only extremely difficult to cast from moulds, but shows an utter ignorance of the art of the founder or the process of contraction in cooling. In the employment of wood the most elementary physical laws are equally disobeyed every day, and no one is any the wiser. The expansion and contraction of wood is not suspected; often it is used too dry, and then we get panels that swell at the slightest change of weather. When the wood is over-seasoned or dried in hot weather, it is not fit for panelled work. If the panels are fitted too tight in the grooves, when the first damp weather comes on, they expand or buckle, or cause the framing to give way. Carpenters and joiners often misuse planks and deals by not considering the manner in which they shrink in seasoning. It is a good rule that timber should never be seasoned in a warmer atmosphere than that which it will occupy in the building. The shrinkage in seasoning always follows a certain course, which can be observed by looking at the way a log shrinks and the planks cut from it: the outer layers contract more than the inner, and the outer planks twist hollow or become warped. Then a misused material may be seen whenever the designer has employed it wrongly—as, for instance, when he specifies castiron for a purpose in which cross strain is set up; when he designs shafts of stone or marble with a spiral for the sake of ornament, or employs plaster and other plastic substances for ornamental features where cohesive strength is called for. We may enumerate mistakes of this sort by the hundred, in modern, commercial, and speculative buildings, where cheapness is the leading consideration.

In these remarks, however, we rather dwell on the subject of misused materials on the artistic side, than on the physical. The latter may be perfect, as we have shown, and follow every dictate of science, and yet be inharmonious and repellent to good taste. No scientific authority on materials ever pointed out the objection to using cement for stone. A brick stuccoed wall is agreeable to the soundest science; but it was perceived by the true seer that it was a folly to build such a wall in a stone locality, and to make it imitate stone. It was not an engineer who pointed out the architectural misuse of iron; we presume it was the new light that burst upon us when the first revivalists woke to the fact that iron has its limitations as well as its duties, which make it serviceable as a tie or girder, but not as a column, and never for any construction which originated with stone or even wood. No one with the slightest knowledge of design thinks now of applying the rules of treatment necessary for stone or wood to a plastic material. All these things are well known to the architect; but even he is caught tripping occasionally, as when he thinks out his work in lines without any regard to the material it is to be executed in. We may take as an instance of this a design for a building to be carried out in stone or brick and stone. The elevations and details of windows and doorways, columns and turrets, are drawn out for stone; brick is afterwards decided upon to reduce cost, but no alteration is made in the details. In another instance—a case very frequent in carrying out competition designs—terracotta is substituted for stone dressings, the same details being worked to. With such an elasticity of conscience, the modern architect accommodates his design, and adds the alternative item in his quantities, "The same if executed in terracotta instead of stone." No matter that one material is worked with the tool and the other moulded in clay; that the mouldings of one are free and deeply undercut, as those of the other are limited to small projection and flat contour. Again, we often see the materials and workmanship suitable for a suburban villa—red and pointed brickwork, and timber framing and plaster—introduced in the midst of a district where stone is plentiful and its working cheap. The stone would naturally blend harmoniously with the surroundings, besides being less costly. But is not the contrary also equally glaring, when soft limestone is employed in good brick-earth localities and in places near the sea, exposed to the weather? A mode of working granite or stone which is perfectly justifiable at Glasgow or Leeds is as ill-adapted in a London building, where it is quite out of place, as it is to erect a half-timbered building in a Yorkshire town. Misused materials are not confined, however, to methods of working stone or brick; they are equally the result of misapplied style, when, for example, the old timber and parquet work of Chester is transplanted near bleak Scottish or Yorkshire moors, and all the irritable and fussy details of gable, dormer, and carved wood are introduced amidst quiet and secluded country surroundings. The colour or tone of materials are not less to be considered. Red brickwork and tile are always pleasing amidst trees; but there are some situations, as in the districts of Cornwall and Aberdeenshire, where the redness is certainly glaring and obtrusive, and the grey mountains would harmonise better with the native limestone or granite.

THE SURVEYORS' INSTITUTION.

THE first paper of the session, 1895—96, was read before the meeting of this Institution on Monday last, November 25, by one of the new Irish Fellows of the Institution, Mr. R. M. D. Sanders, of Sanders' Park, Charville, co. Cork. The subject of the paper was the relations of "Landlord and Tenant in Ireland," and Mr. Sanders was fortunate in having as chairman for the evening, Mr. D. Watney, the president of the Institution, whose practice has made him very familiar with Irish land questions. It would be impossible to give, in the space which we can allot to it, a complete *resumé* of Mr. Sanders's paper; but we are glad to note that he considers the present time a favourable one to discuss the matter. He thinks that there is now in power a Government strong enough to carry out what they know to be right, unhampered by party fears and party exigencies. It has, he says, always been the misfortune of Irish Land that her troubles have always been made a medium for political agitation, and that any suggested improvement in the land laws has never been without the suspicion of some political bias. The basis of all Irish law of landlord and tenant was a contract of tenancy. None of the English customs of forfeitures and reversions, and such-like, prevailed. They were destroyed in the creation of the relation of landlord and tenant. If there be two parties to an agreement in which one agrees to be landlord, and the other to be tenant, the relation of landlord and tenant would exist. Mr. Sanders then briefly reviewed the Act of 1860, which, he said, provided for the simplification of ejectments, and secured to the tenant whatever were not actual fixtures; but which did not deal with the all-important question of permanent improvements. After the subsequent agitation of 1869, Mr. Gladstone introduced the Landlord and Tenant Bill, which received the Royal assent on August 1, 1870. The Act legalised the Ulster customs; but left it to be proved that they varied in various cases. Under this Act, the amount of compensation was subject to limitations. The tenant could not claim for improvements more than 20 years old (unless they were buildings or reclamations), nor for any that were injurious to the landlord's estate, nor for improvements under a contract for valuable consideration (which would include the case of a man who let on lease at a value lower than the actual value, in order that the landlord might do the repairs). A scale of compensations had been (the speaker said) laid down, and was taken up by the courts in the case of all new defendants. The whole difficulty of the land question in Ireland was, according to Mr. Sanders, the lamentable fact that while Englishmen did not understand what was necessary in a country, with customs entirely differing from those they were used to, with laws bearing in several ways against the adoption of any English system, with customs inherent to the soil, they, as the governing body in Parliament, had made laws, for the solution of purely social and domestic questions, on party lines. The Land Question in Ireland, which was undoubtedly the question on which the prosperity of the country turned, had always been tacked on to some party agitation, or to some one-sided political programme, and had never been allowed to show itself as the grave and important element in the prosperity of Ireland which it undoubtedly was, in spite of the strife of parties. Mr. Sanders gave many details and statistics to prove his case, and, judging by the careful attention they received, and the cordial acceptance of them at the hands of the many expert land-agents present, they accurately represented the hardships under which Irish land now suffers. He looked forward to better times, when the question should be removed from the arena of political contest, and carefully deliberated and dealt with on sound and disinterested legislative lines. He recognised all the difficulties, but did not seem in the least to despair of the result.

A cordial vote of thanks to Mr. Sanders was moved by Mr. J. Luard Pattisson, C.B., who agreed with Mr. Sanders that the effect of legislation had been rather to discourage than to encourage Irish land, and who quoted statistics showing that while, at the date of the Union, the population of Ireland was $5\frac{1}{4}$ millions, it rose to $8\frac{1}{4}$ millions in 1845, was only $5\frac{3}{4}$ millions in 1861 (after the drain by famine and emigration), was $5\frac{1}{2}$ millions in 1871, a little over 5 millions in 1881, and less than $4\frac{3}{4}$ millions in 1891.

The vote of thanks was seconded by Mr. John Shaw (Member of Council), and the proceedings were brought to a close by an eloquent speech by Mr. Carson, Q.C., M.P. (for Dublin University), who contended that the Land question was at the bottom of all Irish difficulties, and that if it could once be settled on fair lines—apart from party considerations—the solution of the remaining problems would be simple. Free contract was essential. Compulsory sale might be advisable: but whether the landlord bought the tenant's rights, or the tenant purchased the landlord's, freedom of contract must be the ultimate object of any useful legislation.

THE HOME FOR EPILEPTICS, CHALFONT ST. PETER'S.

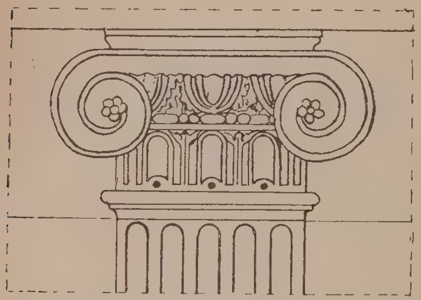
THE Duke of Devonshire, who was accompanied by the Duchess, opened, on Monday afternoon, the new home (the "Passmore Edwards House") in connection with the colony of the National Society for the Employment of Epileptics, established at Chalfont St. Peter, South Bucks, on a farm given by Mr. Passmore Edwards. The home, which was illustrated in our issue of August 9 last, is the first permanent one erected, and provides accommodation for 18 colonists, in addition to an isolated house with two beds. Messrs. Young and Hall were the architects, and Mr. Darlington, of Amersham, was the contractor. The committee, in their appeal for funds to enable them to extend the scope of their operations, point out that large numbers of afflicted persons, even if good workmen, are unable to obtain employment by reason of their disorder, and that under the conditions of medical attention and sanitary surroundings secured by a colony, they are enabled to live a life of usefulness instead of one of enforced idleness, ending in many cases in the lunatic asylum. The progress already made by the little band of colonists is reported by the honorary medical staff to have surpassed all expectations, and the success attained has led to offers of a sum sufficient to erect a home for women (in addition to the one already erected for men) and two for children. A heavy outlay, however, will be necessary to equip the new homes with furniture, work-rooms, and school accommodation, while the drainage system and water supply must be considerably extended. In opening the home, the Duke of Devonshire said it was important that public attention should be directed to the work of the society, because the number of epileptics of all classes, for whom the colony was intended, was very large—he was informed between 30,000 and 40,000 – and their condition was so pitiable that there was little doubt that adequate support would be forthcoming if only the ear of the public could be obtained. There was no treatment which was more effective for the mitigation of epilepsy than healthy and congenial employment, as had been proved by the experience of a colony which had existed in Germany for 26 years. He thanked Mr. Passmore Edwards for the munificence which had provided the society with the farm which was to be the scene of the future colony, and to which also they were largely indebted for the home now opened. He hoped that the splendid example set by Mr. Passmore Edwards might be followed by others.

CLASSIC DETAILS AND THEIR APPLICATION.*

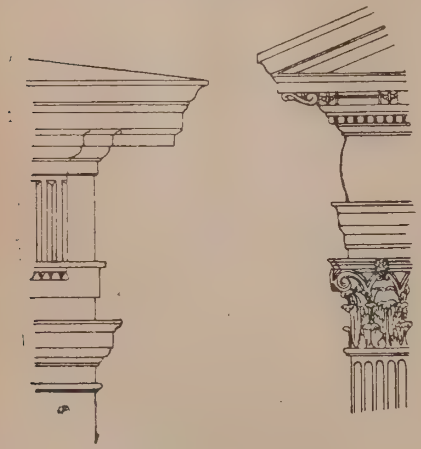
By G. A. T. Middleton.

XVIII.—FRENCH RENAISSANCE: FEATURES OF THE LATER PERIOD.

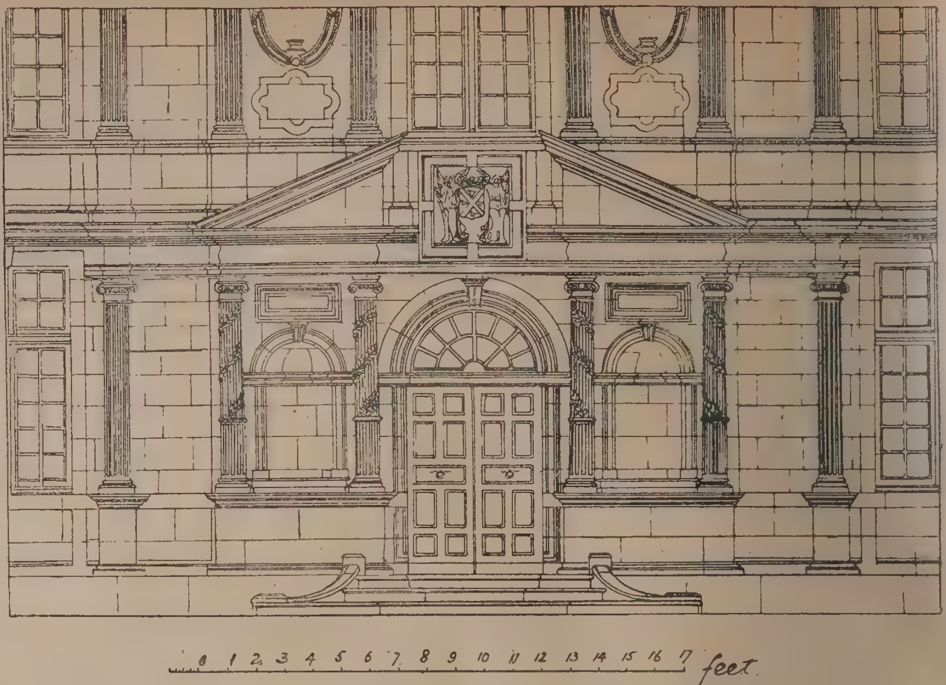
ELEGANCE had been the keynote of the French Renaissance in its early times, and remained its keynote throughout, in spite of the incongruities and absurdities which characterised the period commonly known as that of Henri Quatre. A somewhat extreme example of this is the doorway of the Château des Ifs, which is illustrated herewith. The Orders are used more definitely and more formally than would have been the case in the preceding period; but are almost lost sight of in the mass of heavy applied ornament. The shafts of the columns are entirely hidden in rusticated blocks, out of which, of course, it is to be (falsely) assumed that subsequently they are to be chiselled; and then the bed-mould of the cornice rests directly upon the capitals without intervening architrave or frieze, the increased height of the Ionic capitals needed to carry off the heaviness of the whole design being supplied by heavily drooping swags. This cornice, however, is only the lower of a pair of cornices, and æsthetically serves but as the architrave to the upper; the space usually devoted to the frieze being filled with a broken pediment converted into scrolls. Above comes the true cornice of the order, surmounted again by a broken pediment, the break being objectless, and filled with ornament which would better have been omitted.



Ionic Capital, Chateau de Joigny.—(*From* Sauvageot.)

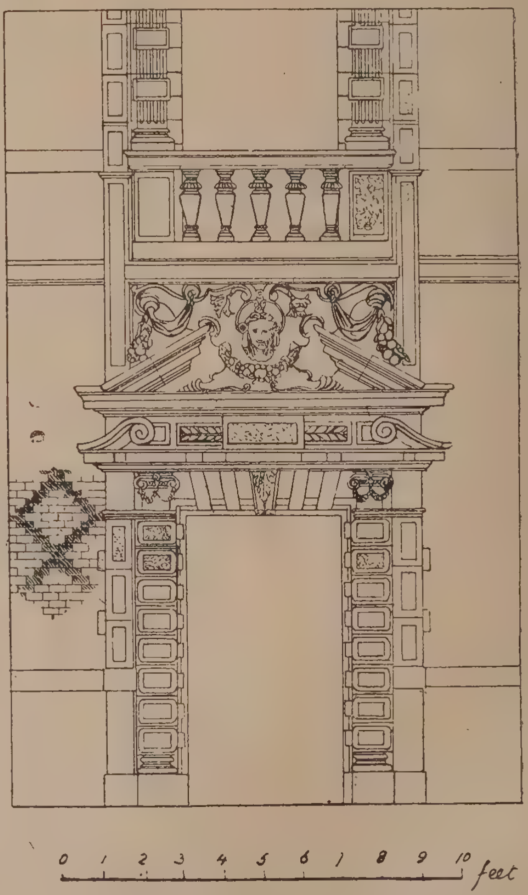


Doric and Corinthian Orders, Chateau Maisons sur Seine.—(*From* Sauvageot.)



PRINCIPAL ENTRANCE, CHATEAU DE BUSSY-RABUTIN.—(*From* Sauvageot.)

Almost contemporaneous is the doorway of the Chateâu de Bussy-Rabutin; but the orders have been more frankly shown, and the light and elegant French proportions are in evidence, with infinitely better result. The Ionic order rests upon a surbase, itself resting on a low, square plinth, and so is raised considerably above the ground, and four of the columns are banded and wreathed; and though it is questionable whether representations of perfectly natural, unconventionalised wreaths is quite admissible, the effect is good. Both entablature and pediment are broken, as usual, without adequate reason; and two of the columns of the upper order appear to rest upon the slope of the pediment!

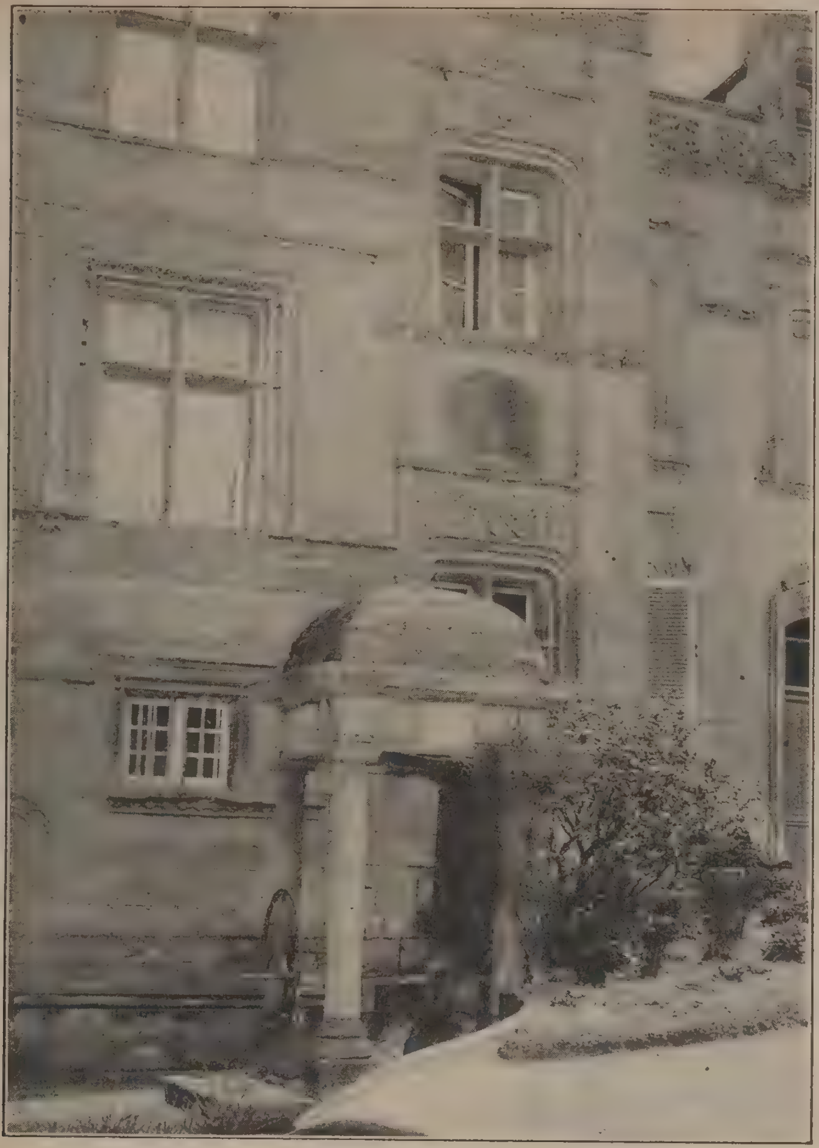


DOORWAY, CHATEAU DES IFS.—(*From* Sauvageot.)

Up to the present, the orders have rarely been found used constructionally in France; but this became gradually more common, first in small features (an example is illustrated in the charming little Doric wellhead at the Maison Fontaine-Henri), and then in larger ones. Of course, the Italian forms of the Roman orders were used, but the frieze was frequently deep, and the architrave

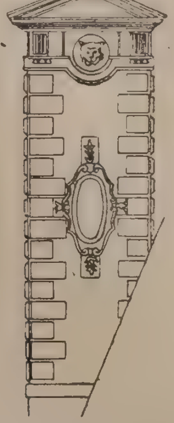
---

* All rights reserved.



WELL HEAD, MAISON FONTAINE HENRI, NEAR CAEN.
(*From a Photo. by* Mr. E. B. Drake.

narrow, while the cyma recta was almost invariably employed for the crowning member of the cornice, and the contours of the mouldings were invariably matter for careful thought, and of delicate, rather than vigorous, handling. The liberties taken with the capitals, too, when present at all, were less noticeable than they had been previously, and more formal. The Ionic capital from the Château de Joigny, for instance, is an original and beautiful variant; but it is not eccentric, neither is it overflowing with the exuberant fancy of the earliest work.



Chimney from the Chateau de la Ferté sous Jouarre.—(*From* Sauvageot.)

While the formal work of the Louis Quatorze period thus took the place of the eccentricities of that of Henri IV. in the greater features, there was an entirely new phase of ornament apparent in the smaller, known as Rococo. It was as a rule so gaudy in gold and colour, so intricate and voluptuous in design, as, in spite of the innate French capacity for rendering the most obnoxious features pleasing by the use of accurate proportions, to be little worthy of imitation or of illustration, especially as colour would almost invariably be needed to give the rich effect of the original. A small and unobjectionable example has therefore been selected in the scroll-inclosed panel upon the chimney of the Château de la Ferté sous Jouarre. Its character will be immediately familiar to everyone, as associated more with mirrors, picture frames and furniture, than with architecture; yet it is a development of Classic detail, and *can* be used effectively—as, for example, in the richly-gilt rederos in the cathedral at Worms, which lights up, with its glow of colour, that large and gloomy interior, adding a much-needed spot of light.

◆

ARCHITECTURAL ASSOCIATION.

THE fortnightly meeting of the Association was held on Friday evening, the President, Mr. W. D. Caröe, F.S.A., in the chair. On the usual proposition being made by the President that the names of candidates for membership be passed *en bloc*, a discussion arose, several of the senior members urging that the system was loose, and that in the list of nominations before the meeting the names of two gentlemen who were not architects were included, one being a teacher of architectural drawing at the Royal Academy Schools. The President remarked that the matter was entirely in the hands of the members. In the case specially referred to, the candidate was proposed by Mr. Alfred Waterhouse, R.A., and seconded by Mr. R. Phené Spiers. Messrs. H. Lovegove, C. H. Brodie, E. W. Mountford, Francis Hooper, and others having spoken, the proposal to take the names individually was withdrawn, and the following fifteen new members were elected without objection:—P. G. Silley, A. E. Willey, F. G. Lloyd, E. H. Morphen, F. Bond, W. W. Biss, F. C. Evans, J. Gamble, H. R. Groves, V. T. Hodgson, G. H. Jenkins, A. E. Nicks, G. S. Powell, J. H. Berner, and K. Biong.

ALTAR AND CANOPY, NORTH TRANSEPT, DOL CATHEDRAL.

Mr. B. Flight Fletcher, hon. secretary, announced that under the will of the late Mr. Ewan Christian, a number of valuable books had been presented from his collection to the Association library. A motion of thanks to the executors for their assistance in the matter was passed in silence.

A resolution was passed, on the motion of the President, regretting the proposed demolition of the ancient Trinity almshouses in Mile End-road, and requesting the Corporation of Trinity House to preserve the buildings if possible.

THE MUNICIPAL CONTROL OF BUILDINGS.

A paper on this subject was read by Dr. G. B. Longstaff, Chairman of the Building Act Committee of the London County Council. The questions were often asked, he said, Why should buildings be controlled by the Municipality? Do not those who build know their own business? Has not every man a right to do what he likes with his own? Is not the meddlesome interference of officialdom un-English, unpopular, and, in fact, an unmixed evil? There is, he continued, much truth in these suggestions. I am inclined to *laissez faire* as a sound general principle; but there is the conflicting principle to be taken into consideration that "circumstances alter cases." Where buildings are crowded together evils are but too apt to arise and to assume such proportions as to become sooner or later unbearable, so that ultimately the local authority has to step in and apply a remedy which, under the circumstances, may be difficult of application, unjust in its bearing upon individuals, and in any case is pretty sure to be costly. For example, cities and large towns must have some means of disposing of the excreta of their inhabitants, and of the large quantities of water fouled by the washing of their persons, clothes, and culinary utensils. This can be applied comparatively easily if the common works be carried out beforehand by or under the supervision of the local authority, and if the buildings be erected so as to comply with certain general principles of construction and arrangement. On the other hand, to apply a drainage system after the town is built will be more difficult, more costly, and probably not so effective. Yet even in such an obvious case as this the municipal control should be carefully regulated; it should be limited to general principles, and not enter into petty details of construction. The by-laws made by the London County Council under section 39 of the Public Health (London) Act, 1891, scarcely appear to fulfil this condition. But if those present had seen the first or even the second draft of those by-laws they would be filled with gratitude towards those who criticised them, and, in place of feeling aggrieved, would rejoice at the comparative freedom they are allowed. One reason which makes minute interference and precise regulations in such matters most undesirable is that it stops the way of experiment and so prevents possible improvements. The end to be aimed at may be definitely laid down, but not the means of obtaining it; on the contrary, the greatest possible latitude should be given to inventive energy. London legislation, wisely or unwisely, deals with drainage apart from other points of building construction. Assuming, then, that municipal control is desirable or necessary, and assuming also that such control should be limited in its scope, the first point to consider is in what respects it should be exercised. New buildings may be considered from the point of:—(1) Stability; (2) Fire; (3) Health; (4) Position and mutual relations; (5) Convenience; (6) Beauty. As regards stability, no one will object to the laying down of minimum thicknesses for walls, and of minimum scantlings of timbers, though it may be difficult to draw up a workable schedule for the latter. Also it will be agreed that sound principles of construction should be insisted on. Whether the provisions of the London Building Act err by excess or defect is for you to say rather than for me. It may be that some of its provisions dealing with construction, though they may not oppress builders, may serve no useful purpose; if so they are excrescences, and should be removed when opportunity offers. A good deal in this direction was done at an early stage of the Bill, but I regret that time did not allow of a more careful consideration of Part VI. before the Parliamentary Committees. However, architects well versed in the old law and the new will recognise that—outside Part V.—the new Act allows much more latitude. As instances in which this is the case I would quote Section 73, which permits, subject to certain limitations, the erection of bay windows and projecting oriels and turrets without the formalities and delay attending a special application to the Council. Also the second paragraph preliminary to the first schedule, which allows walls to overhang to the extent of 6in. Again, detached greenhouses, sheds below a certain size, and small cycle-houses can now be erected without special leave, or subject to less tiresome restrictions than before. Also section 54 deals with openings and recesses in a much more liberal way than the old Act, a point that will be especially appreciated by City architects. Lastly, the words added to sub-sections 11 and 12 of section 201, in effect greatly extend the number of detached suburban houses which will be wholly exempted from the Act. Fire affects buildings as regards their liability to burn when once set alight, the spread of fire from one building to another, and the escape from fire of their inmates. This part of the subject is one to which municipal authorities, as being also the fire-extinguishing authorities, naturally attach much importance. For this very reason it is a part of the subject which requires to be closely watched, as being specially liable to a pedantic and officious treatment. It is well known that regulations of the London County Council as to the structure of theatres are so onerous that it is now a matter of great difficulty to erect a theatre in London, and there is a tendency to apply these regulations to small buildings of a comparatively unimportant character, which it is difficult to suppose that the Legislature intended to be so controlled. The 74th section of the London Building Act, 1894, deals with the protection of life from fire; but I fear that it will be found in many cases unduly onerous. It is open to question whether buildings only ten squares in area should be in all cases so constructed that the part used for trade should be separated from the part used as a dwelling-house by fire-resisting structures; but this point was overlooked by the numerous opponents of the Bill. It is a matter of much regret to me personally that the projection of party-walls above the slates is still insisted upon, even in the smallest dwelling-houses, as not only is the rule strongly objected to by many architects, on both structural and æsthetic grounds, but because the evidence tendered to the House of Commons Committee was conclusive that this precaution is not required in the case of buildings used exclusively as dwelling-houses. On the other hand, that the new schedule of fire-resisting materials allows much greater elasticity than the old, will be appreciated by those who have to work under it. As regards health, apart from all questions of drainage and water-supply, the points that arise are the thickness of walls, damp-courses, and ventilation. The thickness of walls is mainly governed by questions of stability; but in the discussions that preceded the first drafting of the London Streets and Buildings Bill it was suggested that 9in. walls should not be allowed in any case for dwelling-houses. There is no doubt that such walls are objectionable; unless the best materials are used, they cannot be trusted to keep out the rain, and they are cold. As a fundamental principle underlying all building legislation, it should ever be borne in mind that, while it is comparatively easy to enforce a standard of excellence which admits of measurement by the 2ft. rule, it is practically impossible to prevent the use of inferior materials. Nevertheless, it will be admitted that, taking into consideration the great importance of cost, the Council was wise not to advocate the extreme measure of abolishing the one-brick wall. Whether it was wise in stiffening the schedule of thicknesses is disputed, and I was surprised that the first schedule was not gone into in committee. The schedule as it stands was the work of practical members of the Building Act Committee, and it was left for practical men to criticise it. The only suggestions in opposition came from one or two district surveyors who deemed the old rules sufficient. The question of damp-courses is not an easy one. Foundations and damp-courses in London are at present regulated by the old by-law under section 16 of the Metropolitan Management and Building Act Amendment Act, 1878. A great part of this Act, including section 16, has been repealed, but the by-laws continue in force under section 216 of the Act of 1894. This by-law, although it admits of amendment, allows considerable latitude of practice. The main reason for its existence is, that while speculative builders do not, as a rule, see the necessity for damp-courses, layers of concrete, and the like; after a wall has once been erected, a damp-course can only be inserted at the expense of much labour. Damp walls are no doubt unhealthy; without question they cause much trouble and annoyance to those who dwell within them. Mr. Stenning has pointed out that in so far as a layer of concrete beneath a building is designed to exclude emanations from the earth, it is more necessary in the case of a gravelly soil than in any other, yet the London by-law exempts gravelly sites! That this danger is a real one has been proved on more than one occasion by explosions of coal-gas in houses which have been traced to leaks in the mains under the impervious street pavements outside the houses. As regards ventilation, a sanitary requirement which comes even before drainage in importance, we can do no more than provide the means for it, and these should be the simplest. It is both wise and reasonable to insist that every habitable room shall have a window or windows bearing at least a certain proportion to the size of the room, and that at least half of the area of such windows shall be made to open. Certain attempts in some provincial towns to prescribe the height of the top of the window above the floor have not only proved destructive of all architectural proportion, but have produced ridiculous results. Indeed, next to the general use of Welsh slates, few causes have in this country contributed so much to the deterioration of the architectural effect of ordinary commonplace domestic buildings as the almost universal desire for lofty rooms and large windows, more especially in the upper stories. The picturesque windows of the 15th and 16th centuries, nestling close under the broad eaves, and often placed nearer to the floor than to the ceiling, are a thing of the past. But even as compared with the last century, the ordinary street house of to-day looks top-heavy by reason of the size of the windows of the upper stories. All must admit that the modern bedroom is better lighted and ventilated, and more habitable generally, than those of the old half-timbered houses of Kent and Sussex; nevertheless, while admitting this, it is open to doubt whether Sir Christopher Wren and his contemporaries did not go far enough in this direction. The question of the ventilation of buildings admits of an entirely different system of treatment. If any extreme advocate of economy still defend the system of "back-to-back" construction of houses, I would recommend him to make an architectural tour of the Scotland ward of Liverpool, so called, I presume, from the fact of its inhabitants being almost exclusively Irish. This system reached, in fact, perfection in Liverpool about half a century ago. An ideal plan having been invented, it was repeated wholesale; the resulting evils proved ultimately intolerable, and enormous cost was imposed upon the town council in its efforts to remove them. It is not surprising, therefore, that Liverpool has led the way in preventive legislation. The prevention of the erection of back-to-back dwellings is but one case of the general question of the position and mutual arrangement of buildings. Legislation in this matter is of quite first-rate importance in its bearing on the public health; it is also beset with the greatest difficulties on account of its interference with the rights of property. There is also a peculiar difficulty which needs to be emphasised; it is this: A lofty building does not interfere much, or perhaps at all, with its own light and air, but it may interfere with the light and air of its neighbours to almost any extent. No law yet enacted and no by-law yet in force has boldly faced this difficulty. A building proposed to be erected, whether it be itself dwelling-house or counting-house, stable or factory, may equally smother a cottage now existing on the adjoining plot, or to be erected thereon in the future. It follows logically that any regulations which it may be deemed expedient to enact prescribing the height of buildings and the open space about them, should be applicable to all buildings, regardless of the uses to which they may be put. It is, however, doubtful whether Parliament would sanction such legislation. Hence we are driven to such compromises as legislation dealing with dwelling-houses only, or "domestic buildings." At first sight such a compromise may seem to be a satisfactory conclusion; but to the inhabitants of a long row of cottages, with very limited backyards, it will appear less so. Picture to yourselves a row of six cottages having behind them small backyards, which, in their turn, are separated by a wall from a strip of vacant land 40ft. or so in depth, and abutting upon a street parallel to, and at the rear of, the six cottages. Two building-owners purchase this vacant land —A. who has purchased one-third of the frontage, erects thereon two cottages, and the law compels him to leave a certain space at the rear of them, and consequently adjoining the backyards of two of the old cottages. The provision of this open space may be a very serious matter to A., and may greatly detract from the value of the site he has purchased, but it has the wholesome effect of preventing any very material interference with the light and air of the old cottages, although the erection of the new buildings (or, for the matter of that, of any new buildings) may spoil the view from the back windows. B., warned by the experience of A., or having other views as to the investment of his capital, erects on his plot—the remaining two-thirds of the frontage—a warehouse or factory, and so doing is not compelled to leave any of his land vacant; on the contrary, he covers the whole of it with a building 60ft. in height, which may no doubt bring him in a considerable rent, yet by his act he will have made the back rooms of four of the old cottages unfit for human habitation! Some will no doubt say, "How about ancient lights?" My reply is that the building-owner B. may be compelled to pay a sum of money, possibly a considerable sum, to the owner of the old cottages; but there is no law to compel the giving of any portion thereof to the tenants of the same, nor is there the smallest reason to believe that they will get any benefit out of the transaction; certainly they will get no compensatory light and air. There is, however, another course open to B. He may buy the old cottages and continue to let them as before, while the demand for houses will probably prevent any material fall in the rents. From this instance it is plain that the compromise of the present law fails alike to secure justice as between individuals and the end primarily aimed at. I am still of opinion that the angle of 45° as enforced in Liverpool in the case of buildings on new sites is not an unreasonable one, and I would urge on those who deem it excessive to take the first opportunity of inspecting some of the many houses erected in conformity with that angle in the newer parts of Liverpool. Apart altogether from the sanitary aspect of the case, the greatly-increased traffic of the modern town demands far wider streets than formerly sufficed. Sir Thomas More doubtless thought he was acting very liberally when he laid out the towns of Utopia with streets 20ft. wide; but he went somewhat beyond the London Building Act in that he provided all the town houses with gardens at the back in which were grown vines, fruits, herbs, and flowers. The houses were three stories in height; the materials were such as to resist the action of fire, and the line of frontage seems to have been very strictly observed, so that, as he tells us, "The buildings . . . are so uniform that a whole side of a street looks like one house." Three centuries and a half have achieved streets double the width thought ideal by More, but three centuries and a half have played sad havoc with his back-gardens! Part V. of the London Building Act, though deemed by many to be over-stringent and exacting, scarcely allows of open space at rear sufficient to admit of the successful cultivation of vines, fruits, herbs, and flowers. It has often been remarked that whereas in the present day house-builders seek out exposed and breezy sites, the men of old time preferred sheltered valleys; it is all of a piece with this practice that we find the streets of Utopia described "as very convenient for all carriage, and well sheltered from the winds." If the gospel of fresh air and the gospel of expediency have done much to exclude the picturesque from modern towns, is this not an additional reason for exerting ourselves to the utmost to preserve what is left to us of the works of our forefathers? As regards the internal convenience of buildings, all will be agreed that any control would be quite out of place. The quality of beauty is, of all others, perhaps that which modern buildings least often possess. Whatever may be the position of British architecture at the present day, the vastly greater portion of the buildings put up are built by men who, whether they call themselves builders, surveyors, or architects, deem architecture an expensive luxury, well enough, perhaps, for churches and town-halls, but a thing wholly divorced from the more numerous buildings in which folk have to live or to earn their living. The general neglect of architecture—meaning, thereby, the fine art—not merely by the builders but by the general public, is a great misfortune to the country, and one not easily accounted for. Yet architecture, above all arts, binds us to the past, so that even a superficial knowledge of it, provided that it be accurate, not only adds vastly to the interest of history, but materially facilitates its study. The importance of architecture cannot, indeed, be overestimated, and the argument is strengthened if it be kept in mind that we are from day to day becoming more and more a nation of dwellers in cities. In proportion as we are divorced from all contact with Nature, in proportion, alas! as modern "Progress" too rapidly destroys so much of natural beauty, so are we made more and more dependent upon such beauty as Art can give us in substitution for that which is lost. Admitting, then, that beauty is a quality in buildings which is of supreme importance, and that outside comeliness pre-eminently concerns those who do not dwell within, is it a matter for municipal control? I think it is not. To begin with, the greatest latitude should be left to architects as regards design, whereas any system of municipal control would be apt to hamper the noblest efforts of genius, and at the same time would tend to strengthen the tyranny of the prevailing fashion of the day. *Quis custodict ipsos custodes?* What one man deems beautiful another calls hideous, and I am by no means sure that this is less true of architects themselves than of vestrymen or county councillors. The hanging committee of the Royal Academy does not give complete satisfaction; could better results be expected from a committee of design? Nevertheless, I have been an active advocate of a certain amount of control of an æsthetic character. I do not allude to the case of the County Council as a land-owner approving the designs of buildings erected on its property by leaseholders, although in one such case I was partly instrumental in preventing the erection on a prominent site on the Thames Embankment of a building which would have marred irretrievably one of the finest prospects in London. This is a special case in which the Council acted as landlord rather than in its municipal capacity. But modern civilisation, with perverse ingenuity, has devised certain excrescences upon buildings which serve no useful purpose that I ever heard of, and which no Goth or Philistine will be hardy enough to claim as ornamental—to wit, sky-signs. This Association, at any rate, will not object to a municipal control tending to their ultimate extinction. A single advertising board judiciously placed upon the top of a building may vulgarise a whole street. To the end that one man may increase his income in a not very honourable way the purpose of vast outlay in public buildings may be thrown away. As regards design, my view is that the municipality should, on the one hand, take care that its regulations interfere as little as possible with the efforts of the artist, but that it should do its best to protect him from extraneous foes. I have endeavoured very imperfectly to indicate the principles which should underlie the municipal control of buildings. It is perhaps rather in the application of those principles than in the principles themselves that differences of opinion arise. Before long it will probably be necessary to go to Parliament once more, not so much to strengthen the hands of the Council as to remove ambiguities or inconsistencies in the law which practice has brought to light. In some cases amendments introduced in committee by irresponsible opponents (and not always expressed in the clearest possible manner) have led to inconsistent or even absurd results. In some cases provisions which have proved to be more far-reaching than was intended may need modification. But be this as it may, I feel sure that any representations made by this Association to the Council would receive the most careful consideration, and prove of great assistance in the drafting of any amending Bill.

In proposing a vote of thanks to the lecturer, Professor Kerr paid a tribute to the broad view Dr. Longstaff had taken of the interpretation of building enactments, both in his paper and as chairman of the Building Act Committee of the L.C.C. The provisions of the new Building Act of 1894 were in many cases, as the lecturer had admitted, vague, but the intention was always clear. He held that the County Council were well advised by their staff of practical architects, who acted as district surveyors, and were therefore entitled to the confidence of the public. As to the suggested amendment of the new Building Act, he hoped the Council would not be too precipitate in taking action, for with the aid of moderation, intelligence, and kindness on the part of district surveyors, it could be made to work well.

Mr. Richard Roberts, L.C.C., in seconding the motion, said the new London Building Act was not an easy measure to administer; but Dr. Longstaff was neither an architect nor a builder, and therefore could arbitrate in an impartial manner. As for the ugliness of London, it was not due to the profession, for the majority of the buildings had neither been designed by architects nor erected by builders, properly so called. Several clauses of the new Building Act were not, he confessed, very workable. It was a curious thing that the famous clause 74, dealing with the separation of dwellings from trade premises, slipped in without any objection being raised by the Institutes of Architects or Surveyors or the Association.

Mr. R. H. Lovegrove said it would be well for builders and the district surveyors of London if a decision could be obtained in a high court on a well-devised case dealing with the interpretation of Clause 74.

Mr. E. Woodthorpe suggested that it would be well in an amended Act if some clause were inserted dealing with the classes of stone to be employed. Stones were now used for cornices, from which fragments broke off after every frost.

Mr. Marsden did not think Clause 74 was otherwise than fair and reasonable.

Messrs. Bernard Dicksee, Francis Hooper, and F. T. W. Goldsmith also supported the vote of thanks, which was cordially passed, and was briefly acknowledged by Dr. Longstaff.

NOTES ON APPROXIMATE ESTIMATES.*

EVERYONE actively engaged in the design and superintendence of building or engineering works has doubtless at some time or other been called upon to submit approximate estimates for some proposal which it is desired to carry out.

As a measure of ordinary prudence, the client will desire to know the probable cost of any proposed undertaking. Frequently a preliminary estimate must be prepared before any definite instructions will be given respecting the preparation of a design or specification. Even when the drawings and specification have been prepared, a more or less detailed approximate estimate is generally asked for before the order for the execution of the work is given. In many instances it is also stipulated that the total cost of the proposal must not exceed a given amount, so that the design may be arranged accordingly.

Under any of these circumstances, the possession of suitable data for the calculation of the probable cost, together with a knowledge of the different methods by which appoximate estimates may be prepared, is found to be of the utmost value. Especially is this the case if an estimate is required at short notice, when the architect or engineer is compelled to rely on any sources of information he may have at hand.

Most architects and engineers have collected from time to time various notes and data—more or less complete—for use in such emergencies. It is hoped, however, that the following observations on the methods most generally adopted in the preparation of approximate estimates will prove of service.

I.—*The cubical contents, together with a general idea of the materials and finishings required, being known, the cost per cubic foot is estimated from the ascertained actual cost of constructing similar buildings or works.*

This is the best known and most usual method of preparing an approximate estimate for ordinary buildings or works, and with the exercise of due care in calculating the price per foot cube at which they shall be taken, very accurate results may be obtained.

If the description of materials or workmanship varies for different portions of the same building or work, then each portion should be priced separately according to their relative values. For instance, the value per foot cube of the outbuildings or domestic offices of an ordinary mansion would be much less than that of the main portion of the building. Any small turrets, towers, or other ornamental features should also be kept separate, and priced at a higher rate.

The cubic contents of a building, for the purposes of an approximate estimate, is usually obtained by taking the dimensions from out to out of walls, and from the bottom of the footings to half-way up the roof. Another practice is to consider the cubic contents as obtained by taking the dimensions from out to out of walls, and from half the depth of the footings to half-way up the roof. Personally, however, I prefer to obtain the cubic contents in the way first mentioned, and to price in accordance therewith.

II.—*Taking out rough Quantities, according to the varying materials and workmanship required; but at the same time concentrating the work as much as possible into a few specific items, and pricing them accordingly.*

Although the course indicated above is perhaps less generally used than any other for the purpose of making approximate estimates, yet it is undoubtedly the most reliable method that can be adopted. The fact that it is not more often used may be due in a great measure to the want of a readily accessible table of prices for the different groups of materials and labour. Slightly more time is also required for this purpose than when the cost is arrived at from the cubic contents or any other of the methods that will be mentioned. The final result, however, is much more satisfactory.

When rough quantities are being taken out for an approximate estimate, it is desirable for ordinary purposes that the various descriptions of materials and workmanship should be grouped together so as to form as few separate items as possible; also, in all cases where it can be done, the items should be priced at per square of 100ft. superficial, for the sake of uniformity and convenience.

The walls should be classed according to their materials and thickness, also whether external or internal. Each item should, however, include all necessary digging, footings, doors, windows, and finishings of wall surfaces, such as plastering, papering, facings to external walls, &c., so that the item, and consequently the price, shall be inclusive of everything that appertains to the various inclosures or divisions of the building.

---

* All rights reserved.

For this purpose the superficial area of the walls should be obtained by taking the extreme length of each wall by the height from the bottom of the footings to the eaves, in cases where the wall is of the same thickness throughout. Should the wall vary in thickness, either in its length or height, each portion should be measured separately. No deductions must be made for door, window, or other openings. Bay windows, chimney flues, and other additions of a like nature should be numbered and priced according to their materials and workmanship.

The floors must be dealt with in a similar manner as described for the walls. The ground and upper floors must be kept separate, and classed according to the materials and finishings required. The item for wood floors on the ground floor, to include sleeper walls, joists, boarding, hearths, &c., together with a layer of concrete on brick rubbish over the whole area, and all necessary digging for same. Similarly, concrete or other floors will include all materials, labour, and finished surfaces that may be required. The upper floors to be treated in a similar manner. The item to include all joists, boarding, hearths, ceilings, cornices, and whitening or colouring to same.

The roof-coverings to be measured on the slope, the item being inclusive of roof-trusses, rafters, boarding, slating, leadwork, eaves-gutters, down pipes, &c. Ceiling-joists, ceilings, and whitening to ceilings will also be included in the same item where required.

Drains, gas and water-mains, and items of a similar nature, should be taken at per foot run, according to sizes, and including all necessary digging, laying, filling, and removal of surplus materials. Manholes, disconnecting pits, &c., to be numbered and priced according to size and average depth.

Staircases to be taken at per step, or per foot in height, classed according to their widths, and the nature of materials and finishings. Gas and water fittings to be priced at per light or per tap, including all service-pipes from mains, diggings, &c.

Fitments or furnishings generally, such as cupboards, baths, sinks, w.c.'s, kitcheners, grates, mantels, &c., should be numbered and priced, according to the class of fitment, material, and finishing required.

A series of average items and prices, adapted for this method of calculating approximate estimates, will be found in the tabulated list of data and prices compiled for use with these notes.

III.—*The superficial floor area of the building or work being known, the cost per square of* 100*ft. superficial may be estimated from the average cost per square of similar work already executed.*

Under some circumstances it is convenient to prepare approximate estimates by this method; but its use is generally confined to one-story buildings, such as schools, churches, chapels, bungalows, &c. It may, however, be used for buildings two or more stories in height; but in all cases where this course is adopted, a considerable amount of discrimination and care must be exercised, in order that the final result may be relied upon.

When estimating in this way, the superficial area is obtained by taking the dimensions from out to out of walls. Where the materials, workmanship, or height of the building or floor varies, each description or height must be kept distinct, in order that they may be separately priced.

In the case of one-story buildings, the price per square includes foundations, wall, roof, and all finishings. In two or more-story buildings, the ground floor is taken to include foundations, floor, walls, ceiling, and all finishings. Upper floors include floor-joists, flooring, walls, ceilings, finishings, &c., whilst the top floor includes the roof covering in addition. It is usual, however, in the case of two-story buildings to price both floors at the same rate, as it is found that the average cost of the ground floor, including the foundations, is about the same as that of the first floor, which includes the roof covering.

IV.—*Given the accommodation or requirements of the proposed building or work, the approximate cost may be obtained by pricing the same at the ascertained average cost per unit of similar accommodation or requirements.*

In practice, it is found that for certain descriptions of buildings or works constructed under normal conditions, the cost of such buildings or works varies (within certain limits) in a direct ratio to some known unit of accommodation or requirements. For such buildings as hospitals, schools, &c., the cost can be approximately given if the number of patients, children, &c., required to be accommodated is known. On occasions when time will not admit of even a sketch of the proposal being made, this method affords oftentimes the only ready means of ascertaining the approximate cost. Similarly, for certain minor accessories, where the cost of materials and construction varies but slightly for units of the same class, as in a range of latrines, &c., the approximate cost can be accurately determined in this manner.

Where time allows, a useful check in the preparation of approximate estimates is to calculate the cost by two or more of the methods mentioned, in order to insure that no serious discrepancy may afterwards be found.

In connection with these notes, a tabulated list of prices and data on which to base approximate estimates has been compiled. The various items are arranged alphabetically, and also numbered for ready reference. Such items and prices may require modification, according to the local circumstances of each specific case. Peculiarities of design, accessibility of situation as regards transport of material and supply of labour, character of materials and finishings required, local rates of labour, and many other considerations must be taken into account and due allowance made, if a fairly accurate approximate estimate is desired.

The buildings and works to which these items and prices refer are assumed to be of brick (unless otherwise stated) of normal design, and built under ordinary conditions. For stone buildings of the same class, from 10 to 20 per cent. should be added to the prices, according to the locality.

CIVIL BUILDINGS, WORKS, &c.

	Average Cost.		
	Per foot cube.	Persquare of 100ft. super.	Per unit.
1. Ash-bin. Cast-iron, 4ft. by 3ft. by 3ft. 6in., with wrought iron lid, &c., fixed complete, including concrete base, digging, &c.	—	—	£9 each
2. Assize Courts	10d.	—	—
3. Asylums, Lunatic, including administrative buildings ...	6½d.	—	£150 per lunatic
4. Balconettes. For windows of upper floors, complete ...	—	—	£10 each
5. Balconies. (See "Verandahs")	—	—	—
6. Bandstands. Iron, complete, 24ft. diameter, and 12ft. high to eaves	—	—	£180 each
7. Baths. For private houses. Enamelled iron, with brass fittings, mahogany inclosure and top, fixed complete, including lead waste, overflow, &c., but exclusive of water supply	—	—	£20 each
8. Billiard Room, complete, except table	8¼d.	—	—
9. Board Schools. (See "Schools")	—	—	—
10. Breakwaters. Formed of concrete blocks below low-water mark, and of concrete *in situ* above low-water mark	—	—	25s. per yard cube
11. Breakwaters. Formed entirely of concrete deposited *in situ*. 7 parts sand and gravel to 1 part Portland cement	—	—	23s. per yard cube
12. Breweries	6d.	—	—
13. Bungalows, residential	7d.	£55	—
14. Canals, as constructed in England	—	—	£9,000 per mile
15. Ditto in Scotland	—	—	£11,000 do.
16. Ditto in Wales	—	—	£5,500 do.
17. Ditto in France	—	—	£8,000 do.
18. Ditto in United States	—	—	£5,000 do.
19. Cess-pits, not exceeding 12ft. deep, including digging and steining, with half-brick sides in cement, stone cover, &c., 4ft. internal diameter .	—	—	10s. 6d. per ft. in depth
20. Ditto 4ft. 6in. ditto	—	—	12s. ditto
21. Ditto 5ft. 3in. ditto	—	—	16s. ditto
22. Ditto 6ft. 0in. ditto	—	—	20s. ditto
23. Chambers. (See "Offices")	—	—	—
24. Chapels. Ornamental	—	—	£8 per sitting
25. Ditto Plain	—	—	£5 ditto
26. Churches, including tower, Ornamental	7½d.	£170	£15 ditto
27. Ditto ditto, Plain	6d.	£120	£10 ditto
28. Ditto Iron (200 to 400 sittings)	—	—	£2 ditto
29. Ditto ditto (400 to 700 sittings)	—	—	£3 ditto
30. Cisterns. Wrought iron, galvanised, fixed complete, including wood cover, &c., but exclusive of water supply, 50 gallons	—	—	£3 10s. each
31. Ditto ditto, 100 gallons	—	—	£5 each
32. Ditto ditto, 200 gallons	—	—	£7 each
33. Ditto ditto, 500 gallons	—	—	£12 each
34. Ditto ditto, 800 gallons	—	—	£15 each
35. Conveniences. Public, underground, as constructed in London, and comprising urinals, w.c.'s, and lavatories	—	—	£60 per urinal, w.c., or lavatory
36. Corn-Bin. Wrought-iron galvanised, with padlock, &c., fixed complete	—	—	£5 each.
37. Cottages. (See "Mansions or Houses")	—	—	—
38. Cow-houses complete with fittings	3½d.	£22	£17 per stall
39. Cow-houses, iron fittings for, comprising iron trough, fodder-rack, fastening-rods, heel-post, and dwarf division complete, including fixing	—	—	£6 per cow
40. Drainage. Arterial system as for towns, but exclusive of cost of works for treatment or disposal of sewage	—	—	25s. per head of population, or 6½d. in the £ of rateable value.
41. Drainage, disposal of. (See "Sewage")	—	—	—
42. Drainage of Land. Heavy clay soils	—	—	£6 10s. per acre
43. Drainage of Land. Medium soils	—	—	£5 per acre
44. Drainage of Land. Light sandy soils	—	—	£3 10s. per acre

45. Analytical Table of Average Cost of Land Drainage per Acre.

Description of Soil.	Distance of drains apart.	Depth of drains.	Cost of drain-pipes per acre.	Cost of cutting, laying, and filling per acre.	Total cost, per acre.
Heavy Clay.	ft.	ft. in.	£ s. d.	£ s. d.	£ s. d.
Stiff, heavy clay	16	2 9	4 0 0	3 15 0	7 15 0
Stiff, adhesive clay	20	3 0	3 13 0	3 6 0	6 19 0
Friable clay	24	3 3	2 15 0	2 10 0	5 5 0
Medium Soils.					
Clayey loam	27	3 6	2 8 0	2 4 0	4 12 0
Gravelly loam	30	4 0	2 3 0	3 4 0	5 7 0
Porous or Light Soils.					
Light, gravelly loam	35	4 0	1 18 0	3 2 0	5 0 0
Sandy loam	40	4 0	1 12 0	2 0 0	3 12 0
Light, gravelly sand	50	4 3	1 7 0	2 5 0	3 12 0
Coarse, gravelly sand	60	4 6	1 1 0	2 4 0	3 5 0

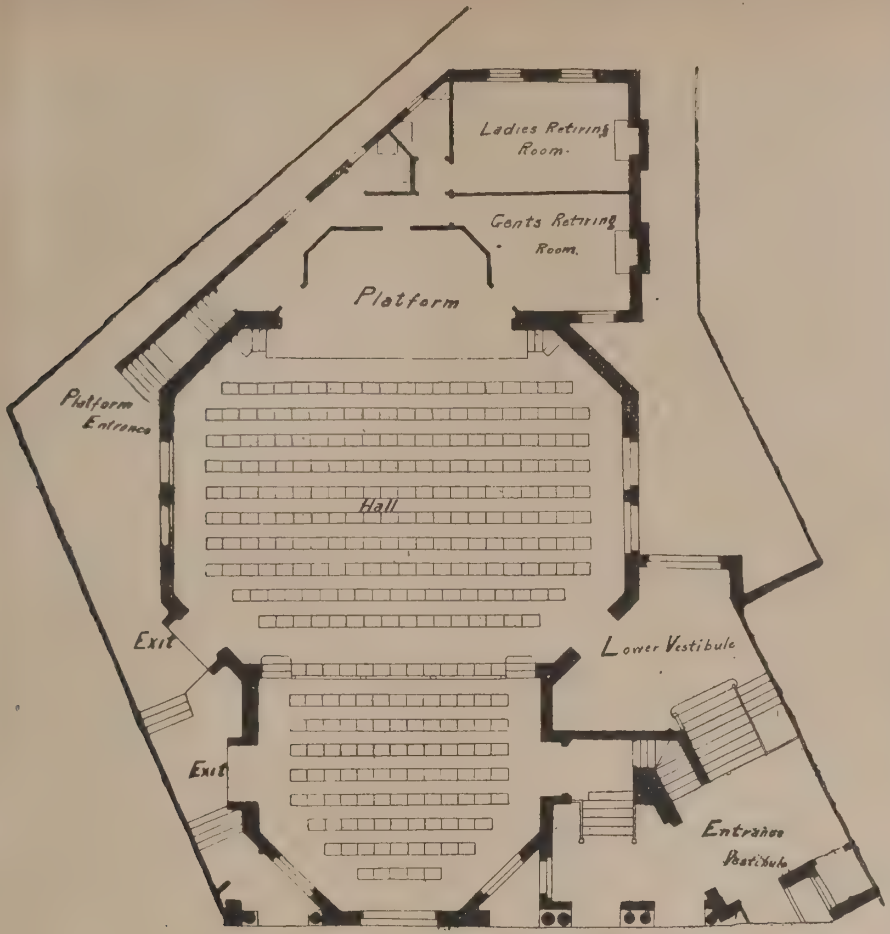
(*To be continued.*)

CONCERT HALLS AND ASSEMBLY ROOMS.—VI.

By Ernest A. E. Woodrow, A.R.I.B.A.

I HAVE now to consider the assembly hall of the small towns or suburbs, and I take as an illustration, by permission of the architect, Mr. Henry G. Brace, F.R.I.B.A., an example lately erected from his designs of a small suburban hall in Lordship-lane. Everybody knows to what purposes a suburban hall is put, and how frequently it is used for private dances by persons who either have not a room in their own house large enough for the purpose, or who do not care to disarrange their house by turning it inside out in order to clear the floor space. A small and comfortable hall is what is needed in this case. The other usages of the suburban assembly hall are on much the same lines as those which I have already laid down in dealing fully with the parochial rooms: the letting is subjected to the same daily and constant change from theatricals, balls, concerts, lectures, meetings, dinners, to Sunday services, &c.

What I have said about interior fittings for the various purposes in a former chapter equally applies here. There is, however, a slight difference from the parochial hall with regard to its surroundings in the class of building we are now considering, which difference arises from the fact that the suburban hall has so frequently to be a substitute for the home, and should, therefore, have more home comforts. Naturally all public halls should be kept perfectly free from draughts; but we may expect in this case that special care should be taken by the architect to avoid this, for should any of the guests, when heated by dancing, catch cold from the effects of a draught of cold air, and the hall become notorious for its defects, the lettings would at once diminish, as a host would never think of subjecting his friends to this danger. Swing-doors should be placed in as many places as possible: in every passage way, corridor, or vestibule, so that they could not all



be open at once and admit the cold night air into the dancing room. Where the hall is on the first floor, the swing doors should be at the foot and the top of the staircases; but they should not be immediately in line with the step. This is dangerous, and might cause a fall down the staircase by a person coming unexpectedly upon a step. There should be a square landing between the doors and the first step in every case.

The cloak-rooms are most important features in buildings of this character. They are too often treated as afterthoughts. Given a plot of land of a certain size, the architect too frequently is over-anxious to get a hall as large as possible upon the land, and therefore curtails the adjuncts to the detriment of his scheme. Cloak-rooms are placed in positions quite regardless of their use, and of the fact that they are the first places the guests have to go to on their arrival. Ladies' and gentlemen's rooms are placed in close proximity, and in conspicuous positions, so that guests, especially ladies, hesitate to go to them during the course of the evening. While cloak-rooms should be near to the entrance vestibule, they should not be placed so that a crowd collecting in the vestibule would prevent the people reaching the doors who had their cloaks and wanted to leave, nor should the people waiting in the vestibule obstruct the way to the cloak-rooms from the part of the audience who wish to get their wraps. Where room permits, it is well to have a way into the cloak-room from an internal corridor, and a second door to serve as a way out, leading directly into the vestibule, so that the people can move in a stream from the dancing-room into the corridor through the cloak-room to the vestibule.

The fitting up of the cloak-rooms is also an important matter; separate numbered bins for each guest should be provided, and the hats and coats should be given by the attendant over a counter. Lavatory, washing, and other accommodation should, of course, be provided in both ladies' and gentlemen's retiring rooms.

As to the relative positions of the ladies' and gentlemen's rooms, it is well to have the one on the right, and the other on the left; and where the cloak-rooms have two doors, one to the vestibule and one to the corridor, the ladies and gentlemen could, after parting in the vestibule, meet again in the corridor before passing into the dancing-room to be received by their host. There is another advantage in such an arrangement: When waiting for one another in the corridor before entering the hall, the guests are not loitering in a cold draught, as in the vestibule, where the doors are constantly being opened upon the arrival of fresh guests.

A German writer upon the subject which we are now considering, gives some useful measurements, which I will now repeat. He says that, in cloak-rooms, for every 100 persons the receiving-table or counter should be 6ft. 6in. long, and this measurement should be considerably increased if the dressing-space of the cloak-room is not ample. The space behind the counter should be 9ft. deep, and the area 26ft. 3in. for every 100 persons.

It must not be forgotten that refreshments other than of the "light" kind are needed in premises where dances do not terminate till the small hours of the morning. A supper-room must, therefore, be provided, and the size of it must be governed by the number of people that the hall will accommodate for dancing.

In addition to the supper-room, there should be a room for light refreshments between the dances, and this should be near the hall, reached without having to go into air colder than that of the dancing-room. In fact, a recessed portion of the hall itself is a most suitable location for such a purpose. A smoking-room for gentlemen is also a desirable addition.

The floor-space allowed for each dancing couple should be rather over 6ft. 6in. square, and when the non-dancers stay in the hall this area should be considerably increased. The floor should, of course, be laid specially for dancing, with smooth polished surface. I may have to speak further upon the construction of dancing-floors, when dealing with another class of room.

Where suppers are served, it is very desirable to have a kitchen in connection with the premises; but its position should be studied, having regard to the risk from fire. Caretakers' living-rooms and bedrooms are also frequently needed in suburban assembly-halls, for, as a rule, the caretakers act as servants and attendants to all who hire the premises. Coal-cellars and such-like adjuncts should not be forgotten.

An all-important item is the heating and ventilating. The heating apparatus should be of such a character that the temperature of the room could be regulated to a nicety. It is most damping to one's enjoyment to enter a hall of this class at the beginning of the evening, and to feel it strike cold. After two or three dances, complaints are, however, often made that the room is too warm. The heating apparatus should therefore be so under control that the room may be warmed at the beginning of the evening, and kept at a lower temperature some short time after. The heating-chamber should be separated structurally from the rest of the building to prevent any danger arising from fire. The London County Council insist upon this provision in the Metropolis.

The musicians must not be forgotten. A minstrel gallery should therefore be provided. Sometimes a gallery exists in the hall, and this is used; sometimes the band is placed on the platform. This latter course, however, is a disadvantage; it places the musicians too near the dancers, and robs the space which is useful for people who like to sit out and watch the dancers. The platform, too, is frequently for the reception of the guests by the host; this, however, entirely depends upon the position of the entrance and cloak-rooms in relation to the platform.

Where a hall is put to many usages, the retiring or dressing-rooms behind the platform can with economy be so arranged as to serve for cloak-rooms, or be used for other purposes, as refreshment or smoking-rooms, when the hall is used for dances.

It may be supposed that, as the majority of the guests will arrive in carriages, therefore care should be taken to plan the entrance so that the people can step out of their carriages under cover. This is seldom the case in suburban assembly-rooms; but such a simple provision would add greatly to the comfort of those frequenting the hall.

ART FOR SCHOOLS ASSOCIATION.

THE exhibition just opened at 29, Queen-square, Bloomsbury, in connection with this association, contains a large collection of framed and unframed pictures specially selected for school prizes, Christmas presents, &c. The Art for Schools Association has, in this as in former exhibitions, aimed at a high standard of subject and artistic merit. Many of these are small framed pictures in black and white and colour at very moderate prices, ranging from 1s. 6d. to 10s., and suitable for prizes. This association, founded in 1883, is doing admirable work in promoting an artistic taste among our scholars, and in reproducing masterpieces of art. The object which it promotes are fourfold; (1) to negotiate with art publishers for the purchase of engravings, photographs, etchings, chromos, &c., on advantageous terms, and supply them at reduced prices to schools; (2) to reproduce works of art for schools, and publish the same at the lowest prices; (3) to lend groups of framed engravings, &c., to poor schools; (4) and to assist in promoting oral instruction explanatory of works in our national collections, &c. This exhibition bears ample testimony to the carrying out of these intentions. Masterpieces of Fra Angelico, G. Bellini, Botticelli, Michael Angelo Buonarotti, Albrecht Dürer, Giotto, Georgione, A. Mantegna, Fra Fillippo Lippi, and other old masters are represented. Of these we may single out the following:—"A Madonna and Child," by Angelico—a photograph, price 2s. 3d.; "The Adoration of the Shepherds," by G. Bellini (an autogravure); a series of photos and autotypes from Michael Angelo's works; a heliogravure of Raphael's "Madonna degli Ansidei," £1 14s., published by the Association; and a fine reproduction (heliogravure) of Hans Memlinc's "Visit of the Magi," also published by the Association. Of English masters we have several good reproductions, in photography and autotype, of Constable—"The Cornfield," "Salisbury Cathedral," and "The Glebe Farm," all well-known subjects. Gainsborough's portraits of Mrs. Siddons and Miss Linley," and Sir Joshua Reynolds's portraits of "Lady Cockburn and her Children," "Georgina, Duchess of Devonshire," "The Strawberry Girl," &c., most of these in autotype. Geo. Romney's "Mrs. Jordan as Euphrosyne." Of later masters we notice some beautiful photos of Dante Gabriel Rossetti's works, as his "Proserpine" and "The Loving Cup," several autotypes and chromos of Turner's works, and one or two inimitable examples representing G. F. Watts, R.A. His charming little figure subject, "Good Luck to your Fishing," a photographic reproduction of a red-chalk drawing, is very good. Other painters' works reproduced are those of S. Prout, as the autotypes of "Abbeville" and "Strasburg"; Sir J. E. Millais, Bart., R.A., Miss Clara Montalba, Henry Moore, R.A., J. J. Shannon, and several other well-known painters are represented by examples, many of the prices of these reproductions being exceedingly low. The series of chromolithos of flower studies in colour published by the Association are particularly useful as a series for schools and classrooms, and the autotypes of historical portraits they have published are very interesting and instructive. The supply and reproduction of works of acknowledged excellence in this manner cannot be esteemed too highly, and if these were the only works of the Association, it would deserve public encouragement.

THE TRINITY ALMSHOUSES, MILE-END-ROAD.

MR. G. S. MURRAY, Assistant Commissioner to the Charity Commissioners, opened an inquiry on Wednesday, in the Board-room of Trinity House, into the administration of charitable endowments by the Brethren of Trinity House, the proposed demolition of the almshouses in the Mile End-road being one of the matters considered. Numerous societies and public bodies were represented in opposition to the removal of the almshouses, including the National Trust, the Society for the Protection of Ancient Buildings, the Commons Preservation Society, the Greater London Survey Committees, the Kyrle Society, and the Royal Institute of British Architects, the latter body being represented by Mr. F. C. Penrose, president, and Mr. J. MacVicar Anderson, past-president. A letter was read from Sir F. Leighton, President of the Royal Academy, stating his inability to attend on the ground of ill-health, but strongly deprecating the proposed destruction of "the most delightful and characteristic group of buildings which is menaced." Evidence was given by Mr. Leisching, secretary to the Pensions and Estates Department of the Trinity Corporation, it being admitted that structurally the buildings were in good condition, although certain internal sanitary defects existed. Eight houses were first built in 1692, but four years later were pulled down, and 28 houses were erected. The estimates were that £225 would have to be spent upon the 28 houses, £369 upon the other houses, and if new drains were called for, as they might be, a further £1,825, making a total of £2,416. The vestry has been holding its hand pending the final decision of the board, who had, in fact, adopted the principle of abolishing the almshouses long before the sanitary question was raised. The inquiry was adjourned.

BUILDERS' CLERKS' BENEVOLENT INSTITUTION.

A SPECIAL general meeting for the election of two pensioners took place on Tuesday evening, the 26th November, at the offices of the charity, No. 21, New Bridge-street, Blackfriars, Mr. E. C. Roe (Messrs. Geo. Trollope and Sons) presiding, in the unavoidable absence of Mr. Chas. Wall, the president.

The election was a contested one, there being three candidates—viz., Mrs. Sophia Lovett, who polled 1,014 votes, Mrs. Helena Bishop polling 916 votes, and Mr. J. T. Gough 114 votes. At the close of the poll the chairman announced that the successful candidates were Mrs. Lovett and Mrs. Bishop. The amount of the widow's pension is £20 per annum, and there are now (including the two widows just elected) twenty pensioners on the books. Votes of thanks were passed at the close of the election to Messrs. James Aynsley (Messrs. Carter and Aynsley), H. W. Parker, and James A. Robson for their services as scrutineers, and to Mr. E. C. Roe for his able conduct in the chair.

COUNTY LUNATIC ASYLUMS.—XXXIV.

By George H. Bibby, F.R.I.B.A.

DISTRICT ASYLUMS ABROAD AND AT HOME.

IN my last paper attention was directed to a type of asylum which has been found suitable for the climate of those portions of North America where the variations of temperature are far greater than in this country. In the case of one modern American asylum the authorities in their annual report state: "The advantages of the cottage system and non-restraint treatment of the insane is illustrated by the operations of our asylum during the past year, while, as we have shown, the cost of our plant is about one-third of the one-building plan, we continue to show that the expenses of maintaining our institution are materially less. We have been even generous in the quantity, variety, and character of the supplies for the treatment of our patients." It must be remembered that the extreme cold during the winter makes the heating and ventilation of a large asylum a very difficult matter to contend with. It has been found that the separated asylum cottages for 50 patients may be erected for about £3,000 each, to which must be added a fair proportion of the administrative buildings, when the actual cost of the whole institution (per patient) can be ascertained; but, from the figures before me, it would appear that the Americans expend per patient at least as much as the English upon their asylums. In Australia, it will be remembered that no such difficulty as extreme cold is offered against asylum heating and ventilation, the conditions of climate being wholly different.

In Fig. 51 is given a general block plan plan of a large hospital for the insane at Callan Park, Sydney, New South Wales, which, it will be at once perceived, bears a far stronger resemblance to an English asylum than to the American asylum as illustrated in Fig. 50 in my article No. XXXIII. of this series.

In this plan, A, B, C, H, I, J indicate blocks of building for male and female patients respectively, each having on the ground-floor, day-rooms, single rooms, and various necessary apartments similar to those provided usually in British asylums, while on the upper floors dormitories are arranged with two staircases for exit in the event of panic or fire; but the single rooms on the upper and lower floors are placed off isolated corridors, instead of communicating directly with the day-rooms or dormitories. The letters D E F G indicate the position of the hospital day-rooms and single rooms, together with some dormitory accommodation on the ground-floor, the upper floors being occupied as dormitories and single rooms, and with two staircases to each ward. The single rooms lead directly out of both day-rooms and dormitories in these wards. K indicates the position of the consulting-rooms, offices, and other administration apartments; L shows the dining and recreation-hall (provided with stage and other accessories), M indicates the kitchen-court, N the general stores, O the entrance and reception buildings, P Q R the chief attendant and dispenser's residences. S T the medical superintendent's residences, U the conservatory, V and Z bath-houses, W workshops and sheds, and Y the general washhouse and laundry. Nos. 1, 3, 6, 8, 30, 33, 25, 24 indicate water-closets, while Nos. 2, 4, 5, 7, 9, 29, 31, 32, 34, 35 show the airing-courts; No. 26 is the drying-yard (inclosing No. 21, the water-tower); the boilers and engines occupy a position at X.

Verandahs are erected on the ground-floor level on every side of all the patients' wards except wards C and J; but even these have verandahs on three sides, an arrangement more suitable in the Australian climate than in ours.

It will be observed from the foregoing examples that the Australians, in their Callan Park Hospital for the Insane, adhere to the system of inclosed airing-courts, while the American asylum (at Ogdensburgh), of which a plan was given in Fig. 50, exhibits nothing of the kind, the amount of freedom given to the American insane having determined the authorities to dispense with airing-courts that are fenced in, as being too prison-like in character, and this in view of the fact that the St. Lawrence River winds around three sides of this asylum, and within a few hundred feet (a temptation, it might be supposed, to those of the patients with suicidal proclivities). The Exeter Asylum plan is in strong contrast with the American and Australian plans shown in Figs. 50 and 51, as will be seen from the ground plan shown on Fig. 52. In this arrangement the patients' wards are mainly situated in one continuous line, over 800ft. in length. The whole of the administration and other buildings are situated to the rear of these, the recreation-hall occupying the central position in the front, while the main entrance is in the centre of the buildings at the back.

The dangerous patients, of whom there are 40 of each sex, are placed in the two wards marked No. 1 on the plan; the buildings marked E F H I being for day and single rooms on the ground floor. No. 2 wards are on the upper floors above each of the No. 1 wards. No. 3 wards are each for 40 working patients, and on the ground floor at D D there is on each side of the asylum a day-room, with one single room, and the usual offices. The two No. 4 wards are each for 70 suicidal, acute, and epileptic patients, and the reference to the plan, on each side, is: A M, dormitories; B C K L dayrooms; while the annexes for water-closets, &c., are shown at *a a*. The remaining references to Fig. 52 are: N, coals; O, post-mortem room; P, carpenters' and painters' shops; Q, tailors'; R, Turkish baths; S, visitors', bakers', and night attendants' rooms; T, dining-hall for males; Z, kitchen; Y, dining-hall for females; U and X, sculleries; V, male attendants' mess-rooms; W, female attendants' mess-room; G, is the recreation-hall; 1, main entrance; 2, bakery; 3, attendants' and visitors' rooms; 4, laundry-patients' day-room; 5, laundry; 6, dynamo house; 7, boiler-house; 8, post-mortem room and mortuary for females. The architect for this asylum is Mr. R. Stark Wilkinson, of Furnival's-inn, London, and by whose kindness I am permitted to give these particulars. This asylum was one of the first, if not the first, to be lighted by electricity; and, as appears on the plan in Fig. 52, a special building has been provided for its production. In the basement a corridor traverses the whole length of the building, in which a small tramway was planned for supplying the wards with coals and stores from the central blocks. The rain-water is collected and stored in underground tanks, and the drainage is kept separate and carried to sewage-irrigation tanks at the lower part of the farm lands.

Under various Acts of Parliament every county and, with certain exceptions, every quarter-sessions borough was compelled to provide, either independently or jointly with other counties and boroughs, lunatic asylums sufficient for the pauper lunatics of that county or borough. The county councils succeeded to the powers and duties of the quarter sessions of the county (and of the justices or town council of a quarter-sessions borough, the population of which, according to the census of 1881, was under 10,000, no such borough maintaining an asylum independently.)

The English law on the subject of the provision of lunatic asylums is very elaborate, and it may here be well to state that pauper lunatics are provided for in two distinct ways. In the first instance they are kept as "paupers," and maintained by the union or parish to which they, as paupers, have become chargeable; but where it cannot be ascertained to which union or parish they belong, they are chargeable to the county or to the borough in which they were discovered. In the second instance they are provided for as "lunatics," and asylums must be provided for them by the county or borough upon which they have a claim.

The cost of maintaining a pauper lunatic kept in a county or borough asylum must be divided between the union or parish and the county or borough in this way.

The parish or union must pay to the authority maintaining the asylum a sufficient sum to defray the expense of the lunatic's keep, clothing, and other matters, and, in addition, provide for the salaries of the asylum officials; but the Treasury make a grant towards the maintenance of each lunatic chargeable to the parishes.

The boroughs and counties are chargeable with the cost of providing and repairing the asylum and the necessary furniture; but where a lunatic is chargeable to a county or borough (owing to the impossibility of discovering to what union or parish he belongs), the Treasury also assist that county or borough.

The erection of a new asylum, or the maintenance of an existing asylum, is vested in a committee of visitors, who carry out all ordinary repairs of the asylum; but their total expenditure for the year in this respect must not exceed £400, and they must make an annual report (to the council of every county and borough interested in an asylum) as to the state and condition of that asylum, its sufficiency for the proper accommodation of the number of lunatics requiring care, the management and conduct of the officers and servants, and the results of the treatment of the patients and any other matters deserving of notice. A copy of this report must be sent to the Commissioners in Lunacy.

Architects may legally be authorised to prepare plans and estimates for everything necessary to be done in the erection of a new asylum or the

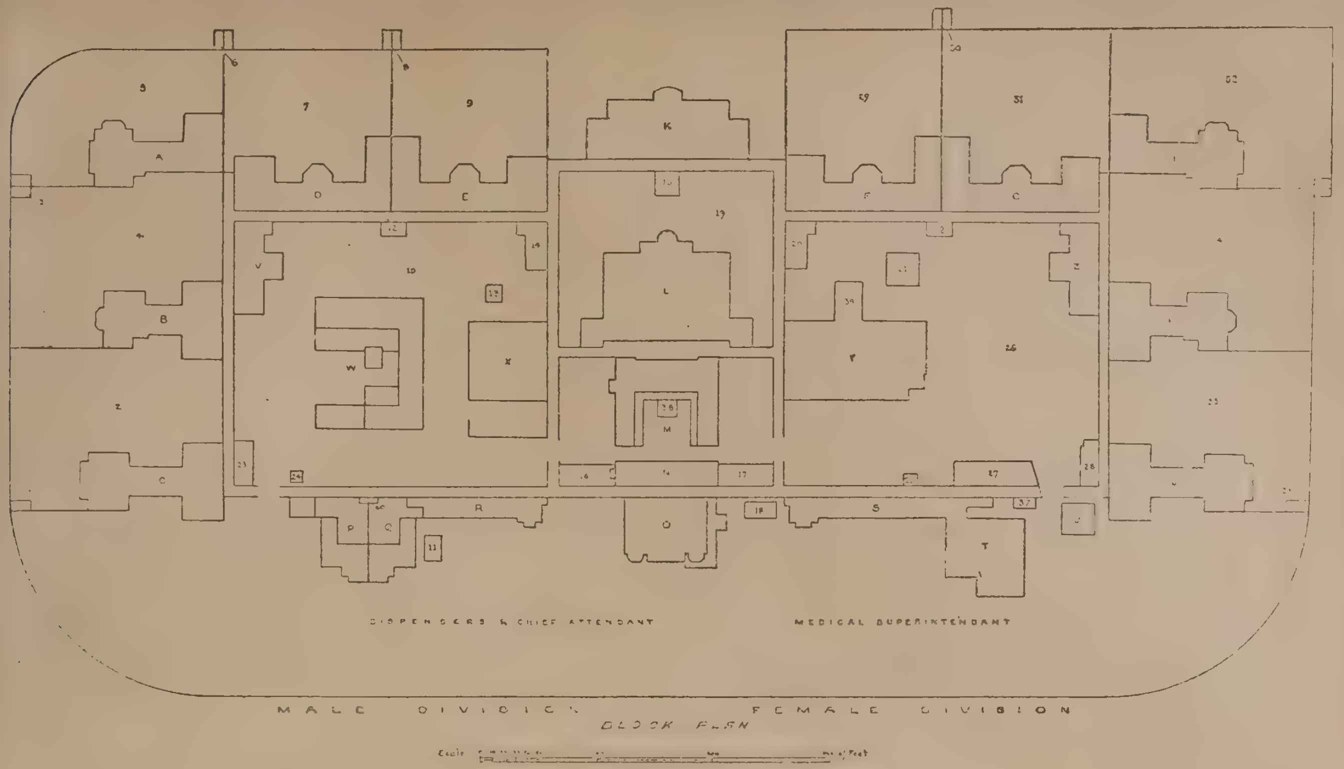


Fig. 51.

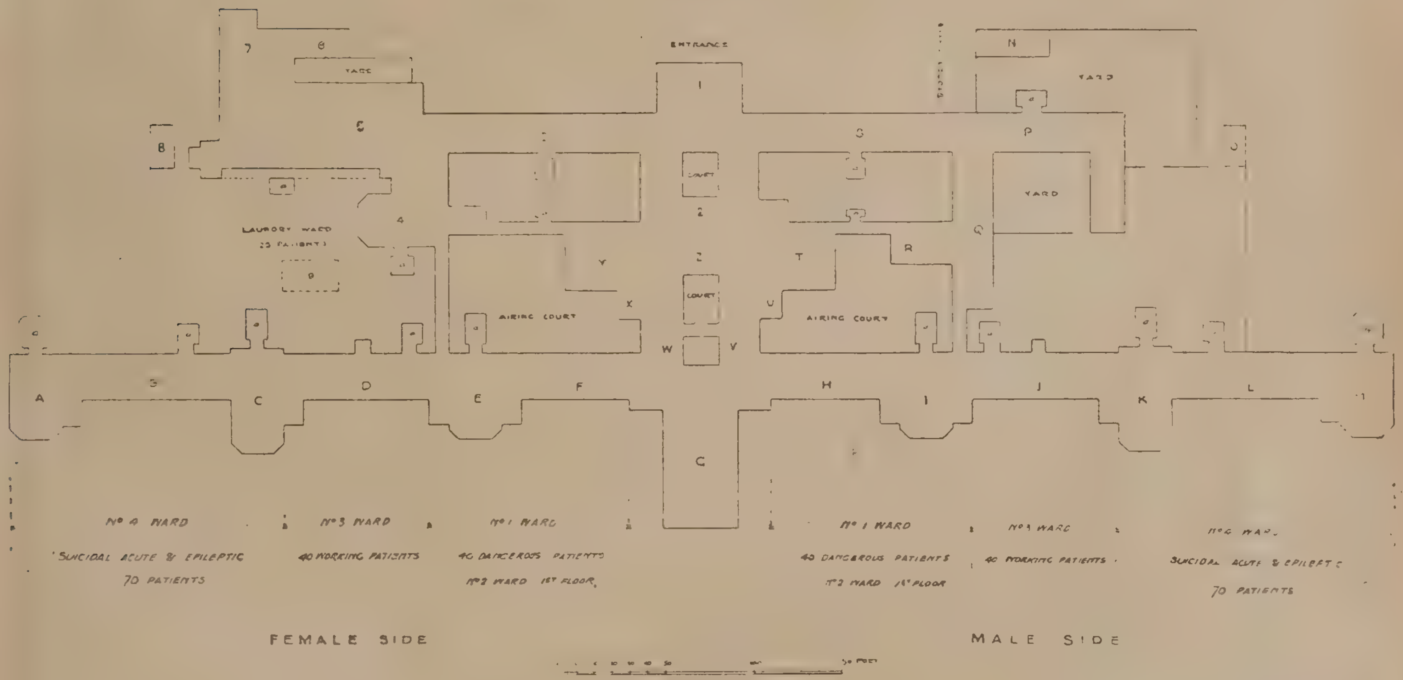


Fig. 52.

enlargement of an old one, if instructed by a committee of visitors who have been authorised by one or more public bodies interested to expend a certain sum; but if any of the authorities interested do not approve of the plans, estimates, or resulting contracts, while others approve, the objecting authorities must forward the plans, &c., with their objections in writing, to a Secretary of State, who must decide upon the question.

I have pointed out above that the sum of £400 only can be legally expended per annum upon the ordinary repairs of any asylum. This sum appears to be rather a small one for a large asylum, and in the case of five asylums, the accounts of which are before me, the sums so expended in one year are respectively £400, £400, £399 13s. 8d., £383 1s. 7d., and £397 5s. 11d., thus showing that the visiting committees must have considerable difficulty in adjusting their building accounts.

While in this country the asylum officials must report to the Commissioners in Lunacy, the officials and trustees of the American asylums must send in annual reports to the governors of the various States in the Union. These foreign reports are frequently of an elaborate description, and appear to be produced by men of high ability.

(*To be continued.*)

* * *

CAST IRON IN BUILDER'S AND CONTRACTOR'S WORK.—X.

By Joseph Horner.

BURNING-ON is a practice which everyone knows by name; but very few outside the trade know in what way it is done. It is a practice generally discountenanced, but one which is occasionally justifiable. Most inspectors would condemn work in which it had been done, and very properly, too. But there are exceptions in this as in other matters, and they are these:—

Burning-on is justifiable when done on some portion of a casting which is not a vital part; and also in some parts which are subject to moderate stresses only, it may be allowed to pass if there is ample margin of safety. Burning-on, again, is a job that some workmen can accomplish much more soundly than others, and when the work is known to have been done by a clever workman, that will be much in its favour.

Burning-on should on no account ever be permitted in parts subject to purely tensile stress. Cast iron is weak enough in tension when sound, and a burnt-on piece is seldom thoroughly sound and strong. It will be remembered that at the inquiry into the failure of the Tay Bridge, evidence was given to the effect that many imperfect lugs had been made good by burning-on. Being in tension, and forming as they did the attachment for the bracings, they were utterly unsafe. Only when lugs are subject to little stress, as when they form points of attachment for secondary details, would burning-on be justifiable. Burning-on may be permitted if the corner of a flange is broken off, or if a piece has been knocked ou of one side of a flange, or if there is a big blowhole in a part subject to compressive stress alone or if a moulding does not run up properly in some locality of limited area, &c. But there is always this risk incurred in any case—that of the casting becoming cracked during the act of burning-on, and, therefore, such cracks must be looked for keenly during inspection, and, indeed, rather expected. They are due to the difference in the temperature of the molten metal and that of the cold metal adjacent, which causes unequal expansive stresses, and often consequent fracture. As the art of burning-on successfully is little understood, I will illustrate it with two common examples, one that of a lug, the other that of a broken flange.

The art of burning-on consists in pouring molten metal over the fractured or imperfectly cast surface which it is desired to make good. It must be poured in sufficient quantity to cause fusion of that surface, and consequent union of it with the newly-poured metal. This is in effect soldering, and is sometimes termed "autogenous soldering." but the details of the process differ entirely from those employed in any soldering process, using the term in its commonly understood sense.

Obviously, in burning-on, it is not sufficient to pour some molten metal upon the surface which it is desired to make good. That would not raise the cold metal to the fusing point, and the hot metal would chill simply, and not adhere in the least degree. Neither is it practicable to raise the cold metal to the fusing point previously to pouring the hot metal over it. Hence the art consists in pouring a constant stream of hot metal over the broken part until the latter is thereby raised by mere contact and transmission of heat by conduction to the same state of fusion. Then, and not till then, the pouring can cease. But if the state of fusion is only partial, then union will only be partial, and therefore a careful moulder will try the fractured surface with the point of a rod from time to time, just as a smith does the surface of a joint to be welded, until assured that the whole surface is in the condition desired. In burning-on, it is much better to continue pouring a little longer than seems necessary rather than stop a little too soon. It is generally the case, therefore, that to burn-on a bit of metal weighing a few pounds, from four to six hundredweights will have to be poured on.

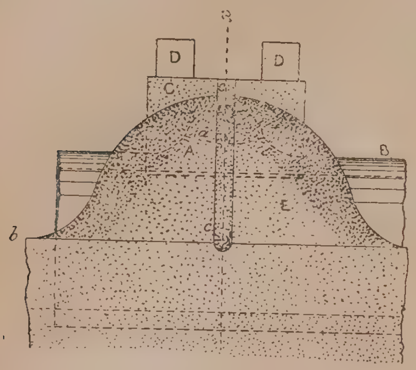


FIG. 39.

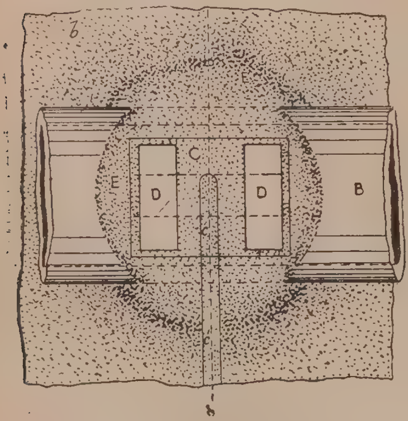


FIG. 40.

But, beside this, certain provisions have to be made for burning-on, provisions which seem rather elaborate in comparison with the small bit of work accomplished. The shape of the piece which has to be cast on has to be formed in a mould, not usually of common sand, but of loam cake filed to the shape required. This has to be set over the casting in position by weighting down, and further secured with a mass of surrounding sand, and a gutter or flow-off channel has to be cut to carry off the superfluous metal. Generally, too, the casting is first warmed to lessen the risk of fracture. If small, it is heated in a core stove, if large, it is warmed around the part where burning-on is to be done by means of lumps of red-hot iron—"heaters" These are the principles and precautions observed in burning-on, of which the accompanying figures illustrate examples.

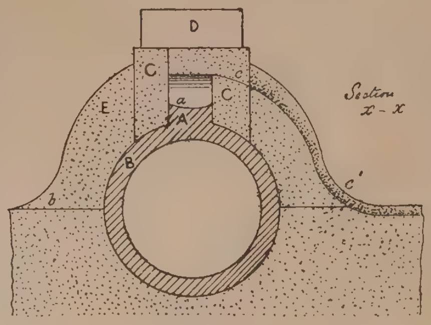


FIG. 41.

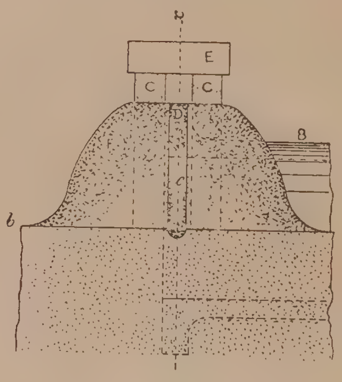


FIG. 42.

Figs. 39-41 illustrate an arrangement rigged up for burning-on a portion of a lug, A, on a column, B, which has either been fractured, or imperfectly moulded, along the break *a*. Fig. 39 is an elevation, or side, view of the mould, Fig. 40 a plan, and Fig. 41 a section of the same along the plane *x-x*. The column B is bedded in the sand floor of the foundry to any convenient depth. In these figures *b* is the floor-line. A piece of dried loam cake C is then filed out to fit over the column and broken lug, and also filed to the required supplementary outline of the lug. The hollow, curved outline thus filed is seen dotted in Fig. 39, and indicated by the shading in Fig. 41. By comparing the three figures it is seen how the loam cake is made to embrace the broken lug, and form a mould for the supplementary outline which has to be cast. A gutter or flow-off, channel is cut in it at *c*, commencing from the level of the top of the lug, in order to carry away the metal, as explained just now. The piece of prepared cake is then set finally in position, and loaded down with weights, D, D, and a quantity of sand, E, is beaten and pressed around it, so that it shall not shift, nor the metal run away anywhere except by the channel c^1 provided for it in the sloping wall of sand, reaching from the channel *c* cut for it in the loam, down to the floor line. There is no runner, or ingate, through a solid top of loam cake, but the cake is left quite open, as shown in section in Fig. 41. The flow-off channel commences therefore at the highest part of the casting. The moulder can thus both see what is going on, and feel the surface, *a*, below with the point of a rod, until he finds it has been brought into a molten condition by the pouring of the new metal. The metal is poured very hot, and very slowly, directly on to the broken face, so as to cause fusion to take place with the least possible expenditure of metal and time. Four or five hundredweights would probably have to be run through before a lug four or five inches long, by a couple of inches thick would be burnt on properly.

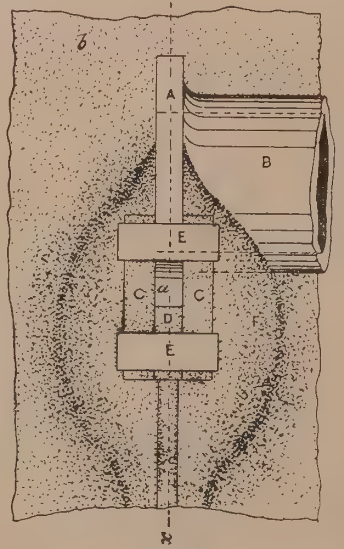


FIG. 43.

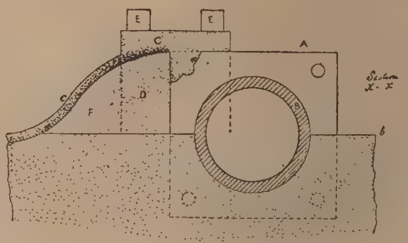


FIG. 44

Figs. 42-44 illustrate the rig-up for burning on the corner of the flange of a column. The elevation is shown at Fig. 42, the plan at Fig. 43, and a section on the plane *x-x*, at Fig. 44. The flange A, on the column B, has been fractured at *a*. The column B is bedded in the sand of the floor *b*, and three flat pieces of loam cake C C D, D being of the same thickness as the flange, are fitted against the flange. C C are carried up above the top edge of the flange, and the only egress for the metal is over the top of D, which is made level with the top of the flange A, and conducts down to the flow-off channel *c*. Weights E E are laid on top, and a body of sand, F, is rammed round to confine the pieces of cake, and prevent leakage of metal at the side, and the gutter *c* is cut to carry away the metal.

In Fig. 44 I have shown the fracture as having taken place through a bolt-hole, as would almost invariably be the case. It is better not to try and core another hole, which can be done by the insertion of a core, but to leave it to be drilled afterwards. It is not so easy to drill afterwards, because burnt-on metal is rather hard. But if the attempt is made to core it, the chances are that the union will not be so perfect.

These illustrations will be sufficient to show how fractured parts are made good by burning-on. Rigs-up would necessarily be modified in different jobs. But the general principles and practice are clearly indicated here. A burnt-on part can generally be recognised, provided the casting has not been doctored subsequently. It is rough in the vicinity, and looks as if burnt. A part burnt-on should be tested with two or three smart blows of a hand hammer before being passed.

◆

The foundation-stone of the new offices of the Free Church Temperance Society, which are to be erected in Bank-street, Edinburgh, was laid, on Friday, by Lord Overtoun.

The urban district council of Eastleigh, Hants, have appointed Mr. Batten, surveyor to the late urban district council of Shirley and Freemantle (now incorporated with Southampton) as their surveyor, at a salary of £150 per annum. There were 78 candidates for the appointment.

CONTENTS.

Provincial Architects ... 767
Masked Rottenness ... 767
Misused Materials... ... 768
The Surveyors' Institution... ... 769
The Home for Epileptics, Chalfont St. Peter's ... 769
Classic Details and their Application ... 770
Architectural Association ... 771
Notes on Approximate Estimates ... 773
Concert Halls and Assembly Rooms.—VI. ... 774
Art for Schools Association ... 775
The Trinity Almshouses, Mile-End-road ... 776
Builders' Clerks' Benevolent Institution ... 776
County Lunatic Asylums.—XXXIV. ... 776
Cast Iron in Builder's and Contractor's Work.—X. ... 777
The Building News Directory ... IX.
Our Illustrations ... 779
Competitions ... 779
Engineering Notes... ... 798
Building Intelligence ... 798
Architectural and Archæological Societies ... 798
Notes from Paris ... 799
Sanitary Specialities ... 800
Books Received ... 800
Obituary ... 800
Correspondence ... 801
Intercommunication ... 801
Legal ... 802
Legal Intelligence ... 802
Water Supply and Sanitary Matters ... 802
Statues, Memorials, &c. ... 803
Our Office Table ... 803
Meetings for the Ensuing Week ... 804
Trade News ... 804
Tenders ... 804

ILLUSTRATIONS.

"A DUKE OF BURGUNDY."—PLANS FOR DAIRIES.—DUNCOMBE PARK, YORKS.—NATIONAL SILVER MEDAL DESIGN FOR AN OAK SIDEBOARD.—MONUMENT TO MR. JOHN GIBSON.

Our Illustrations.

"OLD MASTERS" ON THE CONTINENT: XXVII. "PORTRAIT OF A DUKE OF BURGUNDY."

This Flemish painting, from the Royal Gallery at Brussels, is by an unknown hand, and it represents an unknown personage, so that the interest attaching to the work is entirely confined to the picture, quite apart from any other consideration. The costume and the architectural accessories of the scene enhance its value and decorative effect, which is largely due to the skilful way and minute care with which the detail is painted. The hands of the duke are clumsy in scale, resulting, to some extent, from the thick gloves which he is wearing. In the middle picture the nobleman seems to be represented prostrating himself before the Queen of Heaven, with his coronet, sceptre, and cup displayed on the ground, while his ladies point to the descending angel bearing sealed assurances of acceptance of the ducal prayer. In the distance the landscape adds much to the charm of the painting.

PRIZE PLANS FOR DAIRIES.—(THE BRITISH DAIRY FARMERS' ASSOCIATION.)

These designs for dairies, adapted for the manufacture of both butter and cheese, and capable of dealing with the milk of 25 and 50 cows respectively, were exhibited at the recent Dairy Show, at the Agricultural Hall, Islington. The 25-cow dairy was placed second in order of merit, obtaining the third prize, there being two prizes only awarded in this class (81) by the judges. The 50-cow dairy was commended in class 82. In both designs the architects, Mr. A. R. G. Fenning, F.R I.B.A., of 46, Lincoln's Inn-fields, and Mr. H. S. Fenning, F.S.I., of 8, St. Paul's-square, Bedford, have recognised that the "setting" of milk in the old-fashioned way in "pans" or "leads" is now virtually obsolete, owing to the almost universal use of the "cream separator," which effects so large a saving of labour, and greatly increases the yield of cream. They have therefore given no separate "milk-setting room," ample space being provided in the dairy for the temporary setting of milk in pans on slate shelves in case of a breakdown of the separator. The drawings given herewith furnish a complete set of plans, with details of a practical character for both buildings usefully shown to scale.

DUNCOMBE PARK, YORKS.

Duncombe Park, Lord Feversham's Yorkshire house, stands on a terrace at a considerable height above the town of Helmsley. The original mansion, said to have been designed by Vanbrugh, was burned down some years ago. The new house has been rebuilt from the foundations, and accords with Vanbrugh's plan generally. Mr. William Young is the architect. The entrance front follows the outline of the original house; but the other fronts have been varied, and the elevations all round are much less severe than those of Vanbrugh's design. The walls are faced with Farndale stone—a hard, warm-coloured freestone quarried on the estate—and the floors throughout are fireproof. The principal features of the interior are: an entrance-hall about 40ft. square and 40ft. high to the top of the domed ceiling, and a saloon 84ft. in length, the walls being panelled in oak from floor to ceiling. The walls of the halls are entirely of stone, with Corinthian columns, and in the dome there is a figure of Jupiter, relieved by the azure-blue ground of the dome. The wings were built by Sir Charles Barry; that on the north side was destroyed by fire last year, and has been reconstructed. Messrs. W. and J. Kirkwood, of Edinburgh, were the general contractors for all trades; and the decoration was done by Messrs. G. Jackson and Sons, of Rathbone-place, London. Our illustration is from the architect's drawing in this year's Royal Academy exhibition.

NATIONAL SILVER MEDAL DESIGN FOR OAK SIDEBOARD.

In the design for dining-room sideboard a departure is attempted from the usual arrangement of sideboard and back, and while fulfilling all the purposes for which this piece of furniture is required, the designer has contrived to build the back and underpart in one piece, thereby obtaining greater unity of design. The style adopted is a free rendering of the Renaissance, with a somewhat new character introduced into the carved ornamentation. The wood intended is darkly fumigated oak, with the drawer furniture, lock-plates, and lamps of Florentine bronzed copper. A high oak wainscoting is intended to work with the sideboard, the capping moulding of which would correspond and intersect with the sideboard cornice, in order that the sideboard may form a portion of the room. and gain dignity from its fixity. The author of this design, of which we give a view and two sheets of details, is Mr. H. Davis Richter, of Bath, to whom a national silver medal was awarded this year at South Kensington.

MONUMENT TO THE LATE JOHN GIBSON, ARCHITECT.

The monument of so distinguished an architectural practitioner as the late Mr. John Gibson, F.R.I.B.A. and Royal Gold Medallist of the Institute, cannot fail to be of interest to our readers, quite apart from its merit as an example of sepulchral design. We, therefore, have arranged on one of our plates to-day two plans and a general view photographed from the actual building, and besides these we give two enlarged details. The grave of our eminent deceased *confrère* is in Kensal-green Cemetery. The architect of the monument was Mr. Harold Brakspear, A.R.I.B.A., of Corsham, Wilts; and the contractor Mr. C. H. Mabey, of Vauxhall Bridge-road. The materials are Portland and red Dumfries stones, with a polished red Peterhead granite plinth. The cost of the substructure put in by the cemetery authorities came to £65, and the superstructure to £455.

◆

Mr. W. H. D. Robotham, C.E., of Wolverhampton, engineer of the central division of the Great Western Railway Company, has been appointed as engineer of the whole of the northern lines of the Great Western system from the 1st January next. Mr. Robotham will then have charge of the whole of the system between Oxford and Birkenhead, with headquarters at Wolverhampton.

Sir Frederic Leighton having, at the request of the Siddons Memorial Sub-Committee, viewed the various models submitted in the competition for the commission to execute a statue of Mrs. Siddons, to be erected on the site on Paddington-green granted by the local vestry, a meeting of the general committee and subscribers will be held at the vestry-hall, Harrow-road, at 11 a.m., to consider his report. Mr. T. H. Baylis, Q.C., will preside.

The sisters at the Home of the Community of the Epiphany at Truro have received several additions to their chapel. A new reredos in carved oak, of Late Gothic character, has been erected. In the central panel, under a canopy of traceried work, is a full-length figure of Our Lord, standing with outstretched arms in the midst of glory, having the outline of a Vesica. A new shrine has also been added. It is of carved oak, the cross itself being of ebony, and the figure of the crucified Christ hung upon it of pear-tree. These additions are the handiwork of Messrs. Harry Hems and Sons, of Exeter.

COMPETITIONS.

Belfast.—The proposed competition for the Protestant cathedral for Belfast has been abandoned, and Messrs. T. Drew, of Dublin, and W. H. Lynn, of Belfast, have been definitely appointed architects. There is little probability that they will be overburdened by their new duties, for the proposal is to expend at least £100,000 on the more spacious building which will replace the present parish church, towards which sum only £4,000 has been offered. Actual building operations are not to be commenced until the committee have £20,000 in hand. However remote the prospect of realisation may thus appear, Messrs. Drew and Lynn are already at work, we understand, preparing their design for the approval of the committee.

Kentish Town.—The promoter of the sketch competition for artisans' dwellings at Kentish Town has selected the following out of the 46 designs submitted, as being, in his opinion, the best:—(1) Harry Heathman, Barnard House, Clarence-road, Redcliff, Bristol; (2) C. Pickford, 14, Great James-street, Bedford-row, W.C.; (3) A. P. Killick and H. S. Wood, 16, Basinghall-street, E.C.; (4) W. G. Lewton, 44, Queen's-crescent, Reading; (5) Valentine L. Knight, 21, Donberg-road, Blackheath. None of these designs, however, altogether meet the wishes of the promoter, and it is therefore not intended to carry any of them out. The unsuccessful designs have been returned to their authors.

Shoreditch.—The premiated designs for the public baths and library are as follows: Mr. Henry T. Hare, first; Mr. A. H. Tiltman, second; Messrs. Groll and Todd, third. The drawings will be on view to the public from Thursday next, Dec. 5, for a fortnight, in the council chamber of the Town Hall, Old-street, E.C.

CHIPS.

A new Primitive Methodist chapel, at the corner of Stratford-road and Wilton-road, Sparkhill, Birmingham, was opened on Wednesday week. The chapel seats 620 persons, and there are in addition vestries for choir and minister, and a lecture-hall at the rear, which will hold 200 persons. Schools, for which sufficient land has been retained, will soon be commenced. The work, which has been carried out by Messrs. J. Harley and Son, Smethwick, from the designs of Mr. A. Harrison, Birmingham, will cost about £3,700.

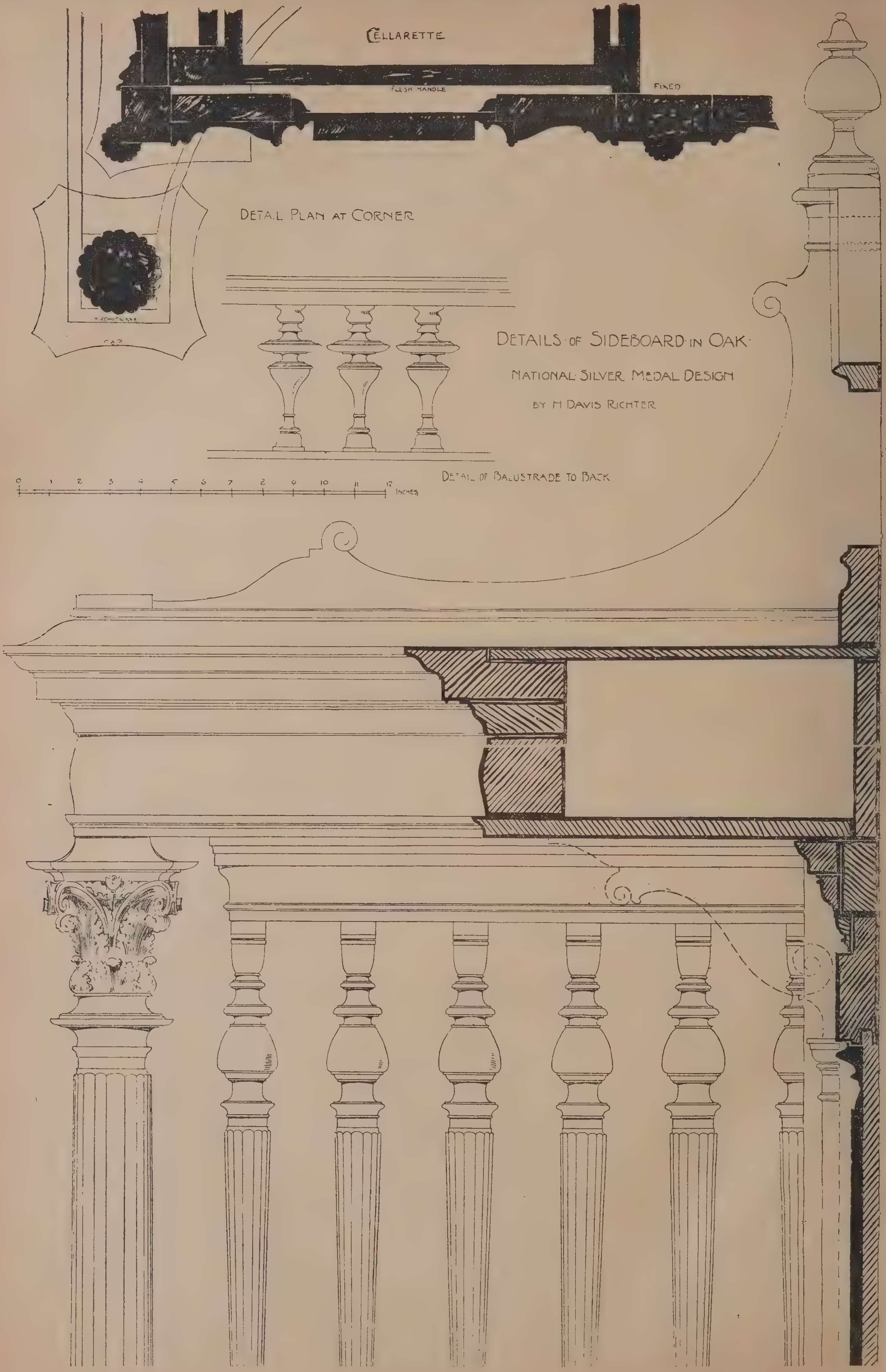
On account of the increasing summer traffic at Rothesay Harbour, the trust have decided to extend the pier westward, at a cost of £7,860. The extension will be 250ft. long by 50ft. wide. The pier, which is at present the largest on the Clyde, will then have a straight unbroken frontage of 570ft.

Mr. J. W. Bird Clerke, a Local Government Board inspector, held an inquiry at Eccles on Friday, into the application of the town council to borrow £3,250 for an extension of the town hall and the provision of municipal offices.

A meeting of the operative plumbers of Dalkeith and district was held on Saturday night, at which deputation from the United Operative Plumbers' Association of Scotland was received. Messrs. John Addison, the secretary, and J. W. Wilson, Edinburgh, addressed the meeting on the importance of organisation, and it was unanimously agreed to form a branch of the association for the district.

Robert Laws, the foreman to a large firm of building contractors, was charged on Monday before the Aldershot magistrates with being concerned with Sergeant-Major Greener, of the Royal Engineers, in stealing in July a large quantity of zinc, the property of the Queen. The accused, it is alleged, consigned to a firm in London zinc ingots, which had been melted down and sent away by Greener. The zinc was supplied for generating gas in connection with the Military School of Ballooning, and was sent to the railway station in Government waggons, in charge of the Royal Engineer sappers. The prisoner was remanded, bail being allowed.

The report of the Nicaragua Canal Commission will be found very disappointing to those who expected to see the project speedily executed. The cost is roughly estimated at 133,472,893 dollars, against the promoters' estimate of 69,893,660 dollars. Moreover, it is said that to proceed upon the present plans would be impracticable, because of the inadequate knowledge regarding the hazards. The commission advises that fresh surveys should be made, and these, it is estimated, will require an expenditure of 350,000 dollars, and a period of eighteen months to carry out.



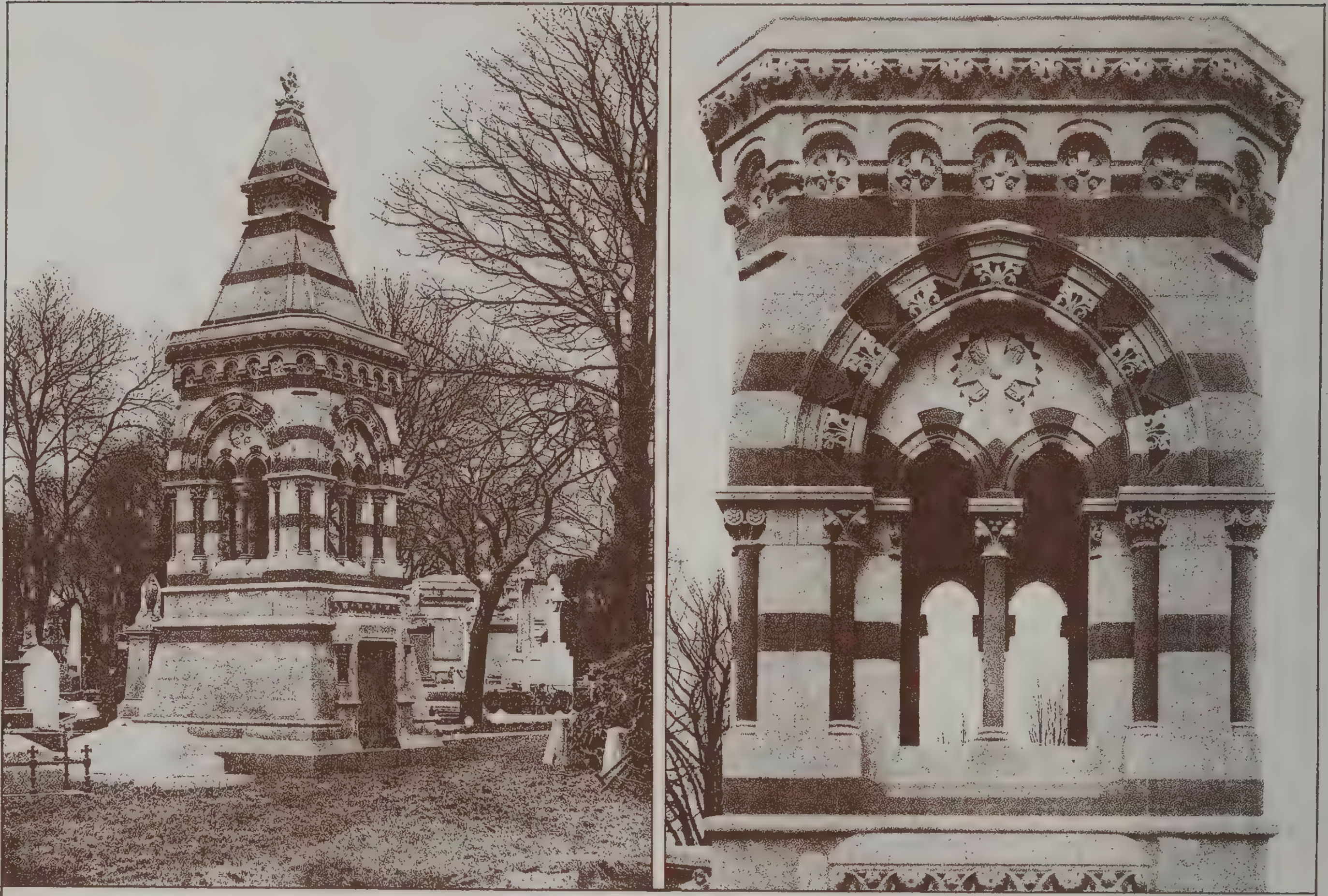
DETAILS OF SIDEBOARD IN OAK

NATIONAL SILVER MEDAL DESIGN

BY H DAVIS RICHTER

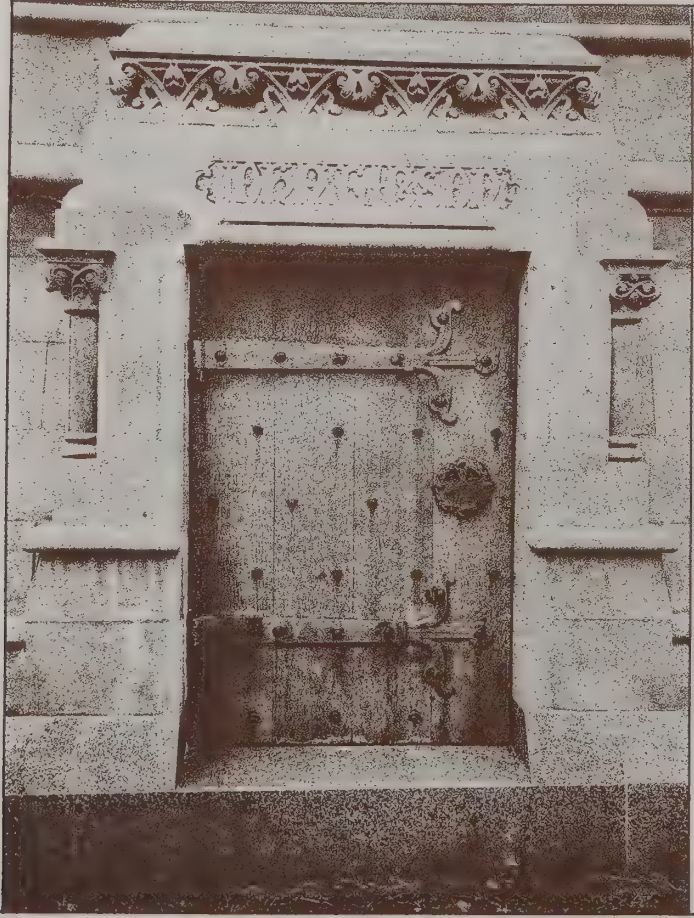
CELLARETTE
FLUSH HANDLE
FIXED
ARCHITRAVE
CAP
DETAIL PLAN AT CORNER
DETAIL OF BALUSTRADE TO BACK
0 1 2 3 4 5 6 7 8 9 10 11 12 INCHES

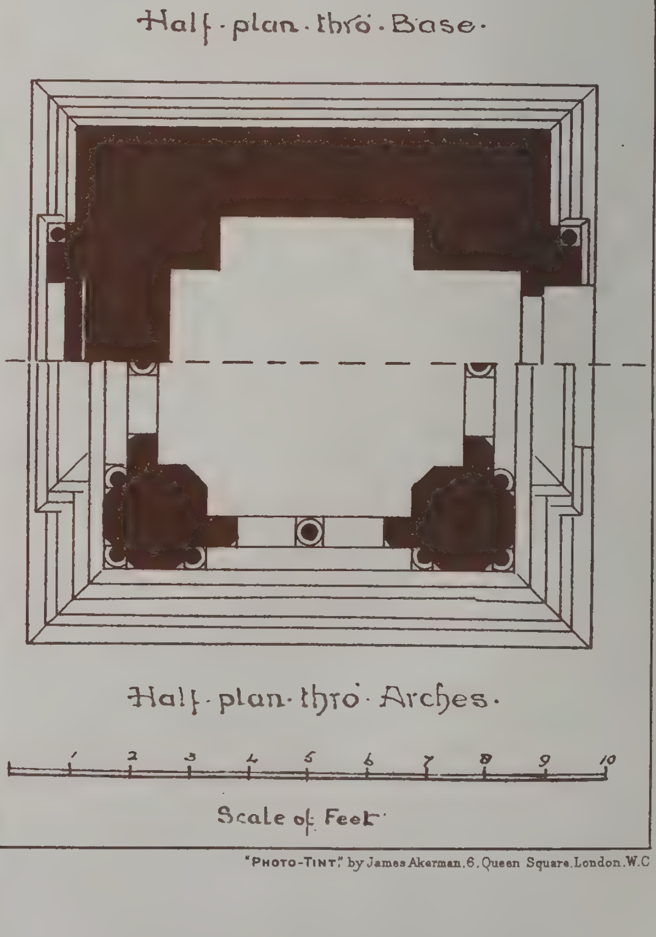
OF THE
UNIVERSITY OF ILLINOIS



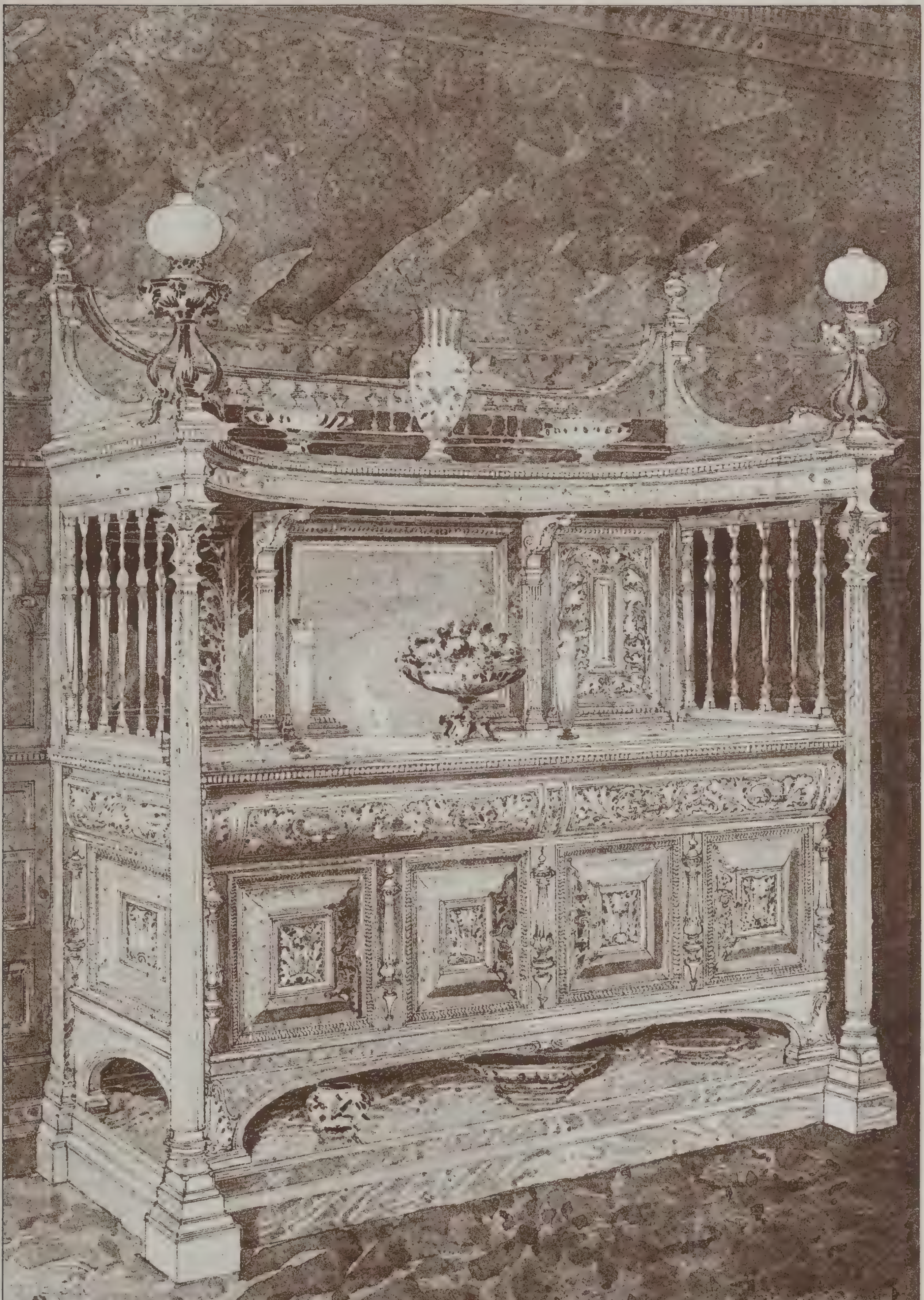
MONUMENT · TO · THE · LATE · JOHN · GIBSON · F.R.I.B.A · AT KENSAL · GREEN · CEMETERY ·

HARO LD BRAKSPEAR · A.R.I.B.A · C · H · MABEY · SCULPTOR ·



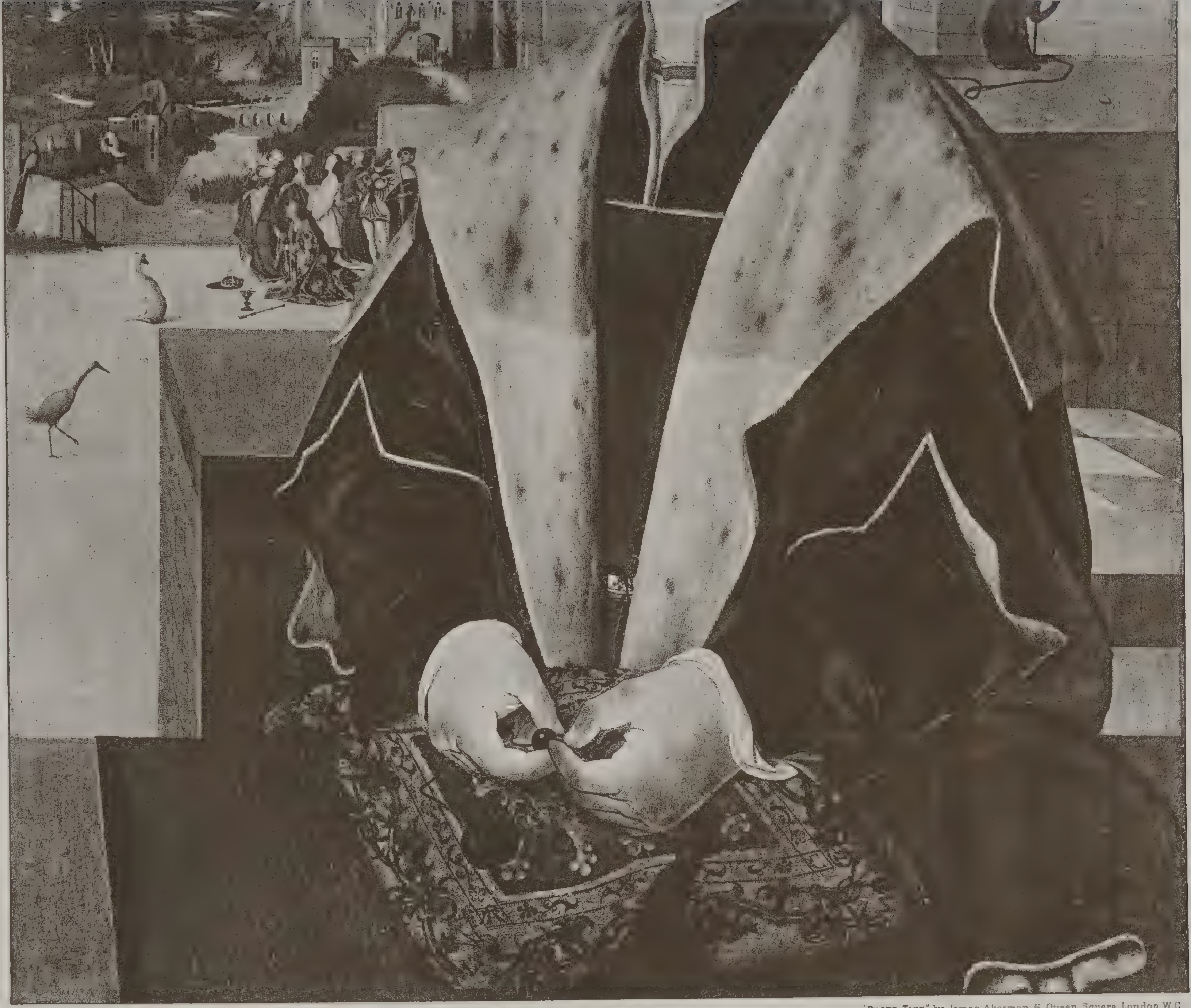


"PHOTO-TINT," by James Akerman, 6, Queen Square, London, W.C.



"PHOTO-TINT," by James Akerman, 6, Queen Square, London, W.C.

NATIONAL·SILVER·MEDAL DESIGN·FOR·OAK·SIDEBOARD·BY·H·DAVIS·RICHTER·

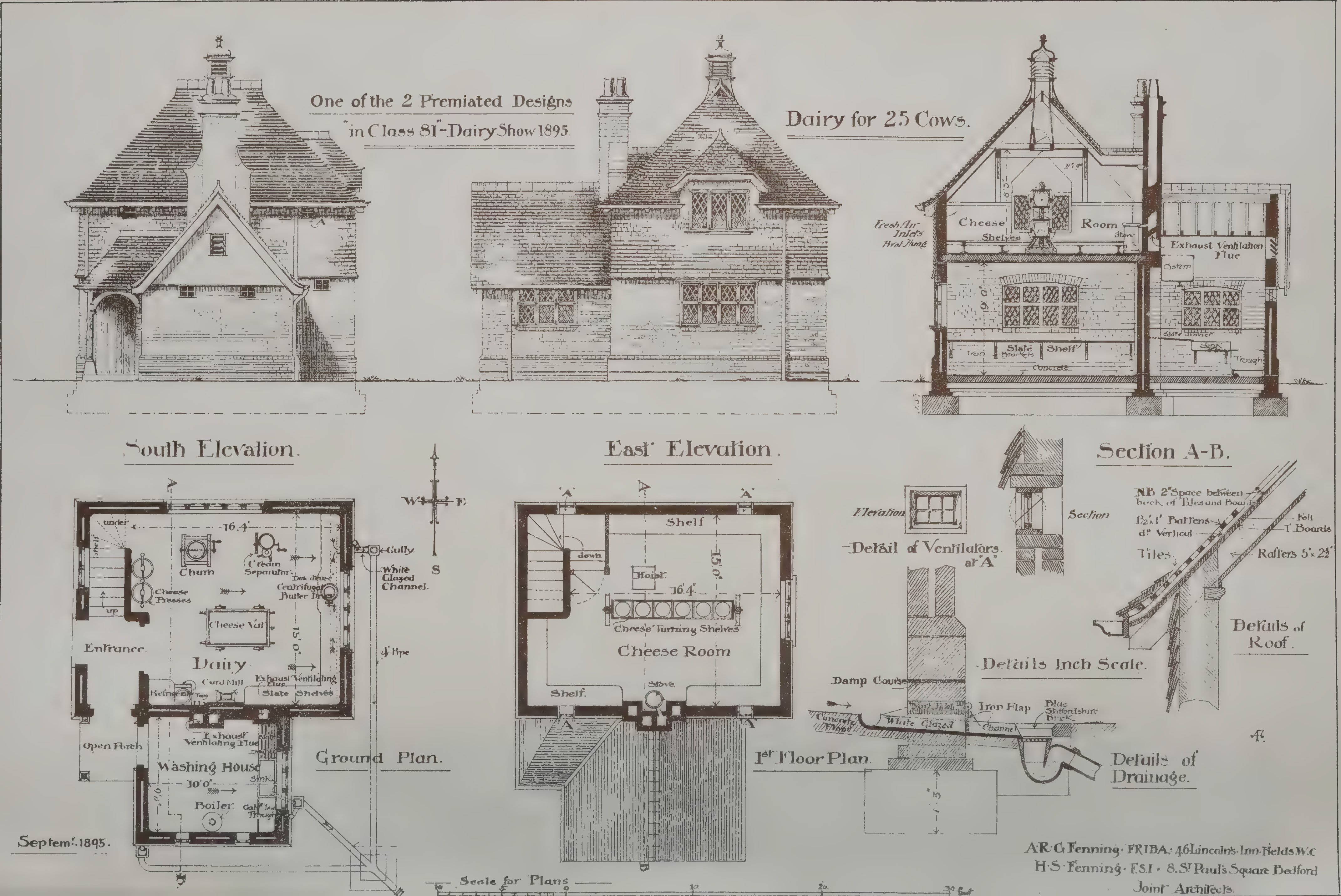


– PHOTO · BY · FRANZ · HANFSTAENGL.–

"PHOTO-TINT," by James Akerman, 6, Queen Square, London, W.C.

OLD · MASTERS · ON · THE · CONTINENT · N°27 ·

PORTRAIT · OF · A · DUKE · OF · BURGUNDY · (BRUSSELS) · (FLEMISH · SCHOOL)



One of the 2 Premiated Designs "in Class 81"–Dairy Show 1895.

Dairy for 25 Cows.

Septem.r 1895.

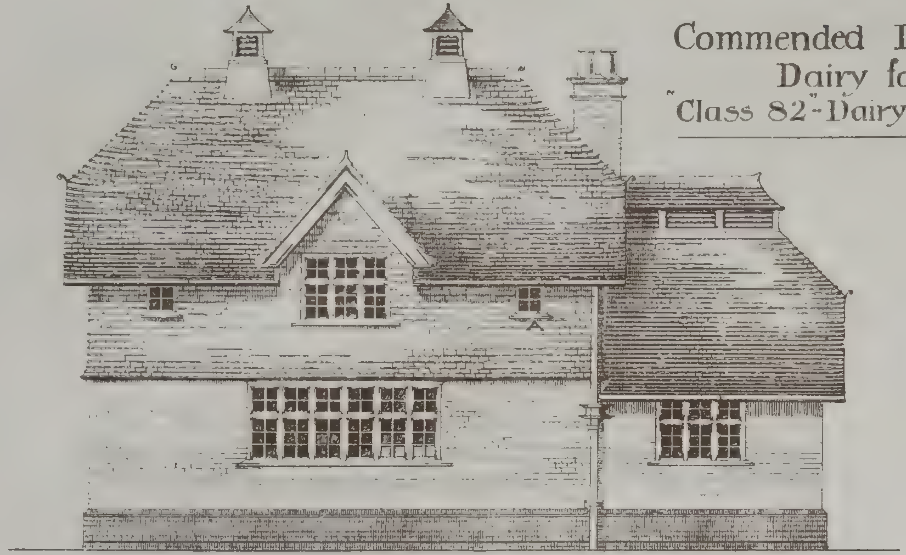
A.R.G. Fenning. F.R.I.B.A.: 46 Lincoln's Inn Fields W.C.
H.S. Fenning. F.S.I. · 8. St Paul's Square Bedford
Joint Architects.

Plans for Dairies adapted for the Manufacture of both Butter and Cheese.

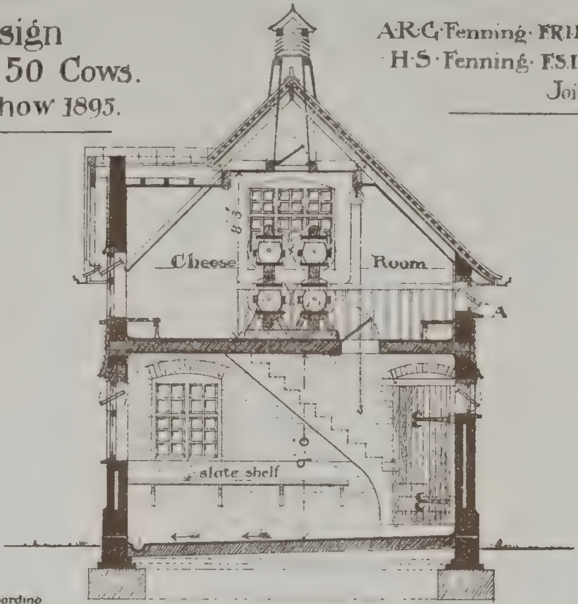
and capable of dealing with the Milk of not more than 25 and 50 Cows.

Commended Design
Dairy for 50 Cows.
"Class 82" Dairy Show 1895.

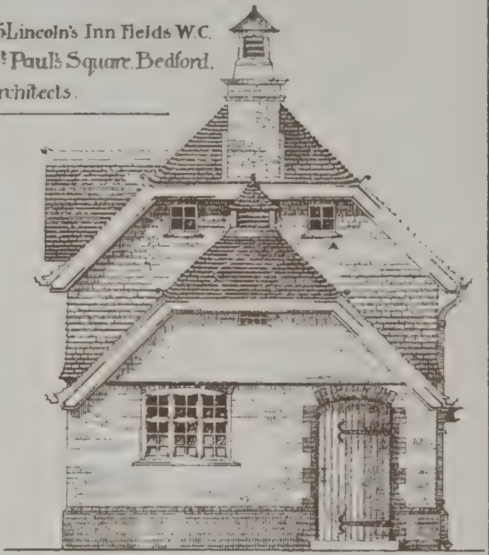
A. R. G. Fenning. F.R.I.B.A., 46 Lincoln's Inn Fields W.C.
H. S. Fenning. F.S.I. 8. St Paul's Square, Bedford.
Joint Architects.



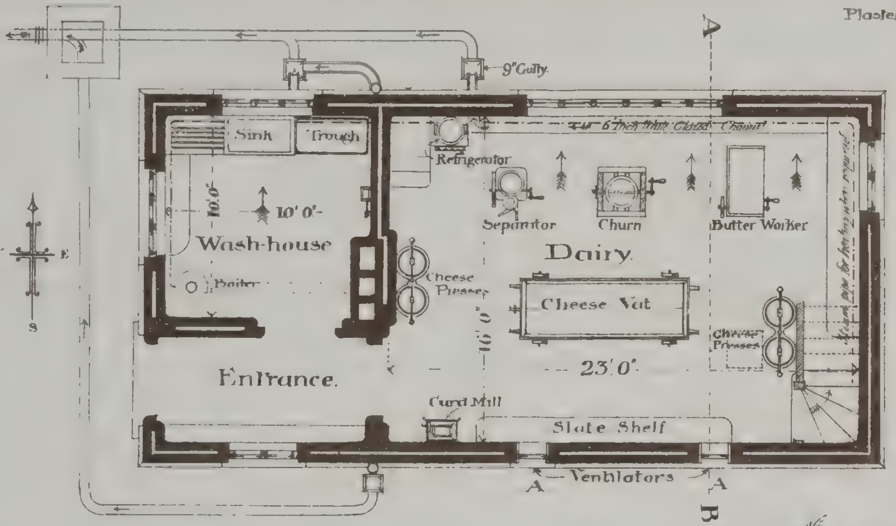
North Elevation.



Section AB.

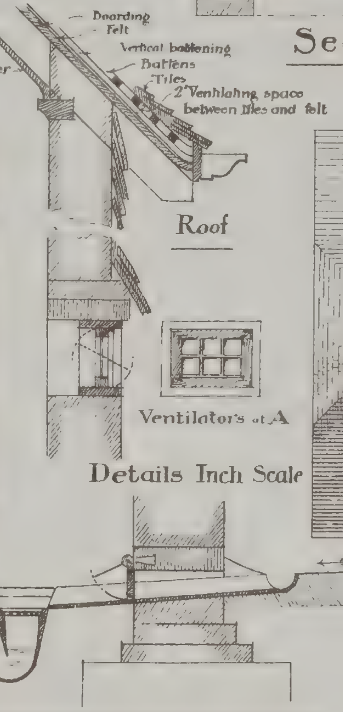


West Elevation.

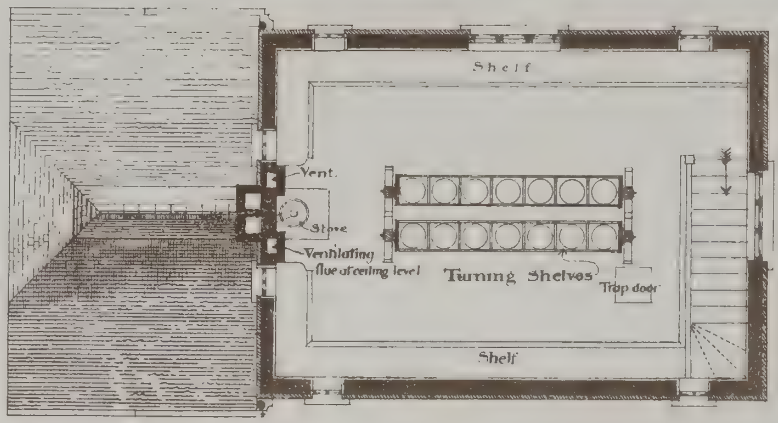


Ground Plan showing Dairy.

Scale for Plans



Details Inch Scale

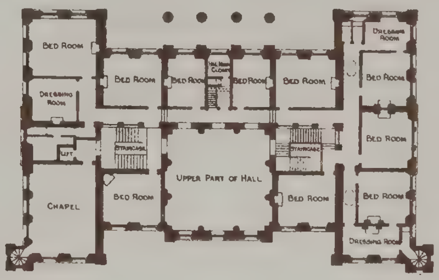


1st Floor Plan. showing Cheese Room

Scale for Details

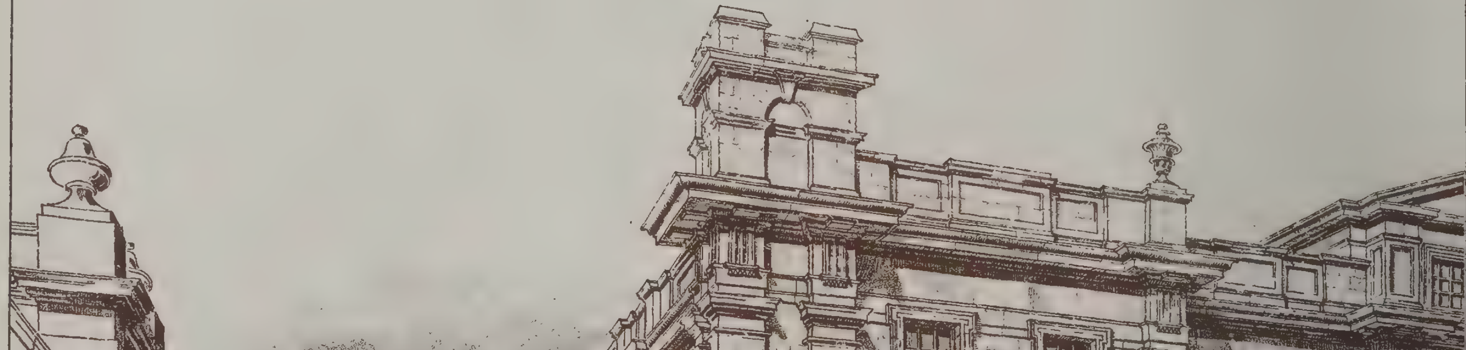
UNIVERSITY OF ILLINOIS

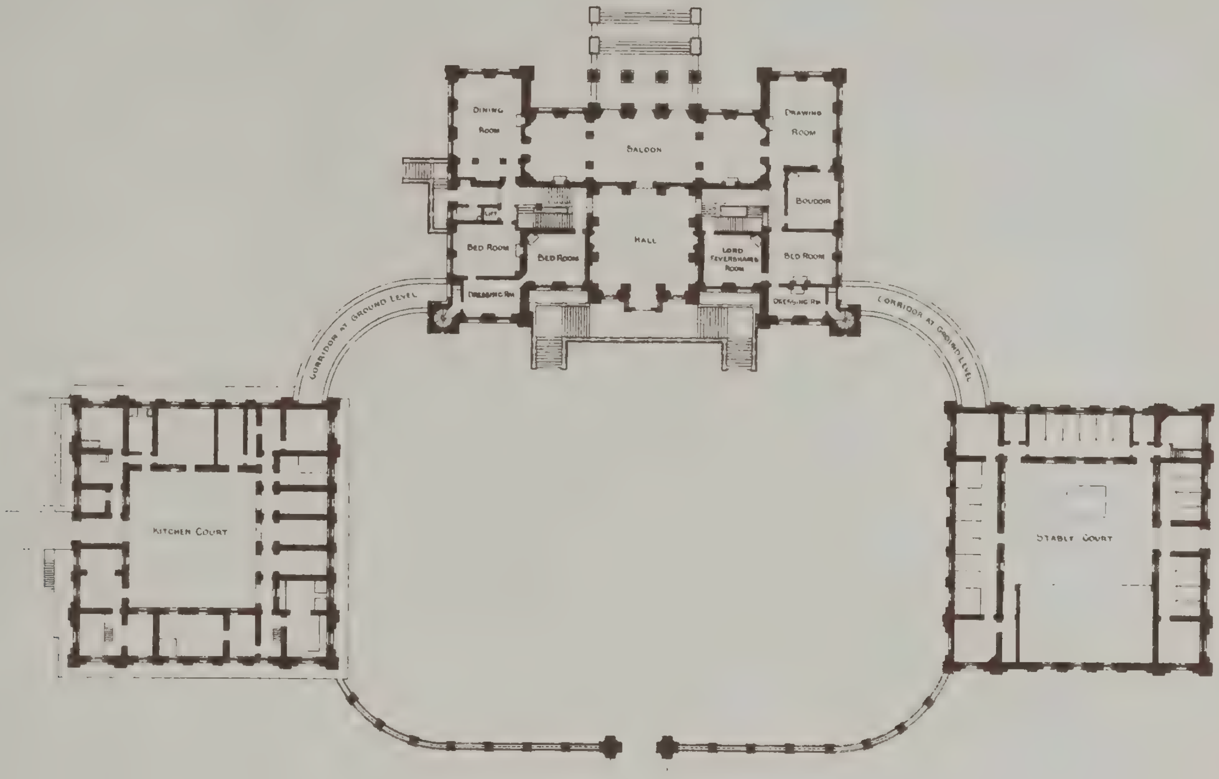
DUNCOMBE · PARK · YORKS · FOR · THE · R$^{\text{T}}$ HON · THE · EARL · OF · FEVERSHAM · W$^{\text{M}}$ YOUNG · F.R.I.B.A. · ARCH$^{\text{T}}$



Plan of First Floor.

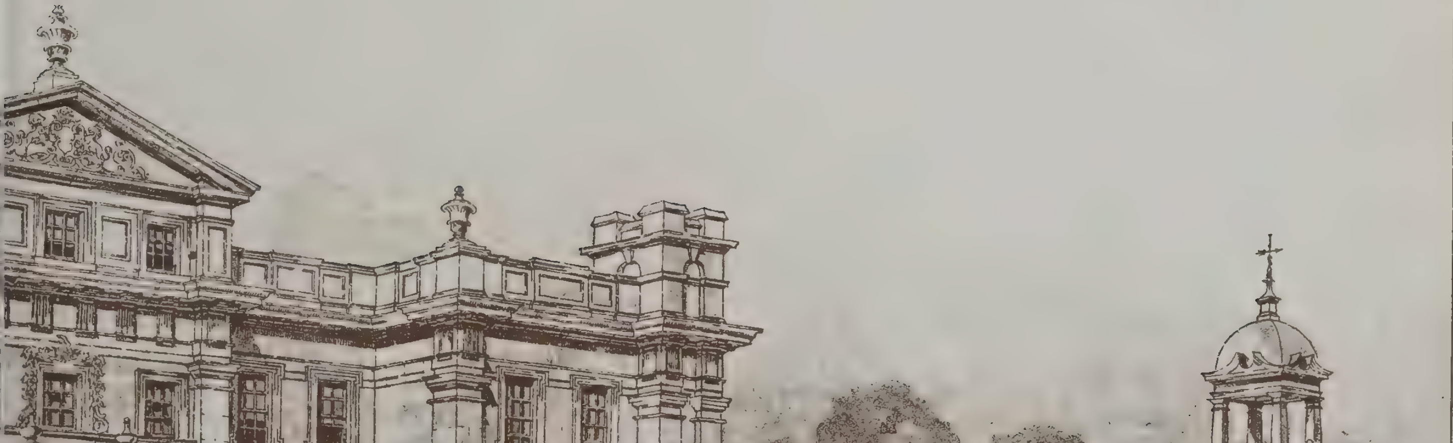
SCALE OF FEET





Plan of Principal Floor.

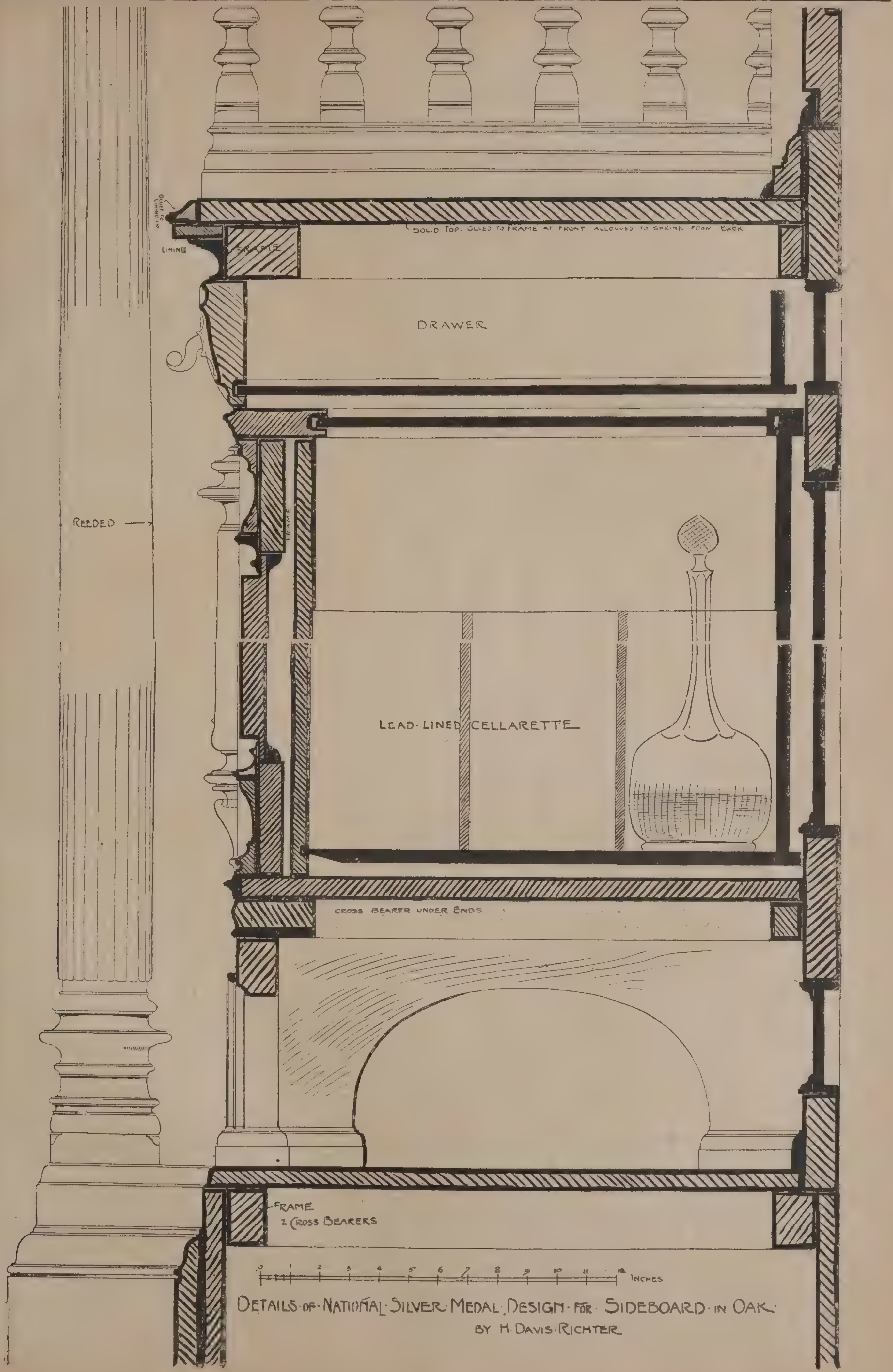
Scale of Feet



Wm Young Archt

"PHOTO-TINT", by James Akerman, 6, Queen Square, London, W.C

LIBRARY
OF THE
[illegible]



DETAILS OF NATIONAL SILVER MEDAL DESIGN FOR SIDEBOARD IN OAK
BY H. DAVIS RICHTER

Engineering Notes.

Kew Bridge.—The County Council of Surrey at their last meeting received a report from their highway committee stating that the time had now arrived when Kew Bridge should be rebuilt; that it should be built of stone; that the rebuilding, irrespective of approaches, from abutment to abutment, should be borne equally by each county; and that the approaches on each side should be at the cost of the respective counties; that Mr. J. Wolfe Barry, C.B., be asked to submit designs and approximate estimate. A member called attention to Mr. Wolfe Barry's previous report, in which he stated that the cost of a stone bridge would be about £90,000, and of a steel bridge £65,000. He moved an amendment that the designs and approximate estimates to be obtained from Mr. Wolfe Barry should be for a bridge of stone, or steel, or iron, with a report which of the structures he would recommend for adoption, and that the committee should report to the council again. The amendment, after a long discussion, was carried by 29 votes to 26.

Building Intelligence.

Burnley.—The opening of the new infirmary adjoining the workhouse at Rake Head, Burnley, took place on Nov. 21. The building is constructed on the pavilion principle, and consists of two wings, each two stories high, with an administrative block in the centre. It is built of Yorkshire pierpoints, with local stone ashlar dressings. The whole of the floors are fireproof. The total accommodation is for 185 beds. There are four wards, each holding 34 beds, and four isolation wards for pulmonary cases, as well as eight more isolation wards for other cases, together with lying-in wards. There are also bedrooms for the official staff. The heating is on the hot-water low-pressure system, by steam passing through calorifiers, and there are also open-fire ranges in each room. In each of the large wards there are two of Shorland's double-fronted stoves. There are baths, lavatories, and w.c.'s on every floor, in both the sick ward and the administrative block, with hot and cold water; fire appliances on the landings on each floor, and iron escape stairs to both pavilions and the central block. The drainage is fitted up with disconnecting traps and automatic-flushing chambers. The cost of the building will be £30,000, exclusive of furnishing and land The contracts have been executed by the following:—Masons' and bricklayers' work, Messrs. A. and R. Parker; joiners' work, Messrs. R. Dean and Sons; concrete work, the Phœnix Fireproof Company, Manchester; slaters' work, Mr. W. Stanworth, Burnley; hot water, Messrs. James Blezard and Sons, Padiham; plumbing and gas-fitting, Mr. John Brooks, Burnley; mantelpieces, Messrs. Doulton and Co., London; ventilators, Messrs. R. Boyle and Son, Ltd., London.

Glasgow.—The new portion of Glasgow Post Office, which has been under construction for several years, was opened on Monday. It has been erected in Ingram-street, to the south of, and as a supplement to, the main structure in George-square. The building is a block of three floors, with a space of 120ft. by 77ft. on each floor. On the ground floor sorting accommodation is provided, and there is a letter-carriers' sorting department on the first floor. On the top floor is the telegraphic-instrument department. Formerly there were in use at this office between 4,000 and 5,000 primary cells, but these are now replaced by 250 secondary cells. This is the first application in Scotland of Faure's accumulating system of secondary batteries, the old primary battery being thus superseded. The plant for supplying the energy and lighting the building has been erected in the basement of the new block. There are three 80I.H.P. engines of the Willans' central-valve type. The dynamos are mounted on the engine frame, and are of Crompton's make. An important extension of the system of transmitting telegrams by pneumatic tube was also brought into use on Monday, pipes having now been laid to Fishmarket and St. Enoch-square. The total length of tube working into George-square is now 4,362 yards.

Knot Mill, Manchester.—Considerable progress has been made with the new Knot Mill station-buildings at Deansgate, Manchester. The design is Gothic in style, and the material used for the main front is red brick, with carved stone facings. The building will be surmounted by a clock tower. From the entrance, which is faced internally with dark brown brick and a gold and brown dado, there is a slight incline, leading by a flight of steps 15ft. wide into the booking-hall. The platforms will be considerably widened, and raised so as to be almost level with the steps of the carriages. On the Bowdon side there will be a general waiting-room, as also cloak-rooms and other conveniences. On the Deansgate side are the station master's offices, ticket collectors' rooms, and waiting-rooms. The platforms will be covered, the roofing being of steel-work. The widening of the Deansgate Bridge is already in a forward state. The street running parallel with the Rochdale Canal is to be widened 75ft. The new buildings, which are down for completion about September, 1896, are from drawings provided by the joint engineers of the London and North-Western and Manchester, Sheffield, and Lincolnshire Railway Companies (Messrs. Francis Stevenson and Alexander Ross), and the contractors are Messrs. R. Neill and Sons, of Manchester.

CHIPS.

Mr. J. Q. Orchardson, R A., has been elected a member of the Academy of Fine Arts in Paris.

A monument to the memory of the Fenian Manchester martyrs has been executed by Sir Thomas Farrell, R.H.A., for erection in Glasnevin Cemetery, Dublin. The memorial, which stands 17ft. in height, has cost £600.

The parish church at Symington, N.B., was reopened on Friday, after having been closed for alterations. The building has been reconstructed, and considerably enlarged, by addition of an apse at the east end, widening the north transept, and a new entrance and entrance porch at the west end. A small vestry, with heating cellar below, has also been built. The lintelled windows have been converted into Gothic lancets, and the interior is now open to the roof, and the exterior has been rough-casted, with a shade of colour to match the Tinto rock. The church is heated by hot-water pipes above the floor, and ventilated. The cost of the improvements, for which Messrs. Hardy and Wight, of Edinburgh, were the architects, has been about £600.

The Shoreditch Library Commissioners have accepted an offer by Mr. Passmore Edwards to enlarge the Haggerston Public Library at an estimated cost of £2,000. The cost of the building and the grounds was defrayed by Mr. Edwards three years ago.

A drinking-fountain has been erected at Conway to perpetuate the memory of Llewelyn the Great. The base of the fountain is worked in Anglesey limestone, surmounted by a column of Cross-hill stone, fluted and festooned. On the top of this column a bronze Corinthian capital upholds a bronze figure of the great Welshman, who is represented in the full chain armour of the first half of the 13th century. The work was designed by Messrs. Grayson and Ould, Liverpool, the figure being modelled by Mr. E. O. Griffith, of Liverpool.

A new Wesleyan schoolroom at Lofthouse was opened last week. The new building has cost nearly £1,300, and provides accommodation for 450 children. The principal room is 57ft. by 32ft., with half a dozen class-rooms, besides a church-room 27ft. by 15ft. The architect is Mr. Arnold Nicholson, of Wakefield.

The London Master Plumbers have established a Metropolitan branch of the National Association of Master Plumbers. Mr. Charles Hudson, Mr. D T. Bostell, and Mr. Marshall are the chief officers.

In the case of Cecil Herbert Morgan, Samuel Eveland Isted, and Edward Percy Morgan (carrying on business as Morgan, Isted, and Morgan), Southampton, contractors, the discharges from bankruptcy have been suspended for three years ending Oct. 15, 1898.

A Local Government Board inquiry has been held at the Barnstaple Guildhall by Colonel Hasted, R.E., on a proposal by the Barnstaple Town Council to borrow the sum of £4,550 for improvements. The works consist of sewerage, sewer ventilation, street repairs, the provision of a steam roller and steam crusher, and the erection of a bandstand in the Rock Park. The south end of High-street, from the top of Cross-street, will be repaved with wood if the loan is sanctioned. There was no opposition to the proposal.

The course of business in the Estate Market at Tokenhouse-yard last week was good for the period of the year. The aggregate for the week was £83,849, of which no less than £73,599 was compiled on Thursday and Friday.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

London and Middlesex Archæological Society.—The first meeting of the session of this society was held at the Old Mercers' School, College-hill, on Tuesday week. The Rev. Meyrick J. Sutton, M.A., Master of the Mercers' Company, presided. The members adjourned to the church of St. Michael Paternoster Royal, where a paper explaining the architectural and historical features of the building was read by Mr. J. Douglass Mathews. From the church they returned to the schoolroom, when Mr. Charles Welch, F.S.A., read a paper on "Old Pewter Vessels." Some specimens which had recently been discovered at Buckington were exhibited by Alderman E. Rayden. A paper on the history of the Mercers' School was also read.

Sheffield Society of Architects and Surveyors.—The members of this society visited the new Sheffield Royal Hospital on Saturday afternoon, on the invitation of the president, Mr. Charles Hadfield, F.R.I.B.A., who is the architect for the building. Among those present were Messrs. C. J. Innocent (hon. secretary), E. M. Gibbs, T. Winder, T. H. Waterhouse, J.P., Wm. Parkin, J. T. Cook, James Hall, J. B. Mitchell-Withers, J. Norton, W. F. Hemsoll, J. R. Wigfull, W. J. Hale, C. Gibson, E. Winder, jun., J. D. Townsend, J. E. Benton, W. T. Brown, and about 40 other members. The contractors for the building—Mr. Molloy, earthwork; Mr. Webster, masonry; Mr. Tomlinson, joinery; Mr. Rodgers, painting; Mr. Higgins, plastering; and Mr. Sutliffe (Messrs. Haden and Co.), warming—were also present; and Mr. Buchanan, the clerk of works, assisted the architect in explaining the plans and the building. Under Mr. Hadfield's guidance the party made a tour of inspection over the buildings, and were very much interested in the general and technical arrangements. In proposing a vote of thanks to Mr. Hadfield, Mr. Wm. Parkin said that as a lay member of the society he had been much interested in all that he had seen, and especially was he pleased at the friendly feeling which the architectural profession in Sheffield exhibited. He did not suppose that in any of the local trades anyone would invite others in the same business to come and see his work. The motion was seconded by Mr. T. H. Waterhouse, J.P., supported by Mr. T. Winder and Mr. C. J. Innocent, and carried unanimously; and on the motion of Mr. E. M. Gibbs, seconded by Mr. E. Winder, jun., a vote of thanks was passed to the board of management of the hospital for throwing it open to the society.

* * *

Notice is published of an application to be made to Parliament for power to reconstruct the dock at Sutton Bridge, on the river Nene, South Lincolnshire, which was constructed 14 years ago at a cost of £170,000, and collapsed just as it was about to be opened, owing to a subsidence of the soil. It is believed that the dock can be restored for an expenditure of something like £40,000, and the money to be expended is paactically guaranteed.

The Hull Corporation are applying to the Board of Trade for a provisional order to enable them practically to relay or construct some eleven double lines of tramways in the borough. The corporation are desirous of obtaining authority to lease the undertaking either in part or in whole, and to confirm an existing agreement with the Hull Street Tramways Company for the purchase of their lines. The corporation also wish to reserve the right of using whatever power they think fit for propelling purposes.

Col. C. H. Luard, R.E., inspector for the Local Government Board, held an inquiry at Felixstowe Town Hall on Tuesday week into an application for sanction for a loan of £1,900, for the purchase and laying out of land as public pleasure grounds, and the provision of shelters, lavatories, &c., and seats by the Felixstowe and Walton Urban District Council. Mr. G. S. Horton, surveyor, explained the scheme.

Reopening services were held on Sunday in St. Luke's Church, Newcastle-on-Tyne, after the completion of extensive alterations. The chancel-floor has been raised, and the steps and tiling within the altar-rails laid with marble. An oak screen, the gift of an anonymous friend, has been erected, and the rough blocks in the chancel have been carved into figures of angels. A memorial window, the work of Mr. Baguley, has been put in. The decoration of the chancel and cleaning of the church has been done by Mr. Carr, of Northumberland-street, and the electric-lighting is by Messrs. Rowland Barnett and Co.

NOTES FROM PARIS.

THE village of Herblay, a short distance outside Paris, is energetically continuing its legal struggle with the Parisian municipality. This lawsuit, which has been going on for some time, arose from the fact that in 1891 the town of Paris forcibly concluded the expropriation of a large surface of land, the property of the commune of Herblay, for the purpose of constructing thereon the collector and works necessary to receive a portion of the drainage matter coming from Paris. The inhabitants of the village and neighbourhood protested very strongly at the time against the utilisation of their land for such a purpose; but at length submitted on the condition that a considerable indemnity be paid them by the town of Paris. This indemnity, amounting to about £5,000, has never been paid, and the inhabitants of Herblay are now very indignant at the insult of being poisoned gratuitously and without indemnity, added to the injury of having their lands spoiled. The court of Versailles has just decided the case in favour of Herblay; but the contending parties are once again sent back before the jury of expropriation. The village council expects to now secure an indemnity of several millions of francs. The jury will, however, meet in a few days, and we shall learn the result of the fight between a small and daring village and its capital city.

The Paris municipality is, however, not yet near the end of its troubles occasioned by the drainage question and the new system of *tout à l'egout*. The little town of Bougival, on the banks of the Seine a small distance below Paris, has the intention of bringing up the question of the responsibility of its capital in the courts of law, its claims being the injury and prejudice caused to the town by the disagreeable and unhealthy odours rising from the river Seine, into which a considerable portion of the drainage of Paris is sent, causing the desertion of the many visitors accustomed to pass their summer at Bougival, and a consequent diminution of the business of the inhabitants. Several environing communes have the intention of following the example of the larger town. The cause of the prejudice coming, however, from the Seine itself, the lawsuit would first have to be brought against the State, the proprietor of the river; the State, however, if the case went against it, would in its turn attack the town of Paris. This being so, it is probable that the matter will last for two or three years, when it is hoped that the important drainage work now being actively undertaken by MM. Bechmann and Launay, chief engineers of the town of Paris, will be completed, and as then no drainage will be suffered to enter the river, the law case will be abandoned, for its reason will no longer exist.

The question of supplying Paris with water from the Lake Leman, on the Swiss frontier, a scheme explained in recent notes, appears to be likely to receive serious attention. A credit of funds sufficient for the expenses of the preliminary study of the means of supplying the city with about 250 million gallons of water per day has been voted, and proper investigations regarding the purity and fitness of the water of Lake Leman for drinking purposes will at once be made.

The chief object of the interesting artistic presents recently made to the town of Paris by the Czar of Russia is a magnificent vase, roughly valued at £10,000, and now installed in the Salle des Cariatides of the Hotel de Ville. This vase, about 10ft. high, and weighing about 8 tons, was entirely manufactured at the Imperial stone-cutting works at Peterhof. The upper portion, in the form of an amphora, is entirely of green jasper, the support being of red jasper; the pedestal, of Siberian stone, forms an octagon. On each side of the vase, two small bronze figures represent the French Republic, with Phrygian bonnet, and Russia, with the diadem head covering. The inscription, "Cronstadt - Toulon," 1891-93," separates the French and Russian escutcheons. The sculptured portion is the work of the Russian artist Tchijoff; the *ensemble* of the vase is treated in a soberly, elegant style, being at the same time very effective.

The first premium of £280 in the competition for the reconstruction of the Cour des Comptes has been carried off by M. Moyaux, General Inspector of Civic Buildings, the second of £200 by M. Blavette, and the third of £120 by M. Maridud. The assessor, M. Guadet, Government architect, explaining the reasons of the jury in its choice of the plans and designs submitted by M. Moyaux, said that this scheme appeared the one which held the closest to the programme demanded, the design being as simple as possible, and completely respecting the line of the original monument on Quai d'Orsay. The original façades are maintained, and no modification is proposed, the idea of the premiated architect being simply to restore a monument of undoubted artistic value. It is now hoped that the new building will be completed in time for the Exposition of 1900.

At a recent meeting of the higher committee of the 1900 Exposition, the question was entered into regarding the programme of the competition which is to take place for the construction of the two important palaces to be erected in the Champs Elysées. Much discussion arose as to whether these two buildings should form the object of a single competition, or whether it would be better to arrange a separate competition for each of the buildings. M. Bouvard, chief director of the Exposition, proposed that the most practical manner of settling the question was to invite architects to take their chance of sending in designs for either of the two palaces separately, or for both united in one scheme. In the former case, however, they should include a plan showing their ideas for the position of the building they do not compete for. It seems, however, doubtful if this system of competition will prove satisfactory, and will not give rise to unexpected annoyances and discussions during the selection of the designs. The resignation of the late Ministry has somewhat delayed the necessary ratification of the Exposition scheme, but it is hoped that the matter will very shortly be brought before Parliament and the whole scheme passed, when the programme will at once be issued and three months allowed for the preparation of the plans and designs.

The financial portion of the Exposition is advancing in a very successful manner, for very nearly the double of the proposed funds has already been found. Forty-six financial schemes were submitted to the committee; none of these, however, have been adopted, but several of the ideas presented were borrowed from them as being worthy of study. The funds proposed as necessary for the proper preparation and working of the whole scheme amounted to four millions sterling. Of this amount nearly two and a half millions were to be found and provided by private enterprise; the remaining one and a half millions to be provided half by the State and half by the town of Paris. The system to be followed will be similar to that which proved very successful in 1889, the issue of bonds including in their value a certain number of entrance tickets. Five of the principal banking houses promise to negotiate this issue, and offer a certain guarantee in return for a commission of £200,000 allowed to them for their services and the expenses necessary for the issuing of the bonds to the public. The two and a half millions to be provided by the organising body of the Exposition have, therefore, been divided into 3,250 parts of about £800 each, and offered not only to the above banking houses, but also to the various chambers of commerce, private bankers, and merchants. The idea has been most successful, for it has just been announced that subscribers for nearly 6,000 parts have been found, nearly doubling the first proposed issue of 3,250 parts. The funds necessary for the Exposition are therefore more than assured; the ratification by Parliament is the only thing now wanted. The owners of the bonds will enjoy special advantages, not only the chances which they will have in the numerous lotteries, but they will also profit by the rebate of 25 per cent. on the rents and moneys paid for grants of land and right to erect theatres, concert-hall, &c., in the Exposition grounds, as well as important reductions of the railway tariffs for the carriage of materials or exhibits to the Champ de Mars. The whole scheme of the 1900 Exposition appears, therefore, to be on a fair road; the great drawback to its thorough success, however, is the metropolitan railway, which, it was hoped, would be completed as regards a large portion in time for 1900. This matter is not at all an easy one to decide; the hesitation of the various railway companies, the indecision with regard to which scheme should be adopted, and the heated but lengthy controversy on the subject, make it more than possible that the end of this century will see Paris as denuded of its much wanted metropolitan railway as it is to-day.

M. Charles Garnier, the distinguished architect of the Paris Opera House, who was some time ago strongly opposed to the scheme of the Exposition of 1900 and the proposed modifications to the existing buildings and grounds of the Champs Elysées, has now completely changed his opinion, and writes in to-day's *Figaro* a very interesting but somewhat satirical article, giving his reasons for his change of ideas, and urging the directors of the Exposition scheme to do their utmost to push forward the whole undertaking. The conversion of such a well-known architect will probably bring others in their turn to look with more favouring eyes on the work of the proposed international fête.

The interesting historical Château d'Amboise, belonging to the late Comte de Paris, has been bought by the Duc d'Aumale, who proposes to devote this old dwelling of Royalty into a "maison de retraite" for the veterans of the African army.

The monument erected to the memory of the late well-known writer and dramatist Emile Augier, was unveiled on the 16th inst. by the Minister of Public Instruction. Placed on the square in front of the Odeon Theatre, it consists of a porphyry column surmounted by a bronze bust of the late author. A young girl personifying Comedy draws the attention of a second figure representing the "Aventurière," the heroine of the *chef d'œuvre* of Augier, to the name of the dramatist engraven on the column. On the other side of the column is the figure of a child, holding the whip of satire in one hand and in the other a mask. The little monument is simple in style, but leaves an exceedingly good impression. A touching speech was made by M. Jerome, who also read the speech which had been prepared by the late musician Gounod, who originated the subscription for this monument, and who had hoped to speak the praises of his best and oldest friend at its unveiling, if death had not been premature in claiming him before the opportunity had come.

The directors of the Louvre shops are again opening a competition to all comers for the following subjects: a woven and painted panel of wall-hanging, and a decorative scheme for the electric-lighting of a dining-room. Three prizes of £60, £40, and £20 will be awarded, and several gold and silver medals.

The directors of the daily paper the *Figaro*, who lately organised and decided a competition for the construction of new premises and salle de depâches in the Rue Drouot, evidently intend to provide for themselves a strikingly original building for they have just invited all manufacturers who may feel interested to submit ideas for the decoration, heating, lighting, furnishing, &c., of the proposed new building, with all the latest improvements and materials which the development of modern building industries and decoration might suggest. It is certain that at this moment —in Paris especially—there is a great call for all that is original and decorative for the exterior and interior installation of public establishments, the result being a very effective, but sometimes gaudy, medley of all kinds of decorative and constructional materials produced by the inventive genius of the present age. The transformation of the cafés into brasseries, now quite à la mode, which is taking place in the principal streets of Paris, is an example of this, where the use of enamelled and decorated glass, ceramic ware, stucco, and all kinds of objects in various metals for capitals, electric-light brackets, cornices, &c., including large surfaces of walls and ceilings in glass and enamel mosaic work, is rapidly influencing the architecture of this sort of building, and producing a number of heterogeneous, but sometimes not unpleasing styles, which will certainly later on influence the construction and style of other class of buildings.

The service of Beaux-Arts has at length decided to go on with the work of completing the fine Daru staircase, at the Louvre. The work consists in replacing the old steps by new ones of fine marble, with the addition of an artistic wrought-iron balustrading, and the completion of the interesting mosaic work of the second dome. The new architect of the Louvre Palace is M. Paul Blondel, an old "Grand Prix de Rome."

The report of the committee appointed to inquire into the causes which led to the bursting of the Bouzey reservoir dam, which, it will be remembered, caused so much disaster and loss of life on April 27 last, has been for some little time before the Parliamentary Commission; but has since a few days only been made public. According to this report the real cause of the giving way of the dam was the extra head of water, amounting to about 7ft., which had been allowed to enter the reservoir, and which had not been foreseen in the original calculations made when constructing the dam. This surplus head of water, combined with the numerous fissures which had been neglected or badly repaired, and possibly other hidden fissures caused by variations in the temperature, were sufficient to have allowed the sudden dislocation of the dam at any given moment. It is probable that the fissures themselves might in any case have caused the giving way of a small portion of the embankment; the additional head of water, combined with these, was enough to produce the dislocation of the dam along a large portion of its length. The question of responsibilities seems rather to have been left a matter for further discussion, the committee of inquiry appearing not willing to take upon itself the duty of condemning its comrades of the Ponts and Chaussées.

The Savoyarde, the new great bell of the church of the Sacré Cœur, was baptised with great ceremony yesterday, and given the name of Françoise Marguerite du Sacré Cœur. The bell was clothed with a drapery of magnificent lacework, worth about £3,000, the gift of the Countess de Boigne, the godmother elect. At the close of the ceremony the bell was rung, the sound being, however, very disappointing, and not at all answering to the high praises which had been made of its power of sound and tone. At the present moment the bell is suspended at a height of 20ft. only, on temporary scaffolding; when placed at its destined elevation of a little over 100ft. in the bell-tower, which is at present being constructed to receive it, the opportunity of proving its real strength of sound and tone will be given.

It has been decided not to repair the damage done to the façade of the Montparnasse terminus station by the fortunately rare accident which occurred a few weeks ago, when a runaway passenger train flung itself through the front of the building into the street below. The State has decided to buy the railway line from Paris to Versailles on the left bank of the Seine, and will make the Montparnasse station the terminal point of the line from Bordeaux to Paris. The existing station will be demolished, and replaced by an immense monumental terminus station, with important staircases and carriage inclines leading to the upper level.

ARTHUR VYE PARMINTER.

Paris, Nov. 21.

◆

SANITARY SPECIALITIES.

WE have received a new illustrated catalogue of sanitary specialities manufactured by the well-known firm of Messrs. J. Duckett and Son, Ltd., of Burnley, Lancashire. This firm's excellent automatic slop-water closet is a speciality which has already received deserved attention from sanitary experts and the profession. We have already in these pages drawn our readers' notice to the valuable points of Duckett's patent automatic slop-water closet, having seen it in operation. We can speak of its simplicity of construction, its powerful flush, and its noncorrodible parts. Arrangement A illustrated on p. 8 shows this apparatus applied to an ordinary house-drain, taking the closet and yard and sink discharges. The pivoted tipper, to flush three gallons, placed under the dishstone of yard, flushes the house-drain as well as closets. The yard-gully is dispensed with as a source of nuisance. The apparatus is made of salt-glazed earthenware. The tipper, hinged on brass axles, with rubber buffer, tilts its contents of slop-water when full, which flushes the drain and closet-trap. Another arrangement, B, shows the apparatus applied to the drain when the closets are a long way from the slop-stone sink. In this case the slop water is collected near the closet, the tipper forming a part of the pan, and discharges with great force into the annular basin and trap. The inlet pipes from yard trap to tipper, the siphon trap under closet, and outlet are all shown in plan and section, so that the mode of fixing the apparatus is clearly seen, and directions and levels for fixing are given. Duckett's automatic tippers for flushing are made of all sizes, even for sewers, from 3 to 100 gallons; sections of these are given, with dimensions of chambers, inlets, and outlets. Arrangement "C" shows the same principle applied to multiple closets, by which a succession of pedestal closets can be flushed from a tipper at one end receiving the slop-stone water. The patent "latrines or trough-closet" arrangement is well adapted for schools, factories, &c., where the closets are in long rows. These are flushed from Duckett's patent flushing tank, in which a tipper works. All these arrangements are clearly illustrated by plans and sections drawn to a large scale. Illustrations of the firm's automatic w.c. for mills and workshops, patent pedestals, self-cleansing channel gully which prevents splashing, street gullies, &c., are shown. Wherever slop water can be collected this system of flushing closets and drains has many advantages over clean-water flushing.

◆

BOOKS RECEIVED.

The Engineering Magazine, October (London: George Tucker, Salisbury-court, E.C.), contains an interesting and illustrated article on the "Canadian Lumber Industry," by T. S. Robertson, full of statistical and useful information. Canada's reputation rests mainly on its white pine of the province of Ontario. The vast pine resources of the Ottawa valley can clearly be gathered from the fact that the cut of white pine and Norway pine lumber in this province amounts to about 700,000,000ft. a year. Several excellent photo. blocks illustrate this district—such as a log jam on the Nashwaak River, drawing and piling logs, lumber ready for shipment, loading lumber, shipping, lumber yards, Ottawa, &c. We read, "The question has been raised lately whether dressed lumber, which is exempt from duty, includes flooring and other lumber that is matched and grooved. The Board of Appraisers of the United States has ruled against this rendering, and if sustained it will be a barrier to the establishment of planing-mills in Canada"; but it is thought that free lumber has come to stay. Besides the tall pines of Ontario, the British Columbia red cedar trees are much admired. And the article by G. Phené Spiers on "Architectural Students' Work Abroad" gives some interesting facts regarding the different methods of work pursued by those two great leaders of Gothic—William Burges and Geo. Edmund Street.——*The Law of Building and Engineering Contracts*, by ALFRED A. HUDSON, of the Inner Temple, Barrister-at-Law. Second Edition, in two vols. (London: Waterlow and Sons, Ltd., and Stevens and Haynes).—This edition is a very comprehensive exposition of the law of building, engineering, and ship-building contracts, and of the duties and liabilities of engineers, architects, and others. It is much enlarged. The architect and engineer will find in these two portly volumes an epitome of the law of building contracts, with a list of cases and precedents. The authority of architects and engineers, their powers as general agents in various points, rights of builder, &c., are fully discussed in the second chapter; their duties and liabilities, charges, bills of quantities, tenders, contracts with public bodies, certificates, extras, &c., are treated with considerable fulness. The illustrations, printed in small type after the exposition of law in every case, are very useful, and the table of cases and references are most useful and complete. The classification adopted is perhaps a trifle too elaborate and bewildering. As a textbook of the law of contracts we can safely recommend this work, which we have tested in some points.——*Practical Masonry*, by WILLIAM R. PURCHASE, with lithographic plates (London: Crosby Lockwood and Son), is a practical guide to the art of stone-cutting, intended for students of masonry in the workshop and building. The author, who has been an operative mason, and is building inspector to the town of Hove, treats his subject in a concise and practical manner, each branch being illustrated by lithographic diagrams to a readable scale. After a section on tools and appliances, we have practical expositions of arches and joints, forming plane and winding surfaces, dressing stones, working cornices and shafts, staircases, arches circular on plan, skewbacks, cylindrical vaults, domes, groined vaulting, tracery, and mouldings. The method of developing winding stairs, the quoin and wall ends and working of the winder is explained and illustrated by examples. Several plates illustrate the mode of setting out domes and pendentives, and the section on groined vaulting, a rather puzzling branch of masonry, will be found to explain the various steps of making the mould and working the vault of a quarter of the space intended to be vaulted, the other portions being repeats of the process. The setting out and working of all useful building problems in masonry are clearly described. There are no unnecessary verbiage or geometrical disquisitions which render the ordinary treatises so obscure to beginners, who know little of projection, only so much of it being presumed as is necessary to the cases treated.

◆

OBITUARY.

THE death is announced of Mr. WILLIAM WATHERSTON, builder, late of the firm of Messrs. John Watherston and Sons, Edinburgh. He was a man of great business capacity, and was very successful in speculative building, one of his most conspicuous undertakings being the erection of a network of streets on the Drumsheugh estate at the west end of the city. The deceased took a keen interest in his workmen, and some years ago he gave, as a benefaction to the Merchant Company, a sum of £40,000 for the payment of £12 each to masons unfit for work, and at the present time there are upwards of a hundred recipients on this fund. Mr. Watherston, who died on Friday last at his residence in Rothesay-place, Edinburgh, retired from business four years ago.

◆

CHIPS.

A new church is being built on Lundy Island from designs by Mr. Charles Pinn, senior, of Exeter. It is Decorated Gothic in style, is being built of local granite, with Doulting stone dressings, and will have a tower 70ft. high.

While workmen were engaged in building a four-storied tenement in Garngad-road, Glasgow, on Monday, a steam boiler and crane erected on a high scaffold collapsed owing to the snapping of the jib of the crane, and fell into the street. Hugh M'Cready, who was in charge of the crane, and James Thompson, a lad, were killed, while Hugh Taylor, the foreman of the works, and Hugh Docherty, a workman, received serious injuries.

An exhibition of Spanish art will be held at the New Gallery from next December to April, 1896. The collection will illustrate the arts of Spain from early Mediæval times, including Moorish art of the Peninsula to the present day. The examples will include the following arts:—Painting, sculpture, books, goldsmiths' work, metal-work, pottery, textiles and embroidery, and furniture.

New corporation baths are about to be built in Monson-road, Tunbridge Wells. The façade will be of red bricks with terracotta dressings, and is three stories in height. The swimming-pool will measure 90ft. by 35ft., is to be paved with white glazed tiles, and will be surrounded with three tiers of galleries carried round three sides. There are also suites of private baths, twelve in all. Mr. T. W. Mellor, the borough engineer, has prepared the plans, and the estimated outlay is £7,200.

An organ was opened on Saturday at St. Cross Church, Bangor, an edifice recently built at the cost of Lord Penrhyn.

On Wednesday week Colonel Luard, C.E., Local Government Board inspector, attended at the town hall, Ipswich, to hold an inquiry relative to the borrowing of £6,500 for the purchase of a further portion of Christchurch Park and the erection of shelters and conveniences. Mr. E. Buckham, borough surveyor, explained the plans.

At the annual meeting of the Glasgow Philosophical Society Mr. T. L. Watson was re-elected president of the architectural section.

The parish church of Groombridge was reopened last week after restoration. The works have included the substitution of a tiled roof for one of slates, the interior being divided into panels by oak purlins, and the restoration of the masonry. Mr. Warren was the architect, and the contractors were Messrs. Sumner and Sands, of Groombridge.

At the City Guildhall yesterday (Thursday) afternoon the freedom and livery of the Turners' Company were presented to Mr. J. Wolfe Barry, C.B., in recognition of his work as engineer of the Tower Bridge.

A tilting helmet, of iron studded with copper, has been discovered during some repairs at Tudeley Church. It probably hung over the fine tomb of George Fane, of Badsell, who died in 1571. It will be placed at the disposal of Lord Falmouth, the present representative of the Fanes.

On Saturday Earl Beauchamp laid the foundation-stone of a new church in Frank-street, Highgate, near Birmingham, dedicated to St. Patrick. It is proposed at present to erect a building providing accommodation for about 690 worshippers, at a cost of £3,200, and eventually to add a chancel and two vestries, which will provide accommodation for a total of 720 worshippers. Part of the present temporary church will be converted into a girls' school. The contract for the building has been intrusted to Messrs. Barnsley and Son, of Birmingham, and the architect is Mr. J. L. Pearson, R.A.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to The Strand Newspaper Company, Limited.

TERMS OF SUBSCRIPTION.

One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India, £1 6s. 0d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front-page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No Front-page or Paragraph Advertisement inserted for less than 5s.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page Advertisements and alterations in serial advertisements must reach the office by Tuesday morning to secure insertion.

Situations.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., LI., LIII., LIV., LVIII., LIX., LX., LXI., LXII., LXIII., LXIV., and LXV. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Received.—F. Yardley.—Quarryman.—C. M. and Co.—J. E. Wilmott.—F. R.—C. W. J.

Correspondence.

FREE GRATIS FOR NOTHING!

To the Editor of the Building News.

To Architects and Builders.—Woking, Surrey.—The committee of the Woking, Horsell, and District Conservative Club Company, Limited, desire to receive Plans for the erection of Club premises on land in Commercial-road, Woking (near the site for the new Municipal Buildings), having 60ft. frontage, and a depth of about 180ft. Plans will be inspected by the *committee only*, and returned. An estimate of the probable cost of such building should accompany the Plans. No Plan or Estimate will necessarily be accepted. The cost of the building is to be about £1,500. No Entertainment Hall with Stage required. Send Plans and Estimates to R. Brettell, Solicitor, Chertsey.

Sir,—The above advertisement is from the *Surrey Advertiser* of Saturday last. Pity it did not appear in the Building News, so that it would give some of your young architectural readers an opportunity of competing, as there are already in Woking, and within a radius of six miles, 36 architects, exclusive of builders, who are prepared to furnish plans and estimates, some free of charge, providing they get the job.—I am, &c.,

Guildford, Nov. 23. A.

TECHNICAL TERMS.

Sir,—May I add an "item" or two to Mr. Gavin Burns's corrections (in a recent Building News) of "English as she is wrote" by the profession?

Sailing, used of a course of bricks, is not derived from any supposed resemblance to the course of a ship moved by wind, but is jerry-builder for *salient*, springing, jutting, or projecting. Some people, having wit enough to see that *sailing* is nonsense, without being aware of its origin, try to improve it by making it *oversailing*; but this leaves us still at sea in the matter. As the correct word is "not understanded of the vulgar," it would be much better to say *projecting*—a word which every one knows.

Baulk, used of large timber, I take to be *bulk* mispronounced, and then spelt accordingly.

Furring has no connection with the coat of any animal; but merely serves to show the inexpressiveness of its original—*firring*, which is intended to mean blocking up with fir, and is apparently used on the *lucus a non lucendo* principle, for the work is usually done with pine, a distinct wood. (Fir is the white wood, the yellow wood is pine, and no trade ignorance or custom can justify confusion of them, any more than of oak with ash, or of beef with red herring.) *Filleting* or *blocking* is the best term to use.

Purlin is an apparent perversion of *perline*—through-line.

Wreathed—used of curved rails and the like—is not due to any supposed resemblance of the bent wood to a garland; but, doubtless, stands for *writhed*—twisted.

Lintol for *lintel*, *soffite* for *soffit*, *rabbit* for *rebate*, *molding* for *moulding*, and even *corked* for *caulked*—are not infrequent errors.—I am, &c.,

Enfield, Nov. 25. W. Simmons.

CHIPS.

New Y.M.C.A. buildings are in course of erection at Kingswood, near Bristol. Mr. Rogers is the contractor.

On Saturday the East and West Molesey sewerage works were formally opened. The scheme has cost £36,000.

The scheme for a light railway from Bideford Quay, through Kennorth to Westward Ho! and thence to Appledore, has taken definite shape. The capital will be from £15,000 to £20,000. Mr. Jervis, M.I.C.E., is the engineer, and Parliamentary powers are being sought.

The Chief Secretary for Ireland has sanctioned the completion of a jubilee road, which is intended to connect Mulcranny with Belmullet in the south-western district of Connemara. The northern section was made a part of the relief works carried out this year, and it is now intended to complete the southern section, which will form a good level road and shorten the distance between the two places by seven miles.

The Lancashire Standing Joint Committee for the County Constabulary have appointed Mr. H. Littler, of Manchester, son of Mr. Henry Littler, architect of many county buildings, as permanent architect for buildings required for the force. The salary is £600 per annum, but there is no pension or retiring allowance. Originally there were 90 applicants.

The school board for Farnham have just completed a new board school at Badshot Lea. It contains places for 150 boys and girls and 118 infants, and has cost £4,060. Mr. H. Paxton Watson was the architect, and Messrs. Kemp and Son were the builders. The new buildings are of red brick and rough cast; the desks and interior woodwork are stained and varnished. The principal apartment is for a mixed school, attached to which are two classrooms. The infants' section contains two rooms. The master's residence is detached.

In Dublin, the Southern Tramways Company have nearly completed an installation of eight miles of double track from Haddington-road, Dublin, through Blackrock and Kingstown to Dalkey. Electrical traction will be employed upon the system.

The Leeds Sanitary Committee were informed on Friday that the Local Government Board had given sanction for the corporation to borrow £63,000 for the purpose of erecting new fever hospitals upon the Manston estate. The accommodation for patients in the existing fever hospitals in that city is inadequate even to meet present requirements, and patients have been unable to obtain admission.

An organ, built by Mr. J. J. Binns, of Bramley, Leeds, has been opened this week at St. Andrew's parish church, Newcastle-on-Tyne.

The annual prize distribution in connection with the Westminster Technical Institute took place on Friday evening at Westminster Town Hall. Mr. Burdett-Coutts, M.P., presided, and stated that the students had gained, in public competition, two silver medals and one bronze medal, six money prizes (amounting to £22), a Queen's prize, 38 first-class and 116 second and third-class certificates, or a total of 164 distinctions, as compared with 133 for the preceding session.

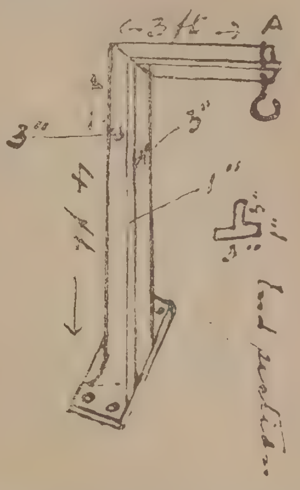
A new building for the secondary department of Niddrie-road School, Portobello, Edinburgh, was formally opened on Friday. The new portion forms one large room, but by means of sliding partitions it can be divided into two rooms. Mr. Robert Wilson, of Edinburgh, was the architect.

Intercommunication.

QUESTIONS.

[11457.]—**Slate Hanging.**—There is a building here (Torquay) which is slate-hung externally, and the slates are hung with fragments of clay-pipe stems. Have any of your readers ever heard of this method of hanging slates before? I might add that the building would come under the head of "antient."—C. Sewell Appleton.

[11458.]—**Malleable Iron.**—Would a malleable casting as sketch bear half-ton on hook A, to be drawn up by pulley blocks, or had I better have wrought-iron, and what difference in the price?—H. J. W.



REPLIES.

[11452.]—**Colour on Parchment.**—It will be found by experience that parchment varies; some skins will take colour very well. Try dusting the skin with finely-powdered alum, wipe with a soft cloth, and use ox-gall (sold in pots) with the colour.—H. L.

[11453.]—**Prices, &c.**—(1) The price of brickwork varies in London from £12 to £16 per rod, according to the quality of bricks used. Details would occupy more space than our Editor will allow. (2) In London and the home counties brickwork is always given in rods, reduced to 1½ brick in thickness; but when sending bills of quantities to the provinces brickwork is given in yards super. of one brick thick. (3) Timber is always given in feet cube, except very small, rough fillets, which are in feet run, and the size stated. (4) Builders naturally object to any departure from established customs, and local methods should be considered.—H. L.

[11454.]—**Skittle Alley.**—I cannot put my hand on notes; hope to answer fully and practically next week.—H. L.

[11456.]—**Extras.**—"J. W. C." can charge 5 per cent. on contract, and extras also 2½ per cent. on omissions; but the latter charge is not made unless the omissions are of considerable amount.—H. L.

St. Robert's Roman Catholic church, Morpeth, built in 1849-50 from plans by the late Mr. T. Gibson, of Newcastle, was reopened on Wednesday week, after it had been for three months in the hands of Messrs. Atkinson Brothers, artists in stained glass and church decorators, New Bridge-street, Newcastle, who have designed and executed very elaborate decorative work in its interior.

A syndicate has been formed to carry out, subject to the approval of Parliament in the ensuing session, various improvements in the James-street area of the parish of St. Mary Abbott's, Kensington. The scheme is to be subject to agreements between the "undertakers" and the vestry, and will provide for the widening of Charles-street and the western end of St. Alban's-road, and the construction of new streets between Kensington-square and St. Alban's-road, and between Kensington-square and Kensington-court. The "undertakers" are to be authorised to hold and build upon, sell, or let any lands, buildings, or property acquired by them under the Act.

St. Peter's Church, Derby, the most ancient church in the town, is about to be repaired and enlarged. Mr. W. H. Lloyd, of Birmingham, architect to the church committee, called attention to the rapid deterioration of the fabric on all sides, and since then experts have advised the removal of the tower because of its dangerous condition. It has, therefore, been determined to demolish the tower and to erect one in a different position. The church is also to be extended. The total cost is estimated at £5,000.

An ordinance has been passed in San Francisco, limiting the height of buildings to 130ft., where they front on streets 100ft. or more in width, and to 100ft. where they front on streets less than 100ft. wide, and requiring that all structures over 80ft. in height shall be of fireproof materials throughout.

Legal.

BREACHES OF COVENANT.

THE question whether a lessor has acquiesced in a breach of covenant in the lease so as to bar his remedy by forfeiture is one that frequently depends upon the facts that can be brought forward in support of that theory. Such acquiescences must, indeed, always be a matter of fact to a great extent; but, all the same, there are certain principles of law applicable, by which in practice we should be guided. In the recent case of "Ashcombe v. Mitchell" (*Times*, Oct. 31) the whole matter was discussed by the Court of Appeal. There the original lease had been granted in 1843 for 99 years. This contained a covenant by the lessee that no goods or other articles should be hung out or exposed for sale or other purposes in front of the shop windows or outside the premises. Such a covenant is frequently inserted for the very purpose of keeping up the quality of shop property, and preventing it from falling in value as far as is possible. It appeared that in 1844 the original lessee granted an underlease to the defendants in this action for 80 years with the same covenant. He in his turn, in 1864, sub-leased the premises to a Mr. Lloyd for 21 years, and omitted to insert this clause. In 1867 this sub-lease was assigned to the other defendant, Field, together with the drapers' business he bought. Now, the plaintiff brought his action against the under-lessee and his sub-lessee, claiming a forfeiture on the ground of a breach of the above covenant, and so to recover possession of the premises.

The defence was that from 1867 down to 1884 this covenant had been broken, and goods had been hung outside the shop. It was said that this had been done with the knowledge, and therefore with the acquiescence, of the plaintiff or his agents; and thus that the law would pronounce from that fact a release of the covenant in question. Mr. Justice Charles, who tried the case, held that as the only evidence before him was that the surveyor of the estate and the receiver of the rents knew of the goods being so exposed for sale, he could not hold that this was in law the knowledge of the lessor, and so he gave judgment for the forfeiture. The Court of Appeal has now confirmed this ruling, on the ground that there was no evidence of acquiescence by the plaintiff, or by any person whose knowledge would be binding upon the plaintiff, and that the covenant had, in fact, been broken for 17 years was not conclusive, and as the defendants had no license to break this covenant, the lessor was entitled to his judgment.

FRED. WETHERFIELD, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

NOTE.—All questions for reply in this column must be headed "BUILDING NEWS," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

CONTRACT.—BREACH.—DAMAGES.—WORK.—You have a claim for something. It would be as well to sue for damages for breach of contract, or, in the alternative, for the value of the work you have done.

Q.E.D.—CONTRACTORS.—LOSS OF TIME.—They would probably be held liable if the facts could be proved; but all would depend upon the evidence. You should claim against owner and contractor as liable in the alternative.

PROCRASTINATION. — DEBT. — LIMITATIONS. — The six years would begin to run from date when rent was due—i.e., from final certificate. But new committee could not as individuals be made liable for debts of predecessors. Accept payment of later account without prejudice to earlier claim.

ONE IN DOUBT.—PAVING. — APPORTIONMENT. — There should be a reasonable adjustment, and the question could be raised by an appeal. The Athletic Company are chargeable as adjoining owners. It is a case for a local solicitor.

PUZZLED.—AGREEMENT.—SERVICE.—NOTICE.— Even if the letter is to be taken as an agreement, it seems clear that in his failing to give the security for his fidelity you could terminate at once. Therefore, I consider the week's notice is quite enough.

◆

The font of Canterbury Cathedral has, after a lapse of 108 years, been replaced in its original position in the nave of the cathedral. Presented by Bishop Warner, of Rochester, in 1636, it was, later in the century, pulled down and scattered by the Puritans. Its fragments were, however, recovered by Mr. Somner, who returned them to the Dean and Chapter, and at the restoration of Charles II. it was re-erected in the nave. In 1787 it was removed to what is now known as the baptistery of the cathedral, a space which is henceforward to be devoted to the use of the lay clerks as a vestry.

LEGAL INTELLIGENCE.

ARCHITECT AND CLIENT.—WM. BURROUGH HILL v. JOSEPH KAPHAM.—At the Southampton County-court on Nov. 19, a claim for £20 was heard, made by W. B. Hill, an architect and surveyor, of Southampton, for plans and specifications prepared for the defendant in connection with certain premises in St. Mary-street. There was a further claim of £2 2s. for tracing plans and forwarding the same for application to the urban sanitary authority. The case was heard by his Honour, Judge Leonard, on the 12th February last, but the Judge then held that the action of the plaintiff was premature, and gave judgment to defendant, without prejudice to other action. The plans had been prepared by Mr. Hill at the request of the defendant, who subsequently altered his mind, and now declined to pay for work done. The plans and specifications had involved an enormous amount of work, for which Mr. Hill had received no remuneration. Plaintiff, cross-examined, said that the plans were at first refused by the corporation, but he was willing to alter them to comply with the borough regulations. He never before had a client who refused to meet him. He could not alter the plans without defendant's consent. His Honour said that plaintiff had not carried out the original contract, and he must be non-suited without prejudice.

LONDON BUILDING ACT AND BEERHOUSES.—John Auley, a builder, of Dalston-lane, was summoned to Lambeth Police-court, on Tuesday, by Mr. Ellis Marsland, M.S.A., district surveyor, for failing to comply with a notice served upon him under the terms of the new Building Act of last year.—The defendant has been building the Boyton Arms Beer house, Boyton-road, Camberwell, and was alleged to have committed an irregularity in not making the passages, staircase, and means of approach to that portion of the premises used as a dwelling-house of fire-resisting materials. It appeared that the staircase had been made of wood. For the defence it was said that the public portion of the premises was separated from that set apart for domestic purposes by a fire-resisting wall, fitted with a fireproof door, and it was contended that as the staircase was contained within the dwelling-house, the Act did not require that it should be constructed of fireproof materials. Mr. Hopkins dismissed the summons, subject to the defendant undertaking to put a fireproof door at the bottom of the cellar steps.

◆

CHIPS.

Mr. R. G. Watt, of 77A, Victoria-street, Belfast, has taken into partnership Mr. F. H. Tulloch, who has been assisting him, and they will in future practise together as architects and engineers under the name of Graeme-Watt and Tulloch.

Mr. Onslow Ford, R.A., has been commissioned to execute the statue to be executed at Birmingham as a memorial of the late Rev. Dr. R. W. Dale.

The City and Waterloo Railway, which was commencdd eighteen months ago in the bed of the river south-west of Blackfriars Bridge, has reached as far as Wardrobe-chambers, Queen Victoria-street. It is anticipated that a junction will be effected with the proposed site of the Bank Station, in connection with the Central London Railway, by June next. The engineers are Messrs. W. R. Galbraith and J. H. Greathead, Mr. H. H. Dalrymple Hay being the resident engineer. Messrs. John Mowlem and Co. are the contractors, and are represented on the works by Mr. William Rowell.

The arbitrator (Mr. Robert Vigers, F.S.I.) appointed by the Home Secretary to hear matters in dispute regarding the Lincolnshire County Pauper Lunatic Asylum, at Bracebridge, near Lincoln, between the Kesteven County Council and the Grantham Town Council on the one hand, and the Lindsey and Holland County Councils, the Lincoln Town Council, and the Grimsby Town Council on the other hand, sat at Westminster on Friday.

Two additional free libraries are about to be built in Camberwell, to serve the requirements of the Nunhead and Dulwich districts respectively.

In a fresh appeal issued for subscriptions towards the completion of the Aberdeen University Buildings extension scheme, it is stated that the total subscriptions now amount to £103,462. The expenditure for sites, and the liabilities for buildings and fittings amount to £110,741, thus showing an excess of liabilities over subscriptions of £7,279. The revised statement of the probable cost of the remaining portion of the scheme is £33,000. A further sum of £40,000 is thus still needed for the works. Of this it is hoped Government may contribute £20,000, leaving £20,000, towards which Dr. Mitchell will contribute £6,000, reducing the sum still to be raised to £14,000.

The Wick Harbour Trustees have received a communication from the secretary of the Public Works Loan Board stating that a loan of £13,000 will be granted for further harbour improvement works.

WATER SUPPLY AND SANITARY MATTERS.

ARBROATH WATER SUPPLY. — The Arbroath Burgh Commissioners resolved on Friday to extend the underground water supply of the town by sinking a new well in the lands of Warslap, and connecting it by means of an adit passing through the water-bearing gravel bed, with the wells and pumping station at Nolt Loan. The adit connecting the wells will be about a quarter of a mile long. It was decided to engage the services of Mr. A. M'Culloch, of Messrs. A. and R. M'Culloch, C.E., Edinburgh, and M'Culloch and Jamieson, C.E.'s, Dundee, in advising the board in the carrying out of the work.

BIRMINGHAM WATER SUPPLY.—A meeting of the Birmingham City Council was held on Tuesday, in order to formally authorise the Water Committee to proceed with the promotion of a Bill in Parliament to confer upon them further powers in relation to the execution of the Welsh water scheme. The cost of the extension is estimated at £110,000. The principal matter with which the Bill deals is the provision of land for the deposit of soil, and the construction of a railway from Rubery to Frankley for the conveyance of materials required in the construction of the Frankley reservoir. The resolution giving the committee the necessary authority was carried without dissent.

BOLTON.—An adjourned inquiry into the application of the Bolton Corporation for powers to borrow £75,000 for the purposes of sewage treatment on land near Clifton Junction, was held at the Bolton Town Hall, on Friday, before Mr. R. Walton, C.E., an inspector of the Local Government Board. The Irwell Bank Spinning Company, Messrs. Champion and Co., of Farnworth, and Messrs. Fletcher, of Kersley Paper Mills, objected to the scheme proposed by the corporation on the ground that it would seriously interfere with their supply of water from the river, which in dry weather was now at times so limited as to stop their works for hours together. It was alleged that the corporation were entering upon a scheme which might land them in enormous claims for compensation from various individuals. The corporation, it was said, were prepared to accept the full responsibility with regard to possible claims for compensation. A number of witnesses were called in opposition to the scheme, and the inspector also inquired into an application of the corporation for permission to borrow £5,000 for technical school extensions and improvements.

DOUGLAS, ISLE OF MAN.—A committee of the Manx Legislature, which met at Douglas on Tuesday, practically agreed, as the result of several years' deliberation, and with the unanimous consent of the town commissioners, to a scheme of drainage of the whole town of Douglas, to cost £30,000. The scheme is that of Mr. Stevenson, civil engineer, Westminster.

STRATFORD-ON-AVON.—The successful completion of a work of sinking a new artesian well was commemorated at Stratford-on-Avon on Monday. For many years Messrs. Flower and Son, of the breweries there, had been dependent upon the local water supply for all requirements; but the water was excessively hard, and in dry seasons uncertain in quantity. This induced the firm, about a year ago, to call in experts to advise them as to the possibility of obtaining water from an independent artesian supply. Messrs. H. T. Brown and A. Timmins took the matter in hand, and, acting upon their advice, a 12in. well was made, and lined with special wrought-iron artesian-well tubes, $10\frac{1}{4}$in. bore, manufactured by Messrs. Lloyd, of Birmingham. These tubes were fixed to 311ft. The well was then continued, 10in. bore, to 636ft., the marl having been penetrated at 604ft., and the sandstone reached, and it early showed signs of being charged with water, as after boring 20ft. in it the water rose from 263ft., and began to run over to the surface to waste. The well was then cased with 9in. tubes, and continued 8in. diameter in the sandstone to the full depth of 804ft., when the overflow was 4,000 gallons per hour. The water rose into a high-level cistern at 56ft. above the ground surface. But as this quantity was insufficient, it was decided to put a pump-pendant in the borehole. The pump was $7\frac{1}{2}$in. bore, and fixed 150ft. below the surface. Worked by an 8N.H.P. high-pressure expansion engine, the water was lifted at the rate of 8,000 gallons per hour into the cistern before mentioned. The water has been analysed, and pronounced to be of great purity. The capital outlay has been £2,000.

◆

A new organ has been erected in the parish church of St. Mary, Handsworth, Staffordshire, at a cost of about £1,300. The builders are Messrs. Gray and Dawson, of Pratt-street, London. The great swell and pedal organs are placed in the north transept; the choir organ and console are in the chancel. The action is tubular pneumatic throughout, and the blowing is effected by hydraulic power.

STATUES, MEMORIALS, &c.

Winchester.—The 500th anniversary of the Foundation of Winchester College and of the inauguration of public school education in England will be permanently commemorated in a double form—firstly, by the completion of the unfinished chantry in Winchester Cathedral, in which rests the tomb of William of Wykeham; secondly, by the erection of some memorial buildings at Winchester College. It has been decided to leave untouched every bit of existing work in the founder's chantry; simply to place sculptured figures in the vacant niches of the altar screen. This work is now being carried out by Mr. G. Frampton, A.R.A., under the direction of Mr. J. T. Micklethwaite, F.S.A., of Westminster. The memorial buildings are rapidly rising. They are intended to cultivate and develop various wholesome interests which lie outside the ordinary school curriculum, including a love of natural history, "love of art and architecture," love of archæology, including especially the history of the college and city of Winchester. The architect is Mr. Basil Champneys. Towards the cost about £8,000 has already been subscribed.

CHIPS.

The district council of Llandudno adopted, on Monday, a report by their engineer, Mr. E. Paley Stephenson, recommending that a new 15in. main pipe be laid in four portions in four successive years, the first portion being from Caelum to Ddol Bridge to the summit of Croesau Hill, a distance of 5,444 yards.

At a general meeting of the Institute of Painters in Oil Colours, Piccadilly, held on Wednesday evening, Messrs. George W. Joy, W. Douglas Almond, and A. D. Peppercorn were elected members.

An exhibition of arts and crafts was opened on Tuesday in the Senate Hall of the Royal University of Dublin by the Lord Lieutenant of Ireland.

The second portion of the Coventry Park Estate, belonging to the Liberator Building Society, was sold on Tuesday at Winchester House, and realised £24,655. The first portion realised £69,415 last month. Since then Mr. Douglas Young, of 51, Coleman-street, has sold a portion by private treaty for £3,600, making a total realisation of £97,665. On Tuesday only two lots were unsold.

A receiving order has been granted in the case of Frederick Stephen Short, of Parkstone, Dorset, architect and surveyor.

The Peterhead Harbour trustees were officially informed on Monday that the Board of Trade had refused to sanction the modified suggestions of Sir A. M. Rendal, engineer for the Public Works Loan Commissioners, recommending the spending of £35,000 on the deepening of Port Henry Harbour and the improvement to the entrance to the North Harbour, but that the Board would adopt the original plan by Mr. Shield, engineer for the Harbour of Refuge, which entails an additional expenditure of £8,000. The trustees resolved to accept Mr. Shield's plan, and steps were taken to have a revised application for the loan made without delay.

The new board schools, Colwyn Bay, have been warmed and ventilated by means of Shorland's patent Manchester grates and vertical inlet tubes, the same being supplied by Messrs. E. H. Shorland and Brother, of Manchester.

In the case of George Hall, of Leicester, builder, the discharge from bankruptcy has been suspended for four months and fifteen days, ending March 2, 1896.

Mr. Andrew Wilson, son of Mr. Thomas Wilson, engineer, Coatbridge, and at present assistant gas-engineer in the Carlisle Gasworks, has been appointed gas manager for the city of Perth, at a salary of £300.

The Floods Committee of the Bristol City Council have decided to recommend the adoption of Mr. Yabbicom's scheme for dealing with the floods from the Boiling Wells and Cutler's Mills streams, the estimated cost being about £40,000. The decision comes, however, too late to permit of the promotion of the necessary Bill next session, so that at the earliest no action can be taken until 1897.

Arrangements are being rapidly completed for the formation of a Union Club for Edinburgh, and the buildings now occupied by the Albert Hotel, Hanover-street, in that city, and premises adjoining, have been secured for the purpose. Plans have been prepared by Messrs. Dunn and Findlay, architects, which show that, after the alterations have been carried out, the club will contain the usual accommodation of a high-class town club, including dining-rooms, smoking, reading, and billiard-rooms. Members' bedrooms will also be provided. It is estimated that the alterations will cost about £3,000. The committee of management hope that the premises will be ready for occupation by the beginning of April, 1896.

Our Office Table.

In an address on "The Use of the Supernatural in Art," given at St. George's Hall, Langham-place, on Sunday, Mr. T. Wyke Bayliss, P.R.S.B.A., said Art was like the great Angel in the Apocalypse, with the book in its hand of men's thoughts about men. He dealt with the supernatural in some well-known poems, maintaining that the representation of the celestial was legitimate in art. Among all races the agency of the supernatural was frequent both by painter and poet. The Greek sculpture in the Louvre, representing Eurydice being brought from Hades by Orpheus, led by Hermes, was a type of its use. The god would go back to Olympus and be forgotten, but the memory of the two parting at the mouth of Hades, from the essential humanity of it, would remain. Poetry was not so much a cry in our ears as a momentary stilling of the roar of the world; Art was a lifting of the veil. Art gave us a living sense of immortality. When it attempted to deal with the supernatural as something apart from us, it ceased to touch us, and became no more than a curious exercise of the imagination. He contrasted the way in which Milton and Dante used the supernatural, pointing out that the former has created in his great poem no human interest. The life of man was the central theme of art, and the use of the supernatural was only incidental to it. The difficulty was not to find the supernatural in art; it was to find art without the supernatural. Should they shut their eyes to the supernatural, most of the children's story-books would vanish; so would some of Shakespeare's finest plays. The classics would go, and with them the Greek art would disappear, and give place to that of Madame Tussaud's and the National Gallery, a storehouse of empty frames. Art would then indeed become blind.

The experimental boring beside the Bank of England, which was instituted to ascertain the character of the subsoil, in connection with the proposed Central Railway Station and subways, has now been completed. Made earth was found down to a depth of something over 13ft., then came a layer of gravel, then one of clay, then ballast, and at a depth of about 30ft. that good foundation and excellent material for working through—the London blue clay. Nothing of antiquarian interest was discovered in boring. The series of subways will be 15ft. wide, lined with white glazed tiles, and lighted at all hours of the day and night with electric lamps. Short flights of steps will lead to the level at which the booking-office, the staircases, and the four lifts of the railway are placed. Under the public subway another subway will exist, and into that will be collected all the pipes, mains, and telegraph, telephone, and electric-light wires, thus obviating any further need to break open the roads for repair. The station will resemble an island, which will be accessible from all sides. The Central London Railway will extend westwards beneath Cheapside, Newgate-street, and Oxford-street to Shepherd's Bush, and eastwards to Liverpool-street station. Messrs. Fowler, Baker, and Greathead are the joint engineers.

The time allowed by the Standing Orders of Parliament within which to give public notice of the introduction of private Bills for the ensuing Session expired on Wednesday. The total number of Bills now in course of preparation is 170, precisely the same as the number of Bills actually deposited last Session. Of these Bills 62 relate to railways, including electrical and light railways; 24 relate to gas and water undertakings; 37 are promoted by corporations, district councils, and other public bodies; 11 relate to tramway undertakings, including tramroads; five to piers and harbours; and three to dock companies. The remaining number is of a miscellaneous nature. Of the total number of Bills, 23 affect London and the suburbs, a number considerably below the average. These Bills include five promoted by the London County Council, one by the Corporation of London dealing with the subject of markets, three by the London water companies, and two Bills for the construction of new railways between London and South Wales and London and Watford, by way of Edgware. Other Bills affecting London and its suburbs are the Westminster Improvement Bill, Ealing and South Harrow Railway (Extensions) Bill, London Tramways Bill, Metropolitan Railway Bill, and the Metropolitan District Railway Bill, which proposes to connect the Underground Railway with the projected railway to South Wales. The Chester Corporation seek powers for the construction of a tidal dam and works in or across the river Dee and the dredging of the river near the proposed weir. The Midland Railway Bill contains provision for the construction a harbour in Morecambe Bay, and the making thereat of two breakwaters and a jetty.

In pursuance of the decision arrived at by the Government some months ago, formal notice has been given by the Commissioners of her Majesty's Works and Public Buildings that they will, next session, apply to Parliament for an Act to authorise them to acquire, by compulsory purchase or otherwise, certain lands, houses, and buildings within the area bounded on the north by Charles-street, on the east by Parliament-street, and on the south by Great George-street; also to stop up, remove, alter, or divert all or part of Charles-street, Parliament-street, King-street, Great George-street, Boars' Head-yard, Little Boars' Head-yard, Gardener's-lane, Delahay-street, and Delahay-mews, for the purpose of erecting public offices on the site of the thoroughfares mentioned.

The London County Council received and discussed on Tuesday the report of a special committee on reorganisation. The resignation of Mr. De La Hooke, the clerk, was received, and it was resolved to appoint as his successor a gentleman who should be required to devote all his time to the council, at a salary of £2,000 per annum. The debate was resumed on the adjourned report of the Works Committee, in which the actual cost of 89 completed works was set out as £297,621, whereas the final estimate for the same works was £298,294. The actual cost of 27 works completed and certified since March 31, 1895, was £119,166, whereas the final estimate was £122,561. The actual cost of the 62 works previously certified was £178,454, and the final estimate for the same £175,732. The report was adopted without a division.

The Surrey County Council have received a report from the highway committee stating that, in view of the large and increasing expenditure upon the main roads, and of the fact that some of these roads in respect of traffic could no longer be considered main roads, and in view also that a very large number of applications for assistance to district roads with very strong claims would involve a considerable additional outlay, the question should be deferred until the present outlay upon the main roads could be decreased as well by dismaining as by diminishing the cost thereof. It was their intention to consider more particularly which roads should be dismained, and to continue their investigation into the question of decreasing the present cost of maintenance. The committee further reported that they had employed Mr. A. T. Davis, county surveyor of Salop, to make an inspection of the Surrey main roads, and to report whether improved arrangements might not be made with the district councils, or whether the main roads might not be more efficiently and economically administered by the county council themselves. Mr. Davis's report had been received, and would be fully considered, and the committee had resolved to pay him 125 guineas for his services and report. The action of the committee was approved.

A banquet was given at Saddlers' Hall, on Wednesday night, by the Plumbers' Company, the Master, Sir Philip Magnus, presiding. In proposing "The Houses of Parliament," the Master observed that the Plumbers' Registration Bill was not a compulsory measure. Its object was to prevent unqualified practitioners from falsely stating that they were registered when they had not been registered by the Plumbers' Company. The demand for registration all over the country was very large. There were as many as 3,200 students receiving instruction in the scientific principles underlying the practice of plumbing. Only that week, in a letter from the Department of Public Instruction in Sydney, New South Wales, the superintendent asked whether colonial students who had passed the necessary examinations could obtain registration by the Plumbers' Company. The company regarded the movement as of national importance, and hoped to see the Bill passed next session. Lord Shand and Sir Walter Foster, M.P., replied. The other toasts included "The Municipal and County Authorities in Relation to the Public Health Work of the Plumber," given by Mr. W. H. Bishop, past master, and acknowledged by Sir T. Roe, M.P., and Mr. Beardwood, of Dublin. After dinner a conversazione was held, "that personal conversation among the guests might tend to advance the educational and sanitary objects" of the company. It was stated that the objects of the national registration of plumbers are to elevate, by education and registration, the status of the plumber's craft; to give every competent plumber a diploma, which would be recognised throughout the Empire; and to insure by these means the protection of the public health.

For some time past the corporation of Glasgow have been making various experiments with a view to selecting a better material for paving the streets than the present granite setts, but they have all proved failures. The latest trial was a tar-macadamised paving laid down in Gordon and Buchanan-streets. On Tuesday this was lifted, and the streets relaid with whinstone setts as a temporary expedient till the half-yearly paving season comes round in spring. Mr. White, the master of the works, reported on Tuesday that, next to granite, wood had been proved to be the best material for paving in Glasgow. Wood, however, would never last so long in Glasgow as in London, if the Scottish system of horse-shoeing were to prevail here.

At a recent meeting of the Paris Academy of Sciences, M. F. Osmond presented a memoir on the hardening of extra-hard steel, in which it is stated that there is a gradual increase of hardening with increase of carbon up to about 1·3 per cent., but beyond that percentage the steel becomes softer. A method of examining steel by scratching it with a sharp point and using the microscope is described, and it is stated that hard steels consist of two interpenetrating types, one much harder than the other. The statements may be useful to students, but they require much verification.

A practical test of the invention of Mr. G. R. Steward, C.E., of London, for the total abolition of smoke from chimney-stacks took place on Tuesday at the mills of Messrs. J. and R. Snodgrass, Washington-street, Glasgow. The door, which is the principal feature of the invention, is so constructed that the air, in passing through various passages in it, produces a baffle and an eddy, partially delaying the progress of the smoke towards the flue until its proper admixture with the air has taken place. Two other features included in the patent are only necessary when the draught is slight. During the trial on Tuesday the furnaces were stoked twice, the ordinary door being applied to the first stoking and the patent door to the second. In the first instance 12 minutes elapsed before black smoke ceased to be emitted from the stack, while in the latter case no smoke at all was emitted. Ten minutes after the patent door had been applied it was removed, and the ordinary door shut, with the result that black smoke at once made its appearance from the stack. The test, which was admittedly severe, appeared to be successful. The other advantages claimed for the iuvention—that of a saving in the consumption of coal and the maintenance of steam—could only be ascertained after further and more exhaustive tests.

The report of the committee of the Austrian Society of Engineers and Architects on arch tests, which appears in the *Zeitschrift* of the society, will be welcomed by those interested in the strength of brick and concrete arches. The report gives tests of floor arches with spans of 4ft. 4in., 8ft. 10in., and 13ft. 3·6in., representing several varieties of floor construction; besides the tests of bridges 75ft. span and 1—5 rise, a series of tests to determine the strength and elasticity of materials used in these arches, and a calculation based on the results. The conclusions are worth attention, and we may refer to them on another occasion. With a span of 4ft. 4·3in., thickness 2·93in., rise 4·55in. dead load 91lb. per square foot, a concrete arch cracked in the centre with a load of 307lb. per square foot, and a second crack appeared at 716lb. The brick arch of 5·91in. thickness, 5·71in. rise, and dead load of 70lb. per square foot developed a crushing fracture at 716lb.

The "Wy-ling" patent eraser, which Mr. F. L. Streeten has just brought out, is a convenient and efficient steel instrument, in a case adapted for the pocket, and it is both light and strongly made. It consists of a small curved steel file, which can be used to remove any portions of a drawing or MS. needing erasure. For architects, surveyors, and engineers, the "Wy-ling" will, no doubt, prove a very handy companion, as by its aid ink or colour may be readily removed with but little damage to the surface of the paper, provided the tool is used with a light hand, of course.

A new "tramway motor" has been inspected in Glasgow. It is called the Johnston motor car, and is thus described:—"The motive power is high-pressed super-heated steam, produced by means of special oil fuel which is fed automatically to the generator. The engines are of an extremely strong and simple type, capable of developing up to 30 horse-power if need be. These engines are controlled by one lever, which regulates the forward or backward motion of the car, or stops it at will. The car is fitted with two brakes—one hand-brake, worked by means of a screw; the other, a steam-brake, which, in case of an emergency, acts instantaneously. In addition to these ample safeguards, it was pointed out that, by reversing the engines, the car could be at once stopped, even on the steepest incline. The car was shown in running to be thoroughly under control. There was absolutely no noise and no indication of smoke or steam to be seen."

MEETINGS FOR THE ENSUING WEEK.

Monday.—Society of Engineers. "Ventilation and Warming," by William T. Sugg. 7.30 p.m.
Royal Institute of British Architects. Business Meeting. 8 p.m.

Tuesday.—Institution of Civil Engineers. 8 p.m.
Glasgow Architectural Association. "Acoustics," by Alex McKee. 8 p.m.

Wednesday.—Society of Arts. "Mural Painting, with the Aid of Metallic Oxides and Soluble Silicates," by Mrs. Anna Lea Merritt and Professor W. C. Roberts Austen, C.B. 8 p.m.
Architectural Association. Discussion Section. "Architectural Drawing," by W. Harold Oakley. 7 p.m.

Friday.—Architectural Association. "Scenic Art," by Professor Herkomer, R.A. 7.30 p.m.

CHIPS.

The works of sewerage at Horfield, near Bristol, which have been carried out from plans by Mr. A. P. I. Cotterell, surveyor to the urban council, have just been completed. The cost has been £13,000, inclusive of purchase of land. The contractors were Messrs. Lloyd and Powell.

A portrait of Bishop Temple is to be painted, by subscription among the clergy of London diocese, to be placed in Fulham Palace with those of his predecessors in the see. The commission has been placed in the hands of Professor Herkomer, and the sum of £900 is asked for.

At Wolstanton, Staffordshire, a new Wesleyan chapel, costing £4,500, and to seat 730, has just been opened.

Col. A. G. Durnford, R.E., held an inquiry on Tuesday, at the offices of the Cowpen Urban District Council, Blyth, Northumberland, relative to an application from that authority for sanction to borrow the sum of £3,383 for works of private street improvement, the provision of public offices, and a town's refuse tip. Mr. R. Grieves, surveyor to the council, explained the plans, and accompanied the inspector on a visit to the sites of the proposed works. There was no opposition.

The parish council of Linslade, Bucks, have awarded the first premium for the competitive designs for the sewerage and water supply of the district to Messrs. R. B. Grantham and Son, Northumberland-avenue, London, and the second premium to Mr. H. B. Nichols, of Birmingham. The rateable value of the district is about £20,000, and the estimates of cost varied from about £3,200 to £9,900.

The North Metropolitan Railway and Canal Company will promote next session a Bill to enable them to make a new street in Ratcliff between Medland-street and Noah's Ark-alley, to construct new locks in Limehouse, and also to both deepen and widen the company's existing canal. The new locks are to be constructed near the bridge by which Salmon's-lane is at present carried over the company's canal. They will extend for 20 yards on either side of the existing bridge, and the bridge itself is to be taken down and reconstructed.

The old building of the University of Virginia at Charlottesville, erected from plans drawn by Thomas Jefferson, and the scene of much of his later work, was destroyed by fire a fortnight ago. The University buildings were situated in a village at some distance from any fire department, and the regular water supply was inadequate for dealing with the flames. Nothing, therefore, could be done but to blow up the adjoining buildings, to prevent the spread of the fire.

Trade News.

WAGES MOVEMENTS.

Weardale Quarrymen.—The Weardale quarry owners have decided to concede the advance of 3¾d. per cent. in wages to the whole of their workmen in and about the quarries, from Nov. 4 to April 4 next. The men at the Raisby Hill Quarries, however, will have the advance from the 11th inst. to the 11th April.

A new Congregational church is about to be built at Barmouth. Messrs. Adams and Evans, of that town, are the contractors.

Colonel J. W. Cameron, who has promised to present a statue of the late Ralph Ward Jackson to the town of West Hartlepool, has placed the commission for the statue with Mr. Onslow Ford, R.A.

The omnibus Bill to be promoted in Parliament next year by the Manchester, Sheffield, and Lincolnshire Railway Company will comprise, amongst many other provisions, powers to construct a short connecting line from Harrow-on-the-Hill, through Kingsbury, to Willesden, and to divert the watercourse known as the Brent Feeder in the parish of Willesden.

The Newton Abbot Board of Guardians adopted, on Friday, plans by Mr. Segar for a new workhouse infirmary, and also accepted the tender of Messrs. Bradford at £1,1000 for steam-power apparatus for their laundry.

FAMBRINI & DANIELS,
Manufacturers of IMPERISHABLE CONCRETE MASONRY for
CORNICES, STRING-COURSES, MODELLED PANELS, AND EVERY STONE-WORK REQUISITE.
LANDINGS and Plain or Moulded and Mitred STEPS, durable throughout.
WORKS AND OFFICES: LINCOLN.

DOULTING STONE.
CHARLES TRASK & SONS.
(THE DOULTING STONE COMPANY),
DOULTING, SHEPTON MALLET.
London Agent:
E. A. WILLIAMS, 16, Craven Street, Strand, W.C.

JOHN GRUNDY,
HEATING APPARATUS MANUFACTURER.
ESTIMATES FREE. SUCCESS GUARANTEED.
Foundry: TYLDESLEY, MANCHESTER.
Showrooms and Workrooms:
TYLDESLEY BUILDINGS, TORRENS STREET, ISLINGTON, N.
West End Showrooms: 57, WIGMORE STREET, LONDON, W.
Chief Office:
30, Duncan Terrace, City Road, London, N.

HAM HILL STONE.
The attention of Architects is specially invited to the Durability and beautiful Colour of this material.
Quarries Well Opened; Quick Despatch Guaranteed; Stonework Delivered and Fixed Complete. Samples and Estimates Free.
Address:—
THE HAM HILL STONE COMPANY,
NORTON, STOKE-UNDER-HAM, SOMERSET.
London Agent:—
Mr. E. A. WILLIAMS, 16, Craven-street, Strand, W.C.

WM. OLIVER & SONS,
MAHOGANY, WAINSCOT, WALNUT, TEAK, VENEER, and FANCYWOOD MERCHANTS,
120, BUNHILL ROW, LONDON, E.C.
The most extensive Stock of every kind of Wood in Planks and Boards, dry and fit for immediate use.

TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender; it adds to the value of the information.

Battersea, S.E.—For providing and fixing a small system of low-pressure hot-water apparatus for warming three classrooms in the infants' department of the Gideon-road school, Battersea, for the London School Board:—

Frazer and Frazer, Ltd.	£69	0	0
May, J. and F....	62	0	0
Davis, G.	56	0	0
Ellis, J. C. and J. S., Ltd.	49	17	6
Vaughan and Brown, Ltd.... ...	44	0	0
Wontner-Smith, J., Gray, and Co.*	39	0	0

* Accepted.

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXIX.—No. 2135.

FRIDAY, DECEMBER 6, 1895.

SHOREDITCH BATHS AND (PASSMORE EDWARDS) LIBRARY COMPETITION.

THE result of this competition we have already made known in the selection, under the advice of the assessor, Mr. Rowland Plumbe, F.R I.B.A., of three designs, to which have been awarded the premiums. We have made a brief and hurried view of the designs, and can give our readers an idea of the respective merits of the plans. The Instructions to Competitors were full and explicit, and gave a schedule of accommodation for both the library and museum and the baths and washhouses. The commissioners asked for a design for both these buildings combined; but it is urged, with some reason, that one competitor cannot do equal justice to the two distinct divisions of the scheme. The site selected, which is being cleared, is a good one, and is mainly rectangular, its main and shorter frontage being towards Pitfield-street and the longer sides facing Coronet-street and Bowling Green-walk. The front elevation of both baths and library buildings is to face Pitfield-street, which runs north and south. On the north side is Bowling Green-walk, a passage of about 8ft. wide, very suitable as an emergency egress to the entertainment hall or first-class swimming-bath; while on the other side of site, Coronet-street is wider. The designs show arrangements in which one or other of these sides have been utilised for the baths. It was desired that the baths and washhouses should occupy the large space (coloured red in block plan), and the library and museum occupy the area on the north-west corner, coloured blue. Each building had to be provided with areas for light and air, and the competitors had also to consider the "ancient lights" marked on plan. These have not been provided for in all instances. Competitors were to provide basements, or half-basements if necessary, with ample areas for light. Much has been left to their individual judgment in the location of the various rooms, the levels of the floors, the style of architecture; but the general construction of baths, &c., is particularly described and scheduled. All swimming-baths and washhouses are to be top-lighted along, at least, two-thirds of their length, with lantern lights and upright ventilating sashes; to be faced with cream-coloured glazed bricks, with ornamental bands and coloured dadoes in the first-class slipper and swimming-baths; the entrances and corridors and staircases are to be well ventilated, and lighted direct from the outside along their whole length, and must be fireproof; the principal staircases not less than 6ft. wide, and the buildings are to be in accordance with the requirements of the Building Act and by-laws. One of the main instructions is that the first-class bath is to be used for public meetings, and to be built in accordance with the requirements of the London County Council regulations for that purpose. For warming, low-pressure hot-water or steam pipes and radiators are required, the hot water being supplied from the electric-lighting station. The cost for the baths is not to exceed £30,000, including all fittings and decorations, and the outlay for the library is not to exceed the sum of £9,000, including all fittings, &c.

The design awarded the first premium by the assessor, by Mr. Henry T. Hare, A.R.I.B.A., appears, from the brief view we have been able to take, to fulfil the conditions in all essential points, and the façades of both baths and library have been combined and treated as one. Looking first at the plan, the author has placed his large first-class swimming-bath east and west, the end towards Hoxton-square, with the washhouse block along the north side, abutting on Bowling Green-walk, and the men's first-class slipper-baths along the other side. The second swimming-bath, with the slipper-baths for the same class of men, are at right angles to the first, their ends abutting on Coronet-street. The entrances are well separated for the classes of men and women bathers. We find this design preferable to some others in the economy of working. The women's first-class corridor leads direct from Pitfield-street to the swimming and slipper-baths, and by a turnstile arrangement on other side of pay-office, the second-class slipper-baths which divide the two sexes are also accessible; thus the same entrance and pay-office is available for both classes, and the confusion arising between them in some other plans is obviated. The men's entrance on the other side is similarly planned: their first-class corridor leads through a spacious waiting-hall to the large swimming-bath by a separate doorway, also to the slipper-baths, and their second-class corridor to the second-class large bath and slipper-baths, these corridors being kept distinct after passing the pay-office. The waiting and attendants' rooms in each class are conveniently placed. A long narrow corridor between first-class large baths and slipper-baths leads to club-rooms at the east end. The waiting hall, which is convenient and central between the main doorways of large bath, and the men's first-class corridor is top-lighted. In one respect we question the advisability of placing the washhouse block next the Bowling Green-walk side, as it thus intervenes between the large swimming-bath and this means of exit. More direct and better exits from this bath, when used as an assembly hall, would have been secured by making the north-flank wall of this bath the boundary next the walk, and placing the laundry on the other side. The author shows two extra entrances from the large bath to Bowling Green-walk, and these are placed at the ends of the washhouse and ironing-room.

The library block conforms generally to the conditions. There is a wide and spacious entrance near the corner in Pitfield-street, which is emphasised in the elevation; an inner hall gives access to the borrowers' lobby of lending library, 42ft. 9in. by 37ft. 6in. The boys' room is opposite the entrance, and under control, and the news-room, 69ft. by 25ft. 6in., is along the main front, and lighted by windows, the magazine room being connected with it, forming a return side. The lending library is top-lighted. On the first floor a museum is obtained over part of the news-room, lighted by front windows; a reference library over the lending library, and a book-store near it. The planning of the library is compact, and the departments under supervision. We scarcely like the curved counter as shown, and, if possible, the reference-library should be on the same floor as the lending-library, one counter serving both. We do not know whether the schedule has been complied with in all particulars. The librarian's rooms are on the second floor in front. The external character of the combined buildings is suitable; the style adopted is a Gothicised version of English Renaissance, with gables to the main façade, and a high pyramidal roof and flèche over the library entrance at the north end of block, the Bowling-green side being kept low and plain, with a wide arched entrance to laundry and pay-office. The windows are mullioned, and have transoms. A corbelled turret at the north angle is a bold feature, and forms the stair landing internally. The plans and sections are full, and carefully drawn in detail. An open-timbered roof, with lantern light, is shown over the large bath, which has galleries.

The second design, by Mr. A. Hesseil Tiltman, F.R.I.B.A. (which has been removed by the author), displays the work of a gentleman who is a specialist in the planning and design of baths and washhouses. The men's first-class swimming-bath is placed on the north side of site with direct means of exit to Bowling Green-walk—a much more convenient arrangement for its use as an entertainment, lecture, or assembly-hall than others have adopted. Next to it, and parallel, is the second-class swimming-bath: both have their respective slipper-baths attached, and conveniently placed in connection with a central hall and corridor, while the washhouse is allocated to the south side next Coronet-street—a more suitable position as regards the convenience of entrance. Mr. Tiltman has introduced into his plan a feature which he has made his own, and is excellent wherever space is available—we mean the quadrangle, in order to avoid the inconveniences of long and devious corridors, and of having to make so many separate entrances in a small frontage.

The design which has been awarded the third prize, by Messrs. Groll and Todd, has some features in common with the first premiated. The positions of the swimming-baths are the same: the women's first and second slipper-baths are similarly disposed between the entrances, and the men's on the west side of the second-class large bath. The washhouse also occupies a position on the north side of the large swimming-bath, and faces Bowling Green-walk. Looking at the plan, we discover a masterly arrangement in many of the details, as in the entrances and exits to the first-class swimming-bath. These are spacious and convenient, and arranged in such a way that when the large bath is used for entertainments they will afford ample ingress and egress. The main entrances are in Pitfield-street, and are arranged on each side of the women's first and second-class slipper-baths. One corridor gives direct access to the public hall or large bath, another to the baths for ladies, with their waiting-room in connection with slipper-baths, and the third to the women's second-class baths. The men's entrance is at the south end of front, with corridors divided for first and second-class baths. A convenient club-room is shown between first-class corridor for men and their swimming-bath. The corridors are wide and top-lighted, and at the end of large bath a "swimming corridor" is shown, which can be turned into a useful crush-room when entertainments are given. Three end doorways are shown to this bath, and two emergency exits to Bowling Green-walk; these are at the end of laundry, as in the first prize plan. We may remark that the authors have so placed their entrances and exits all in the main street, except the washhouse, that during public meetings they can be used without interfering with the daily routine of the bath and washing departments. In the details we see the authors introduce the "collapsible" partitions between the dressing-boxes, by which the whole area of bath can be made available for entertainments; and they also show how these partitions can be used as a decorative dado when converted into a public hall. This is a good point. The authors have adopted a style which is used largely in the countries of the Zuider Zee, the North Sea, and Baltic provinces of North Germany and Denmark. The materials are red brick and stone dressings, and alternative plain bands of stone and brick. A clock-tower over entrance vestibule to library emphasises this block, and the librarian's entrance is made to project at end of library block, and is carried up as a turret. The baths elevation is rather lower and subordinate. In the library, with entrance in Pitfield-street, the news-room is made, a gabled block of two stories, with Gothic windows in the flank on the north side, the upper story being the lending-library. The museum is in front over the boys' room. The reference-library is placed in the rear, and is top-lighted, and the magazine-room is lighted by open area which is left between the library and baths at the corner. The side elevations are plain, and of brick. We hope to refer more in detail to these designs, and to notice other plans next week.

THE TWO SIDES OF ARCHITECTURE.

RECENT addresses—even those of a presidential character—delivered before the architectural societies—are too contradictory in their views to give the most sanguine a hope of unity of opinion on vital points. Perhaps it is as well it should be so. An external unity may be preserved at too great a cost, and it is better to hear the opposite sides of a question than to imagine we agree on all points. Besides, a question of importance always presents different aspects to different minds—not that all are right, but that by viewing the subject all round we get a far clearer opinion of it than if we studied only one side. The truth may lie somewhere between. We may put side by side the utterances of the Presidents of the R.I.B.A. and the Birmingham Architectural Association. When the President of the Institute tells us that competition is not the way to secure the best architectural result, he is expressing the opinion of the few successful men who have no longer any need of competing—certainly not of the many who still regard it as the only means (rightly and honestly conducted) of eliciting talent among the younger men of the profession. Of course Mr. Penrose represents the privileged few, not the great majority of the profession; nor can he deny that many of our greatest edifices have been erected by men whose designs were selected by the means he condemns. We do not assert that competition as conducted is perfect—far from it; but it is one of the few doors to preferment open to architects when everything and every appointment is controlled by influence. Other professions, like the law, have their prizes; but architecture is one of those in which the chances of distinction are very few, and those only gained by throwing open the prizes to all comers. If promoters, as it is suggested, were to discuss among themselves and settle who the architect should be for any particular work, the chances are that only those who are known men in any given department would be selected, or someone who has made a name, but has no distinctive ability for the work. We hardly think the recommendation one which will commend itself either to the young or unknown members of the profession, or to promoters who are desirous of obtaining the highest possible talent. Would the selection fall to the ablest man; ablest, that is, not in the sense of having been most successful in obtaining clients, but ablest in the sense of producing the best design? Experience has certainly not shown that a committee's decision on the appointment of architect is better than their decision as to a design. But the notion is a comfortable one that if there were no competitions, a larger amount of patronage would fall to those who had already made a name, or that every set of conditions for competition should be drawn up by somebody who represented (*sic*) the *élite* of the profession. The same with assessors. No doubt it would be in accordance with all that is considered right that professional prestige should be consulted in selecting an assessor, though we cannot but have had our misgivings sometimes about his capability in choosing the design of highest merit. When should the assessor be appointed—before or after the conditions are drawn up? Here is another question about which there are two opinions in the profession. Something may be said for the appointment of an assessor before the conditions are drawn up. He can advise the committee; the conditions can be made under his direction in a manner advantageous to competitors; he would see that no unjust conditions are inserted. On the other side, it is justly contended that if the assessor is known to the competitors at the onset, they will be influenced more or less by his architectural bias, or preference for a particular style or plan, especially if he has the power of nominating the architect. If the suggestions of the Institute as given in their "Kalendar" were fully carried out, competition would be very much restricted. Only a few would be invited to compete, and the assessor would select an architect to carry out the work. Under such a rule very few architects could compete.

The President of the Birmingham Architectural Association, Mr. William Henman, entirely traverses the position taken up by the President of the Institute; he believes competition opens the door for men of genius who have yet to make a name, who have no friends or money to help them. Mr. Henman says if we banish competition, the greater evil of monopoly will arise, as there is a natural tendency to give to people who have. The overburdened and well-to-do practitioner is often, as we know, unable to give the attention to the design he desires, and the work is delegated to an assistant to carry out. The owner or promoter is disappointed, and the deserving and talented members of the profession suffer.

On the question of architectural education we find equal want of unanimity. While representatives of professional societies are clamouring for examination colleges and classes on academic lines, many of the leaders of advanced architectural thought have broken with the professional traditions of modern practice altogether. The provincial societies, especially those allied to the Institute, are committed to the business side of architecture. The President of the Northern Association, in his opening address, refers to the public demand for architects who are men of business chiefly. It is quite natural to find a large centre of provincial professional life taking such a view. The public expect the architect to become responsible for many things which the artistic aspirant regards with repugnance. As Mr. Oswald said, by the inexorable laws of exchange the younger men of this sort are forced to clip the wings of their ambition. Valuations, ancient lights, party-walls, arbitrations, negotiations, and the like are the matters which most nearly concern the provincial practitioner. He must be able to deal with and advise on such questions when they arise, although they are the surveyor's rather than the architect's duties. Yet this essentially business development of the profession, so necessary to the provincial practitioner, is a development at the cost of the artistic. We must not shut our eyes to this fact. We cannot make a man a good architect and at the same time equip him in the qualifications of the surveyor. If our rising architects are to be well-informed, "all-round" practitioners, up-to-date in all the subsidiary branches — of jurisprudence, valuations, sanitation, and electricity—we cannot expect them to be cultured artists. The two attainments are impossible, if not conflicting. The promoters of architectural education will have to face this division and prepare for it, if they desire to prevent a schism. We see now two classes of architects—those who are general practitioners, architects and surveyors, and those who confine themselves solely to architectural and artistic work. This breach will be widened if anything is done to advance a programme which promotes only one side of the architect's work.

On the other side, the arguments used appear equally strong. At the School of Architecture and Applied Arts at Liverpool, the other day, Mr. T. G. Jackson, A.R.A., a redoubtable champion, gave expression to the artistic view. He points out the defects of school training and mere classes. He believes, as other leading architects do, that the system of apprenticeship will do more than technical training schools, however useful the latter may be in supplementing the deficiencies of office training. Mr. Jackson says truly, the young student apprentice "must read for himself and study for himself as well." Again, he says, "No training in schools will ever give him the same insight into the proper conduct of an architect's work; nor will any amount of exercise in working samplers, as they may be called, teach him a tithe of what he learns from work to which responsibility is attached—work that has really to be carried out, work that is intended to endure for generations, and which must therefore be right, sufficient, and practicable under the penalty of failure and retribution." There is a fear expressed that the technical school may be relied upon too much. School and office practice are both required; "either needs to be supplemented in a thousand ways which the student must discover for himself, and will go on discovering to the end of his life." We must all admit that the reason of so many of our buildings being failures is because the modern architect is trained on paper only, and seldom personally superintends them; but the old architect lived and worked on the building. Another champion of the same view, Mr. Lethaby, equally repudiates the modern school system of architectural training, and puts in its place workmanship. Design is to be thought about as the natural outcome of work, instead of work as the outcome of design, which latter is the system followed. These conflicting ideals of professional teaching are instructive. They clearly prove the divergent views existing among the profession. The historical development of style and the official programme are useful and valuable additions to architectural training; but our great masters were ignorant of both—they handed down a traditional teaching which was sufficient for all their wants, and they thought and worked out works of architecture which have been models for all ages. But the modern course of training, how to make a living in architecture easily for the largest number, is responsible for the system which, with all its merits and advantages, has its drawbacks. Systematic and co-ordinate studies have been established not only here and on the Continent, but in the great cities of the West, at Harvard and Cornell Universities, at Princetown, Brooklyn, Chicago; but it will be for another generation to prove what the result will be in architecture. It will have to be shown whether architects can be better taught than in the old-fashioned way by apprenticeship and knowledge of buildings and workmanship.

LIABILITY OF CLIENTS.

ACCORDING to a recent decision by a County Court judge, as reported, if an architect prepares plans and specifications for a building which, by some circumstance, is not carried out, he cannot charge his commission, and the client is exempted from payment. If this ruling were general, a client could put an architect to a great amount of trouble and expense, obtain valuable suggestions and plans, and not be liable. Is this the law? When an employer engages an architect to prepare a design for a building, there is implied an undertaking to remunerate him in a reasonable manner. Were it otherwise, very few architects could recover any remuneration should the work from any cause not be carried out. There is one exception—when his remuneration is made contingent on a certain event taking place; as, for example, there may be a contract between the parties, that the plans are to be approved by the employer, or when the architect agrees to make no charge if the tender should exceed a certain sum. But these exceptional cases arise only when there is a contract or agreement between the owner and architect to such effect.

In the particulars of the case to which we have referred, an architect and surveyor of Southampton sought to recover a claim for £20 from a client for plans and specifications in connection with certain premises. A further sum of £2 2s. was claimed for tracing these plans and submitting them to the urban sanitary authority. At the first hearing of the case the judge held that the action of the plaintiff was premature, and gave judgment to defendant without prejudice to other action. From the facts as reported it seems that the plans were prepared at the defendant's request; but that he subsequently altered his mind, and declined to pay for the work done. A great amount of work was involved in the preparation of the plans and specifications; the plans were at first refused by the corporation, but the plaintiff was willing to alter them to comply with the regulations, if the defendant gave his consent, which he did not. It was ruled by the judge that the plaintiff had not carried out his original contract, and he was nonsuited without prejudice. We are not clear from this report of the case whether there was a contingent employment or not, or on what grounds the employer refused to pay for the work done. The ruling of the judge, as it is given, needs qualification. As misunderstandings are often arising from one or the other of the causes alleged, the question is worth consideration. The plans in this case, as in many others, had to pass the urban sanitary authority. It may be asked whether their approval constituted a condition precedent to payment. The law imposes on the architect an obligation to know the law. If he is called upon to prepare plans for premises in a given street under certain by-laws, there is naturally an implied contract on his part to prepare the plans in compliance with such laws, even if it can be shown that the owner wanted a building which could not be built. This principle appears obvious enough when we reflect on the duties of a professional adviser. The client relies upon his skill and experience to avoid any difficulties in the way of building, and expects him to make his plans accordingly, or to inform his client of the law. Notwithstanding these facts, we cannot expect an architect to make plans that will invariably be passed. Borough surveyors have sometimes the habit of making things a little awkward; of requiring the letter of the law to be strictly followed in one instance but not in another; of asserting their authority in a perfunctory sort of manner. Urban authorities or their officers are seldom satisfied with the first application, and thus it happens that the plans have to be altered occasionally, and resubmitted before they are passed. No client can grumble at these unexpected requirements.

Sometimes an employer alters his mind, and thereupon refuses to pay for the plans. Such people are common enough; they do not clearly know what they want from the first, and this is a point which brings us to the question we started with. Is there a contract? When nothing is said about approval of plans there is a presumption that the architect, like other professional men, can claim remuneration at a reasonable amount. A legal authority says: Where the terms of the contract, oral or written, are not specific as to the payment of the architect, evidence is admissible to rebut the presumed undertaking to pay; but such evidence must be strong and clear. The presumed undertaking to pay is generally relied upon by the architect, unless there are circumstances which are contradictory. If it is agreed between the parties that the employer is to decide whether the architect is to be remunerated or not, the architect is not entitled to claim till the employer has decided that he shall be. In such a case the amount fixed by the employer cannot be questioned by the Court. This is the ruling in "Taylor v. Brewer." But such a contract or understanding seldom exists.

In another case, "Rumsey v. N.E. Railway Co.," it was decided that the employer cannot set up the plea that he never intended to pay the architect anything, unless he can prove any agreement that the latter agreed to work for nothing. Such a principle is sound, for, if the contrary were held, it would be easy for anyone to engage an architect and afterwards set up a similar plea. On the contrary, when plans are submitted or a sketch made on approval, as in the case of probationary drawings, the architect cannot claim, and this ruling has been generally accepted. It was decided in the well-known case of "Moffat v. Dickson" that such drawings come within the nature of proposals or tenders, which there is no obligation to accept.

COUNCIL CHAMBER DOOR, HOTEL DE VILLE, AUDENARDE.
(*From a Photo. by* Mr. W. Allport.)

CLASSIC DETAILS AND THEIR APPLICATION.*

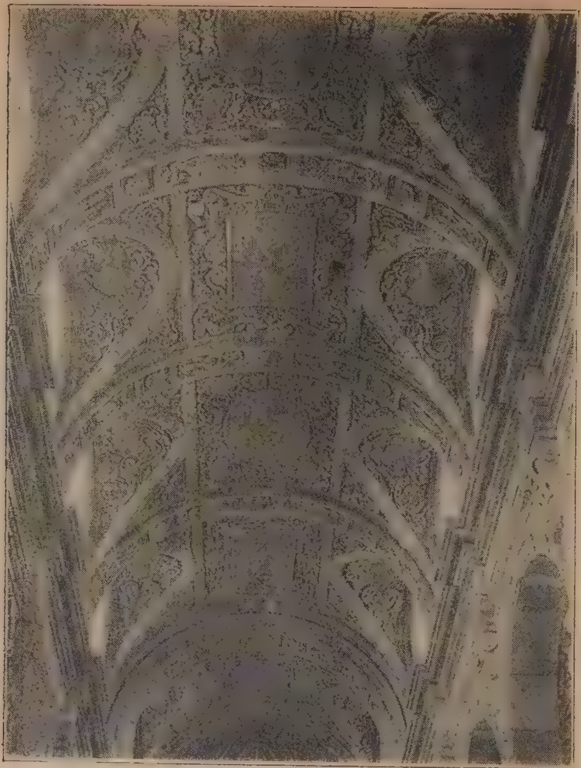
By G. A. T. Middleton.

XIX.—BELGIAN RENAISSANCE.

THOUGH the Renaissance took somewhat the same course in Belgium that it did in France, from the very outset there was wanting

---

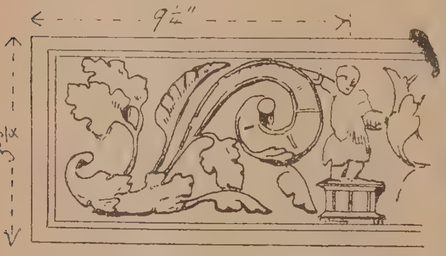
* All rights reserved.



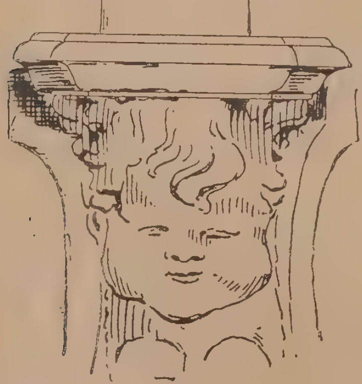
NAVE ROOF, ST. LOUP, NAMUR.—(*From a Photo. by* Mr. W. Furley.)

ST. CHARLES, ANTWERP.

the delicacy and the crisp imaginativeness which characterised the French work. It was, for one thing, later in its introduction, and was accepted as complete with scarcely any influence from, or admixture with, the Gothic. Certainly in the Church of St. Gertrude, Louvain, there are Gothic choir-stalls (of which a slight sketch appeared in the Building News for May 31, 1895), which have panels and other rich carvings of Renaissance character—or, rather, of a mixture of the truly Renaissance form of scroll with the natural leaves of the Flamboyant Gothic. Still, the famous doorway to the council-chamber in the Audenarde Hôtel de Ville, in oak, introduced but ten years after the completion of that florid Gothic building, was more characteristically Belgian, in its complete adoption of the new style, and in its similarity to work of the Venetian school, with its carved angle columns and its deeply-moulded and carved panels.

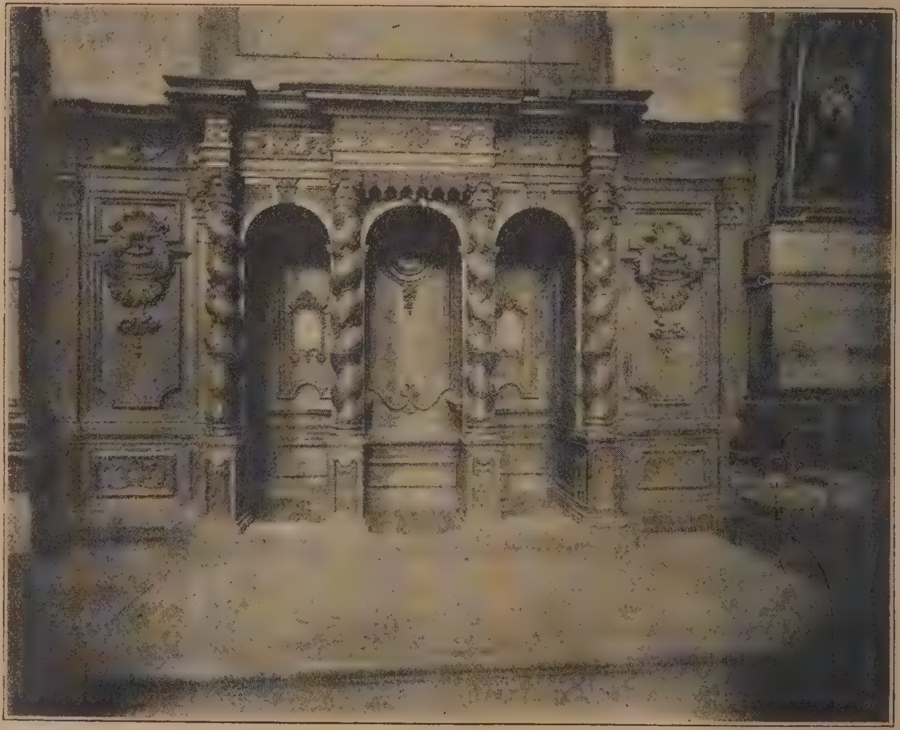


Panel in Choir-Stall, St. Gertrude, Louvain.



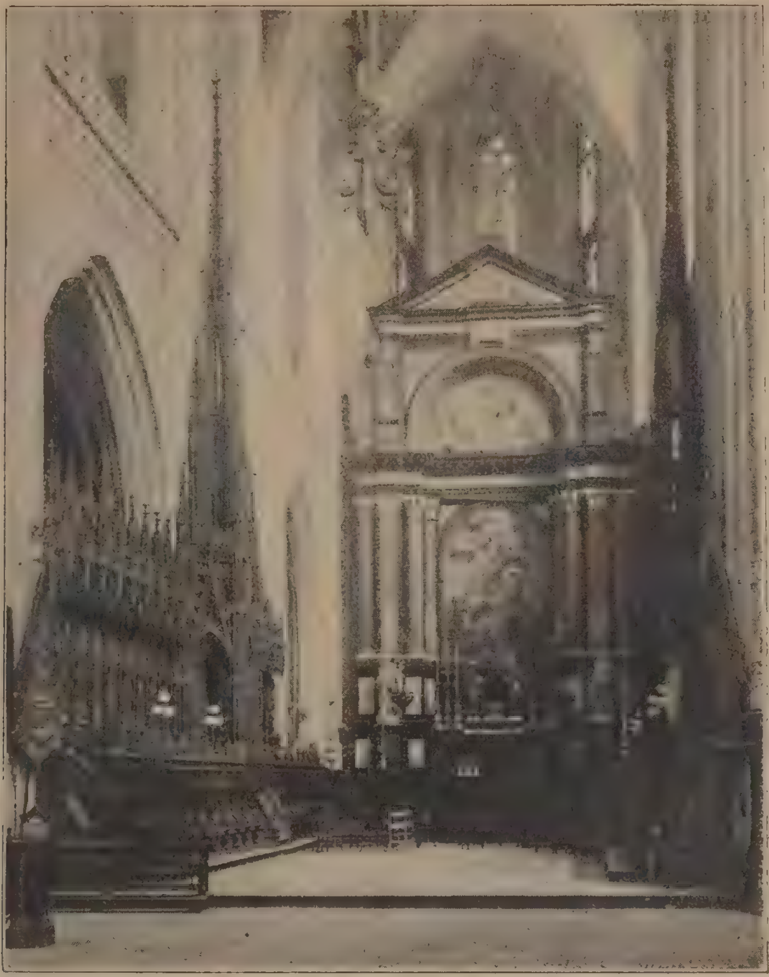
Carved Oak Corbel in Confessional, St. Loup, Namur.

Certainly the finest Renaissance church, and possibly also the finest Renaissance building in Belgium, is the Church of St. Loup at Namur, and that also shows inspiration direct from Italy, rather than as filtered through France; and, moreover, exhibits a sturdy originality which is enough of itself almost to mark the Belgian as distinct amongst the Classic derivatives. Erected in the local dark marble, it is a harmonious and well-balanced composition. The Ionic columns, slightly banded, carry small but complete entablatures from which the nave arches spring, and the mouldings of these arches again are in section complete entablatures, and are banded at intervals. Above the arches runs another complete entablature, proportioned to the entire height, and broken round corbels over the columns to form springing for the main arch of the barrel vault, itself intersected by transverse barrels from the clerestory windows. This strongly-emphasised horizontal line of the main cornice may be a trifle too heavy, cutting the building too definitely into two halves; but there can be no question as to the grandeur of the general effect produced by this simple application of the Orders, nor of the beauty of the vaulting, which is ornamented with exceedingly rich cameo carving, the relief in a dull yellow and background of dark grey.

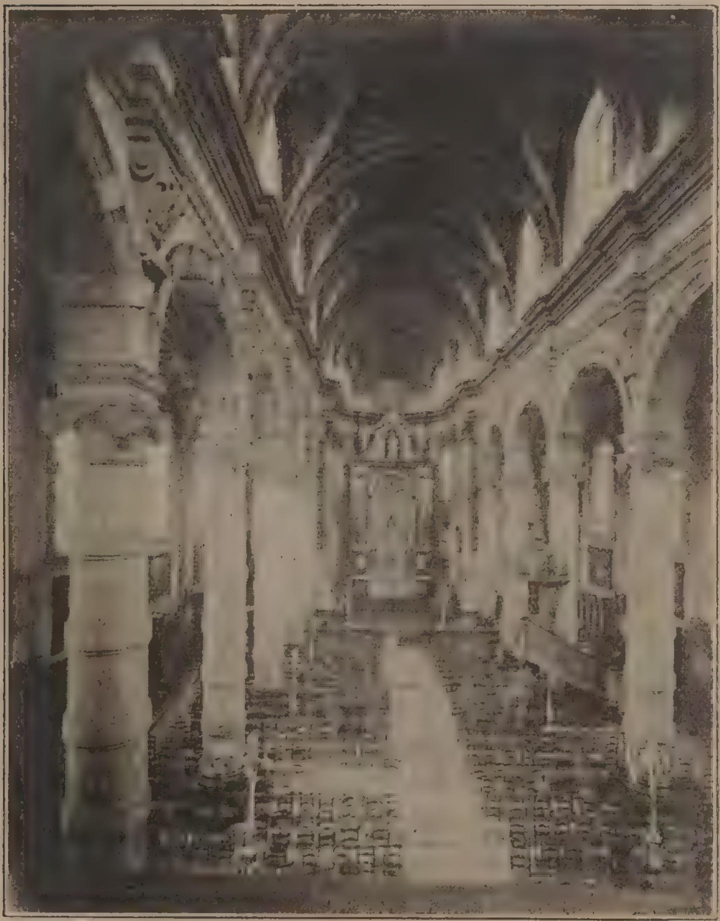


CONFESSIONAL, ST. LOUP, NAMUR.

In the same church is a series of confessionals, all different, carved in oak—the best of much similar work to be found in the country. The orders—Ionic, Corinthian, or Composite—form the basis of each design, the columns or pilasters



REREDOS, ANTWERP CATHEDRAL.—(*From a Photo. by* MR. W. ALLPORT)



INTERIOR OF ST. LOUP, NAMUR (1639).

being raised upon panelled pedestals. In the example illustrated, the columns are twisted and wreathed with natural foliage, and the carving is of the strongly-marked Rococo type referred to in the last instalment of this series; while in others, cherubs' heads are freely introduced.

There is a great deal of Later Renaissance work in Belgium similar to the church of St. Charles at Antwerp—poor, deteriorated stuff, an aggregation of Classic details without thought or harmony or proportion, excellently illustrative of their misapplication. Yet at the same date there were being erected the great chancel screens and altars which are such prominent features in the Belgian cathedrals, in black and white marble, and which, though overpowering in scale, are rarely bad in themselves—one, the screen from Bois-le-Duc, now forming the entrance to the Architectural Court at South Kensington Museum. The example illustrated is the high altar and reredos in Antwerp Cathedral, where its great size, combined with the fewness of its parts, completely dwarfs the rich Gothic choir-stalls, including what is really a lofty bishop's throne.

"BUILDING NEWS" DESIGNING CLUB.

A COUNTRY HOUSE.

THE first subject for the opening competition held this season in connection with our Designing Club has called forth a considerable number of contributors from all parts of the kingdom; but it would be a mistake if we added any assurance as to high-class character of the designs thus received. "A Country House" of moderate size ought to afford a highly attractive and comparatively easy subject for any ordinarily competent designer, and with the more gifted such a problem always may be reckoned upon as giving scope for modesty of taste and skill of invention, not to mention originality of idea. We do not really think that either of the designs sent in on this occasion can be described as an unqualified success, and those which we have placed for the three first positions do not realise what we have described as "A Country House." However, we must take the material received, and make the best choice we find possible, accompanying the same with the above proviso. We place "Owl" first, "Drawde" second, and "Twitty" third.

The following are the instructions issued for the use of competitors, giving the particulars of the accommodation required:—*A Country House*, to cost £3,000. To be built in red brick, and roofs covered with tiles. Stone sparingly used; but carved brick may be introduced for ornamental parts, though not too freely employed. The accommodation to provide three reception-rooms of suitable size, the relative proportions being left to the judgment of each competitor; the hall must be made a central feature in the plan, not be too big, and is not intended for a sitting-room. Seven bedrooms, two of which may be on a second floor and partly in the roof. Offices and bath-room to be provided. The style adopted must be suitable to the material, and a quiet but picturesque treatment is suggested, adapted to the home of a gentleman of moderate means. The entrance front faces the road on the north side; the views from the site are towards the south-west. The height of the ground-floor best rooms to be 12ft., and on the first floor 9ft. 6in. Plans, two elevations, one section, and perspective sketch. The plans may be drawn to scale of 16ft. to the inch; other geometrical drawings to be drawn to scale of 8ft. to the inch. The site is practically a level one.

One of the leading faults shown by the majority of the designs is a failure to realise the needs and habits of a country gentleman, most of the plans being far more adapted to a suburban type of residence, while some resemble too nearly the humdrum Cockney villa quite innocent of artistic character, and cramped as well as pretentious on plan. "Owl" is the best, taking one thing with the other, and, moreover, he has inspired his design with individuality and feeling. One weak point of his ground plan is the awkward consequences resulting from his octagonal hall, and although there would have been no serious objection to such a form being adopted, it must, even by "Owl" himself, be admitted that the entrances from the hall into the staircase and into the lavatory and servants' service corridor are ungainly. A little more thought would have managed the point to which we take exception. The hall would obtain light from the staircase windows but the lighting would be far from perfect. The connecting shutters between the morning-room and the adjacent reception-rooms might be liked by some persons; but they do not enhance the homelike character so essential to the comfort of a morning-room, which, by the way, would be more convenient if located in a little more retired part of the house instead of facing the front door in full view of every chance caller. In this particular "Owl" evinces lack of thought; but we recognise his endeavour to obviate the commonplace, and his design accordingly is somewhat suggestive. Externally, it is not quite clear how the water is to be discharged from the very pronounced oversailing eaves, though a sort of feature is made of the stack-pipes above the main portal. The breadth and simplicity of the façades deserve praise, but we are hardly so sure that a little more grace might not have been added with advantage. This is not to be mistaken, however, as an indication that we advocate the mere introduction of ornamental features, but rather a desire to suggest more refinement in items of detail, and avoidance of uncouth proportions, such as not infrequently result from too marked a striving after quaintness and originality.

"Drawde" does not distinguish himself by good drawing, and, as a matter of fact, his perspective is ungainly and poor. His plan evinces no little study, and has merit accordingly; but we should do its author an injustice if the leading faults were not mentioned. The need of a good solid cross wall is evident, and the building up of the upper partitions over voids above the drawing-room and hall do not serve to insure the best construction, while the chimney-stacks demand a more solid foundation than that shown by the ground plan at the dining-room ingle nook. The back staircase would be quite dark, as the little window in the servery would at best only give a very little light through the borrowed lights shown. The servants' passages also depend upon glazed doors to the adjoining rooms, and the store would be absolutely dark. The elevation is wanting in character, and lacks dignity. The morning-room is a little too far from the hall door as a small apartment to see business visitors in, and in this respect its position off the staircase is an objection. As a sanctum, however, the room is well placed, and a smoking-room or workroom for the boys of the house could be readily contrived under it in a sort of half-basement. "Drawde" must improve if he is to maintain the position which we have assigned to him on this occasion, for the inequality of the remaining competitors' work has largely contributed to his present success in the matter of our placing this design second in the award.

The design reckoned third in merit is by "Twitty," and in plan is the strongest part of his contribution, for the elevations are commonplace. His third sitting-room is more of a study than boudoir, and it is conveniently situate for callers not desired in the dining or drawing-rooms. The fireplace in the dining-room is located between the window and the door opening into the hall—a most uncomfortable arrangement. The mistress's store is inadequate, and the tradesman's door is too close to the larder. These are minor faults not unimportant, and they sample others which we have hardly space to enumerate; but the "hang" of the plan on all three floors is deserving of recognition. "Monster" follows "Twitty" very closely, because his elevations are better, and so are his drawings. In points for planning he fails. The skew-set front door is awkward, and the entrance lobby immediately inside has a w.c. leading to the left, and a lavatory to the right, without a screen of any sort—most publicly objectionable. The hall is wasteful, and the little box for hats at the far end under the stairs is a curious contrivance. The house outside looks like a country rectory, with some rather good bays; but the perspective cannot be said to faithfully comply with the limitations imposed by the elevations. To go over the faults in the plan would take more space than we have room for. Inequality in the employment of space is the main fault, sumptuous in one part, and cramped in another. Still, "Monster" shows indications of better work, if he will but stick to his studies. "Demetrius" has a more exact idea, architecturally, as to the right kind of treatment for a country house externally, but he fails in details, particularly inside, where his notions are wanting in taste, and the same remark applies to the starved-looking bays to the garden front. Thick walls distinguish the plan where solidity is fairly considered; but massive walls need support—as, for example, over the drawing-room. "Tadpole" pins his faith to a Georgian sort of house, which looks homely and comfortable. His plans, however, are neither. The hall is roomy, but the staircase rises in an ungainly fashion, too much in view of the entry. The dining-room door is in the centre of the apartment, and the drawing-room is too much out of the house, with its door awkwardly set in the angle next foot of stairs, with no regard to the pleasurable grace of convenience, not to mention the lordly dignity, such as the peacocks on the terraced lawn shown in the perspective might be thought to imply. "Tadpole's" upper plan is better, though the w.c. on the top of the stairs is too much in evidence to be conveniently private. "Giles" has the charm of a quiet treatment, and his façades are simplicity itself, which in actuality would look at once at home and hospitable. His plan shows a knowledge, too, of the wants of a country gentleman; but the drawings which illustrate the design are meagre to a degree, giving such a lean look to the whole thing, which is much to be regretted. Flash drawing is not likely to mislead us or captivate our choice; but it really is necessary to make the drawings sufficiently attractive to merit selection. The plans are not free from faults either; for example, the kitchen door is directly *vis-à-vis* with that of the drawing-room. "Country Cousin" has a villa-like garden front to his house, and a more imposing façade towards the road, with a courtyard and sundial to match. His perspective is excessively poor for such a competitor. His plan in some respects is clever; but not one room on the ground floor is actually good. The whole thing is too ambitious and strained in order to obtain effect. "Bloggs" has a queer notion about planning, cramping things singularly together, though if less broken in parts and more studied in detail, the general location of his rooms might be advantageous. At present "Bloggs" needs improving. "La Cigale" is neat and painstaking, but we cannot consider his design quite in harmony with the purpose of the building. The arched heads to the ground-floor tall windows ill accord with the long low ones on the first floor. The plan has distinct merits which we have not overlooked. The dining-room is too square, and the chimneypiece is too near the door. "Ivy" sends a design which looks like a convalescent home, with its arched window to the morning-room and verandah over the entrance. "Queen Anne" comes next, with a façade based upon the Dutch method, and a plan which hardly accounts for the demands which staircases make upon space, else how could the bedrooms over the dining-room fireplace otherwise be contrived as shown? "Once More" has a wide flat space for the roof of his main building, and higher pitched gables at the ends. His plan is not really satisfactory, notwithstanding the space it occupies. "Mac" is industrious and painstaking. His plan, too, is ingenious, and more thoroughly worked out than some; but his elevations do not reflect the character which a country gentleman's house seems to demand. "E." is the author of a compact plan, with a circular hall in the middle of the house, where it certainly would be very dark. The arrangement shows thought, and some originality. The same remark hardly applies to the design of the exterior. "Beckington" is more homely, the south front of his house being the better of the two; but his plans are indifferent, and so is his sketch perspective. "Mandalay" shows with every elaboration each floor of his plan in a workmanlike way, which does him credit; but there is no little loss of space in the back hall and landings over. The façades do not please us so well. "Avis" is more compact in his arrangements; but the tower over the drawing-room bay is the sort of thing always best avoided, even in a casino "Leemo" is more modest in his ideas, although he makes a commonplace design. His loss of space in corridors is most objectionable. "Black-beetle" renders his drawings too much like a chessboard, and his plan is not well contrived—thus, for example, the hall fireplace is within a foot or two of the front door. "Cester's" design looks too much like a Board-school. The plan is the better part of the performance. "Red Lion" draws in so unfinished a way that he scarcely does himself justice, and his plan would be improved by study. "Snap Shot" exhibits no little labour in the get-up of his design, and "M" in a circle devotes three whole sheets to the illustration of his, with the most praiseworthy care to the titles and printing. The hall would be dark, in spite of the well-hole and big window on the second floor. "Albyn" draws in his sky so curiously, that in effect the larger gable of the garden front of his design seems to have no roof behind it. The plan is one of the most practical and well-considered schemes sent in; but we had no choice, with these elevations, to place the design otherwise. "Canary" is old-fashioned in his country builder style, and his perspective sketch is too rough to be worthy of more comment. "Cygnette" is neat or nothing. His house is distinguished chiefly by a big bay to the drawing-room, and bedroom over. The plan is economical. "Balbus" makes a symmetrical plan, which obtains little by the arrangement, and we cannot admire his elevations, with which he has been at no little pains. "Kaffir" comes next, with a disconnected, rambling house, gaining nothing on this acconnt. "Dessinateur" is untidy, and very fond of locating his doors as near the angle of the room as he can squeeze them. The consequence is that wall-space is wasted, and the wall-paper gets dreadfully soiled. "Shafston" shows that he ought to do far better work than this, as there is clearly an evidence of good taste about his design, in spite of the ugly section. We seem to remember something like the arrangement of his plan before. "Dunelm" and "Taffy" come next, and then "Tyke" with three sheets, followed by "Rex," "Veller," "Valhalla," "Worcester," "Dono," "Moor," "Peep-bo," "Thrush," "Venus," "Ovolo," and "Ilex."

MURAL DECORATION.

At the Society of Arts on Wednesday night a paper was read on "Mural Painting," of which Mrs. Lea Merritt and Professor Roberts-Austen were joint-authors. Mr. Holman Hunt, who presided, said that, in the attempt to decorate the Houses of Parliament, made 50 years ago, simple fresco was used, and it was asserted that this had been a failure. The causes assigned were the character of the atmosphere of London, the ground that was adopted, damp in the walls, and salt in the sea sand that was used. There had been several attempts to introduce a new system, and one very remarkable attempt was made by Daniel Maclise in the Houses of Parliament, in his two admirable pictures of "The Meeting of Blucher and Wellington after the Battle of Waterloo" and "The Death of Nelson." Although changes had occurred in both these works, in consequence of chemical action upon certain colours, on the whole they had stood very well. But these changes were so serious, that efforts were made to find an improved method of working. Adolphe Keim, of Munich, after many experiments, invented a process for painting on walls which was a development of the silicate process Daniel Maclise used, but eliminated the mistakes in that process. From the time of Maclise it had been regarded as totally distinct from fresco. Mr. Rivington commended it to attention, and invited artists to make experiments on a small scale. The speaker had tried various methods until he was so far satisfied that he had a fixed determination to adopt it some day in a more important work. Mrs. Merritt had tried it more than any other artist.

Professor Roberts-Austen read the paper, in which the details of the process adopted were fully described as carried out by Mrs. Merritt at St. Martin's Church, Wonersh, near Guildford, and it was shown that it was not the ancient one known as *Buon'fresco*, but an improvement of another process, in which a soluble silicate was the vehicle for painting with colours, which were usually metallic oxides.

Remarks were made by Mrs. Merritt, Mr. Batten, Mr. Walker Reed, Mr. Howland, Sir H. Doulton, and the Rev. J. A. Rivington, vicar of the church of Wonersh.

Professor Roberts-Austen, in answering several questions, said, as a chemist, he believed the work would be durable; but he was afraid that in the atmosphere of London the mellowing hand of Time would be seen. It must be remembered that the paintings described were by Mrs. Merritt, and that the work of the artist in the matter must be greater than that of the chemist.

◆

A spire of granite, 140ft. in height, has been added to the Free Church at Holburn, Aberdeen. Messrs. Brown and Watt were the architects, and Messrs. P. Bisset and Sons the builders.

NOTES ON APPROXIMATE ESTIMATES.*

CIVIL BUILDINGS, WORKS, &c.—(*Continued.*)

	Average Cost.		
	Per foot cube.	Per square of 100ft. super.	Per unit.
46. Drains, Stoneware. Laid and jointed in cement on concrete bed 6in. thick, and 12in. wider than diameter of drains, including all bends, junctions, gullies, digging and filling in (but exclusive of manholes, &c.), 4in. diameter	—	—	2s. 6d. per foot run
47. Drains. Ditto ditto, 6in. diameter	—	—	3s. 3d. ditto
48. Drains. Ditto ditto, 9in. diameter	—	—	4s. 0d. ditto
49. Drains. Ditto ditto, 12in. diameter	—	—	5s. 0d. ditto
50. Dredging. In mud or sand, average depth about 10ft. below surface of water	—	—	1s. per yard cube, or 9s. per ton
51. Drill-sheds	4d.	£50	—
52. Driven-tube Wells. (See "Wells")	—	—	—
53. Electric-light Installation. For towns, complete with buildings, plant, and mains	—	—	£7 per lamp of 16-candle power
54. Electric-light Installation. For country mansions or houses, complete, including small oil-engine, dynamo, wires, lamps, &c., for 30 lights	—	—	£300 per installation
55. Electric Tramways. (See "Tramways")	—	—	—
56. Elevators, Hydraulic. Direct-acting, low-pressure, for passsengers, fixed complete, including ram and cylinder, gear, guides, hand-rope, passenger-car with safety apparatus, &c., but exclusive of cost of well-hole, water supply, tanks, and pipes. Travel of car, 35ft. For two persons.	—	—	£220 each
57. Elevators. Ditto, ditto, for 4 persons	—	—	£280 each
58. Elevators. Ditto, ditto, for 6 persons	—	—	£360 each
59. Elevators. Ditto, ditto, for 8 persons	—	—	£450 each
60. Enclosures for Lift-wells. (See "Lift Enclosures.")	—	—	—
61. Exchanges and Offices	9d.	—	—
62. Factories. Plain, except machinery, &c.	6d.	—	—
63. Fence, Iron. As for railways. Height 4ft. Comprising No. 7 lines of galvanised cable strands, with strong wrought-iron standards and earth-plates spaced 6ft. apart, and including No. 12 winding pillars and stays to each mile. Fixed complete	—	—	1s. 8d. per yard run, or £146 per mile
64. Fence, Iron, light, for general purposes. Height 3ft. 6in. Comprising No. 5 lines of galvanised iron wire, with angle-iron standards and earth-plates spaced 10ft. apart, and including No. 8 winding pillars and stays to each mile. Fixed complete	—	—	1s. 2d. per yard run, or £100 per mile
65. Fence. Extra only to the preceding for strong wrought-iron field gate, with No. 2 gate-posts, hangings, fastenings, &c. Fixed complete	—	—	£5 each
66. Filters. Complete as for waterworks, with filter-bed 6ft. thick	—	£33	£3 per yard super.
67. Fitments for Houses, &c., as cupboards, dressers, wardrobes, &c., complete	—	—	£5 each
68. Fives-court, 53ft. by 30ft. Front wall 20ft. high	—	—	£500 each
69. Floating Hospital. (See "Hospitals")	—	—	—
70. Floors, Concrete. Ground floor, 4in. concrete, with floated and finished surface, including 6in. of broken brick rubbish underneath, digging, &c.	—	£2 8 0	—
71. Floors, Concrete. Ditto ditto, but surface finished with Staffordshire tiles in cement	—	£5 15 0	—
72. Floors, Concrete. Above ground story, 6in. concrete, with floated and finished surface, including rolled-iron joists, centring, floating concrete soffit with lime, putty, and whiten, two coats	—	£7 10 0	—
73. Floors. Wood. Ground-floor, 1¼in. deal, wrought, ploughed, and tongued, including joists, plates, skirting, 4in. of cement concrete on 6in. of broken brick rubbish, excavations, hearths, &c.	—	£6 3 0	—

	Average Cost.		
	Per foot cube.	Per square of 100ft. super.	Per unit.
74. Floors, Wood. Above ground story, 1¼in. deal, wrought, ploughed, and tongued, including joists, plates, skirting, lath and plaster ceiling to under side of floor, plaster cornice not exceeding 12in. girth; whiten 2 coats, &c.	—	£7 7 0	—
75. Forge and Shoeing Shed, complete.	6½d.	—	
76. Free Libraries, public	8d.	—	—
77. Gas-mains. Laid complete, including coating with Dr. A. Smith's process, lead joints, digging, filling, &c., in common ground, clay, or gravel. The trenches to be deep enough to allow top of pipes being 18in. below surface of ground. (See Table)	—	—	—

Analytical Table of Average Cost of Cast-Iron Gas-Mains per Yard Run, laid Complete.

Diameter of main.	Cost of mains, including bends.		Cost of lead for joints.		Cost of laying and jointing mains, including digging, cartage, &c.		Total cost per yard run.	
Inches.	s.	d.	s.	d.	s.	d.	s.	d.
2	1	6	0	1½	0	10½	2	6
3	2	4	0	2	1	0	3	6
4	3	4	0	2½	1	1½	4	8
5	4	6	0	3	1	3	6	0
6	5	8	0	4	1	4	7	4
8	8	2	0	5	1	5	10	0
10	11	3	0	7	1	7	13	5
12	14	3	0	11	1	10	17	0
15	19	9	1	3	2	6	23	6
18	26	3	1	[illegible]	3	6	31	3
24	37	6	1	10	5	2	44	6

	Per foot cube.	Per square of 100ft. super.	Per unit.
78. Gas Supply. Including brackets, pendants, service pipes, stop-cocks, digging, &c., but exclusive of meters and gas-mains	—	—	£2 per light
79. Gates. Entrance. As for public institutions, parks, &c. Comprising No. 2 ornamental stone piers 12ft. high, with concrete foundations, &c., and one pair of ornamental iron gates 16ft. 6in. wide and 10ft. high, fixed complete, with all fittings, &c.	—	—	£160 each
80. Gates. Add to preceding item for each side gate. 6ft. wide, and including stone pier. Complete, with all fittings, &c.	—	—	£80 each
81. Gates. Entrance. As for avenues or villa residences. with No. 2 iron pillars and one pair of gates of a plain character. Gates 10ft. wide by 5ft. high. Complete, with all fittings, &c.	—	—	£26 each
82. Gates. Add to preceding item for each side gate, 4ft. wide, and including iron pillar or gate-post for same. Complete, with all fittings, &c.	—	—	£9 each
83. Grates, including Chimney-piece, for bedrooms, &c.	—	—	£6 each
84. Grates, for living rooms, &c.	—	—	£14 each
85. Gymnasiums	5d.	—	—
86. Hedge, quickset, planted complete	—	—	1s. per foot run
87. Hospitals, General, including administrative buildings, &c.	8d.	—	£380 per bed
88. Hospitals, Infectious, floating, including moorings. Float of iron cylinders with timber decking, wards, and all adminstrative buildings	—	—	£500 per bed
89. Hotels (first class)	1s. 4d.	—	—
90. Hotels (second class)	1s. 0d.	—	—
91. Hotels (third class)	9d.	—	—
92. Houses. (See "Mansions")	—	—	—
93. Infirmaries. (See "Hospitals)	—	—	—
94. Kitcheners, including chimney-piece, complete	—	—	£17 each
95. Laundry and Wash-house, complete	9½d.	—	—
96. Lavatories, as for public institutions, &c., complete with iron brackets, slate top, earthenware basin, brass fittings, waste, &c., but exclusive of water supply, walls, roofs, &c.	—	—	£6 per basin
97. Lavatories, cabinet, as for private houses, complete with marble top, earthenware basin, waste, &c., but exclusive of water supply	—	—	£10 each
98. Libraries, Public (See "Free Libraries")	—	—	|

	Average Cost.		
	Per foot cube.	Per square of 100ft. super.	Per unit.
99. Lift Enclosures. For dinner lifts, including proper fir framing, deal matchboarding and doors or shutters to openings	—	—	10s. per foot in height
100. Lift Enclosures. For warehouse lifts, ditto ditto ditto.	—	—	15s. per foot in height
101. Lifts, Hand, Single, Dinner. For hotels, clubs, private houses, &c.; fixed complete, including gear, cage, guides, ropes, &c., but exclusive of inclosure for lift-wells. Travel of cage, 15ft.; size of cage, 1ft. 6in. by 1ft. 6in. by 2ft.; to lift 56lb.	—	—	£20 each
102. Lifts, Hand, Single. Dinner. Ditto ditto ditto. Size of cage, 2ft. 6in. by 2ft. by 2ft. 6in.; to lift ¾cwt.	—	—	£24 each
103. Lifts. Add to preceding items for every additional foot of travel	—	—	4s. per foot of travel
104. Lifts, Hand, Double, Dinner, or Parcel. Fixed complete, including gear, cage, guides, ropes, &c, but exclusive of inclosure for lift-well. Travel of cage, 15ft.; size of cage, 2ft. 6in. by 2ft. by 2ft. 6in.; to lift 56lb.	—	—	£35 each
105. Lifts. Add to the preceding item for every additional foot of travel	—	—	5s. per foot of travel
106. Lifts, Hand. Hospital or Infirmary. Fixed complete, including gear, wrought-iron open cage, with safety apparatus, guides, ropes, &c., but exclusive of inclosure for lift wells. Travel of cage 15ft. Size of cage 7ft. by 4ft. 6in. by 7ft. To lift 7cwt.	—	—	£90 each.
107. Lifts. Add to preceding item for every additional foot of travel	—	—	6s. per foot of travel
108. Lifts, Hand. Luggage or Warehouse. Fixed complete, including gear, cage with safety apparatus, guides, ropes, &c., but exclusive of inclosure for lift-wells. Travel of cage 15ft. Size of cage 4ft. by 3ft. by 5ft. To lift 2cwt.	—	—	£35 each
109. Lifts. Ditto ditto. To lift 5cwt.	—	—	£45 each
110. Lifts. Ditto ditto. Size of cage 5ft. by 4ft. 6in. by 5ft. To lift 10cwt.	—	—	£55 each
111. Lifts. Add to preceding items for every additional foot of travel	—	—	5s. 6d. per ft. of travel
112. Lifts, Hydraulic. (See "Elevators")	—	—	—
113. Lightning Conductors. Fixed complete, including copper tape conductors, lightning-rods, clamps, holdfasts, &c. (All parts above ground to be measured)	—	—	2s. per foot run
114. Lightning Conductors. Add for each shallow earth connection, including copper conductors, broken coke, &c.	—	—	£5 each
115. Lightning Conductors. Add for each deep earth connection, including copper conductor, wooden drum, &c.	—	—	£10 each
116. Locks. For canals	—	—	£3,000 each
117. Maltings. Complete	2½d.	—	—
118. Manholes, Disconnecting. As for house-drains, not exceeding 6ft. deep, including concrete bottom 18in. thick, one-brick sides, disconnecting trap, glazed channels, iron manhole cover with stone curb, fresh-air inlet, complete, including digging, &c.	—	—	£12 each
119. Manholes, Inspection. As for house-drains, not exceeding 6ft. deep, including concrete bottom, one-brick sides, glazed earthenware channels, iron manhole cover with stone curb, and all digging, &c.	—	—	£8 each
120. Manholes. Add to the two last items for every additional foot in depth	—	—	12s. 6d. per foot in depth
121. Mansions or Houses. (First-class.) Main building	1s. 3d.	£110 (Average height of rooms 17ft.)	—
122. Mansions or Houses. (Ditto ditto), servants' offices	8d.	£42 (Average height of rooms 11ft.)	—
123. Mansions or Houses. (Second-class.) Main building	10d.	£55 (Average height of rooms 12ft.)	—
124. Mansions or Houses. (Ditto ditto), servants' offices	6½d.	£30 (Average height of rooms 10ft. 6in.)	—

(*To be continued.*)

---

* All rights reserved.

BOOKS RECEIVED.

Our Homes, by R. BARRY PARKER, architect (Buxton), is a reprint of the articles and illustrations which have appeared in the BUILDING NEWS as a portfolio, now to be had of Messrs. B. T. Batsford, of High Holborn. The articles have been revised, and may be read with profit and interest by all who desire to make our cottages home-like and artistic, and to lift the average dwelling out of the speculative builders' groove. Mr. Parker is justified in saying "that the farmhouse kitchen has an artistic value beyond that of the average drawing-room," because there is truth and honesty about it; he also declaims justly against the over-decoration and the ordinary room, against manufactured ornament, over-furnishing, and the like, all of which are abominations to the real artist, and his sketches or studies of interiors are helpful in showing how the home may be made honest and artistic. We quite agree with the remark that the accessories and things necessary in a room should be made visible and decorative; that things like latches and locks, instead of being let into the doors, should be made decorative. And again, the smallest dwelling or cottage is made to mimic a large house—only the rooms are reduced. Why not do with fewer rooms that one can turn in, and make the hall a room for the family, as it once was? But we have said enough to indicate the scope of the author's remarks on these and other details. The author's ideas are sound, and are worth attention, but some of the sketches hardly do them full credit.——*The Essex Review*, edited by EDWARD A. FITCH, F.L.S. (Chelmsford: Edmund Durrant and Co.), contains, as the chief features of the current quarterly issue, an illustrated article by Fred Chancellor, F.R I.B.A., on the quaint parish church of Navestock, with its picturesque 13th-century tower and spire, entirely constructed of oak timbering; also an account of "The Cistercian Abbey of Stratford Langhorne," by J. A. Sparvel Bayley, and a continuation of George Rickwood's "M.P.'s for Colchester." The notes and queries publish a good deal of information of interest in the county.——*Modern Farm Buildings*, by A. DUDLEY CLARKE, F.S.I., (second edition, revised; London: B. T. Batsford, 94, High Holborn) is a second edition of Mr. Dudley Clarke's useful work on farm buildings, which we noticed a few years ago. In this brief notice we can only remind our readers of the practical and comprehensive character of the treatise, which deals with the arrangement of homesteads; these are illustrated by a "text plan" of buildings for an arable farm which received the silver medal at Kilburn, the "Surveyors' Institution Design" for buildings for a 400-acre farm. Dairy farms, remodelling old homesteads, food department, cowhouses, feeding stalls and boxes, open stackyards, covered yards, stables, piggeries, dairies, &c., are each described in detail, and illustrated by details. The plans are well selected, and drawn to a good scale, and the detail plans of stalls and feeding passages, stables, open and covered yards, and the sections of buildings, roofs, mangers, &c., are useful. As an elementary work on modern farm buildings, Mr. Clarke's book will be particularly welcome to all architectural students, and to all in charge of landed estates, and it is now one of the textbooks recommended by the Surveyors' Institution to all students preparing for their examinations.——*How to Write the History of a Parish*, by J. CHARLES COX, LL.D., F.S.A. (fourth edition; London: Bemrose and Sons, Limited), is a very useful little volume for local historians, giving them valuable hints relating to manorial and ecclesiastical facts. A very useful feature of the book of Dr. Cox is the list of names of the best handbooks for reference, so valuable to the topographer. The author's work, "Notes on the Churches of Derbyshire," is a sufficient proof of his experience and ability. We have in this handbook brief hints where to look for specific information as to records, manuscripts, printed books, &c. General indexes for a series of volumes save time and labour, and we have a list of these given, as the volumes of the *Archæologia*, *Archæological Journal*, and of various other societies. *Notes and Queries*, *The Reliquary*, *The Antiquary*, *Gentleman's Magazine* (edited by Mr. G. L. Gomme) are mentioned as worthy of search. Of course, the Public Record Office in Fetter-lane is one great source of information as to all national documents; next we have the British Museum, Lambeth Library, the College of Arms, Guildhall and Bodleian Libraries, &c. The chapters on Prehistoric Remains, Roman-British Period, Anglo-Saxon Remains, Civil or Domestic Architecture, Church History, &c., are well worth perusal, as they are full of useful data and suggestions. Every prospective local topographer and historian will find Dr. Cox's book invaluable as a guide to the bibliography, records, and remains of any locality.

◆

BUILDERS' BENEVOLENT INSTITUTION.

THE election of three pensioners on the funds of this charity took place on the 28th ult., at the offices of the Institution, 35, Southampton-row, Bloomsbury-square. Mr. J. Mowlem Burt, J.P., D.L. (President), occupied the chair, and amongst other friends of the Institution there were present Mr. J. T. Bolding, Mr. T. Stirling, Mr. T. Stirling, jun., Mr. T. F. Rider, Mr. J. Howard Colls, Mr. C. Bussell, and Mr. F. Foxley. There were three vacancies for pensions—viz., for two men and one woman, there being three male and five female applicants.

At the close of the poll, the scrutineers, Messrs. T. Stirling and T. F. Rider, announced the result, which was as follows:—William Langridge, aged 76, builder, 18, Dorville-road, Hammersmith (first application), 1,817 votes; Thomas Warne, aged 68, builder, 114, Brecknock-road, N. (first application), 1,216 votes; Arthur Fuller Smith, aged 65, builder, 53, Mayfield-road, Dalston (first application), 109 votes; Mary Ann Healing, 20, Curtain-road, aged 65, widow of Samuel T. Healing, builder (sixth application), 850 votes; Maria Elizabeth Powell, 281, Albany-road, Camberwell, aged 62, widow of G. T. Powell, late a pensioner of the Institution (third application), 2,702 votes; Mary Ann Bowley, Tyler's Cottages, Ball's Pond, aged 68, widow of J. Bowley, late a pensioner of the Institution (second application), 763 votes; Eliza Ellis, 46, James-street, Oxford-street, aged 76, widow of E. G. Ellis, builder (second application), 1,428 votes; and Ellen Batchelder, Camden-road, Carshalton, aged 62, widow of Charles Batchelder, builder (second application), 723 votes. The successful candidates were, therefore, William Langridge, Thomas Warne, and Maria Elizabeth Powell.

Votes of thanks were passed to the chairman and the scrutineers, and the proceedings terminated.

◆

A new Baptist chapel and Sunday-schools are about to be built in Manchester-road, Bury, Lancs. Mr. Harry Whitaker, Scotland-road, Nelson, is the contractor.

The Archbishop of York consecrated on Nov. 28 the new church of St. John at South Bank, near Middlesbrough. The church replaces an iron structure which has been in use for over 20 years, and accommodates 700 adults. The cost has been about £4,300, exclusive of an intended lantern. The church occupies a prominent position at the corner of Normanby-road, and is in the Early Gothic style. The architect is Mr. J. M. Bottomley, of Middlesbrough and Leeds.

A memorial chapel has been added to the north side of the chancel of St. Andrew's parish church, Boreham, near Chelmsford, over the private tomb of the Tyrell family. It is Decorated in style, in keeping with the church, and is built of rubble, with moulded stone dressings.

At St. Mark's Church, Reigate, new fittings were dedicated on Friday last. They include a credence table and sedilia, both of 14th-century character, and carved in Bath stone, a chancel screen of Staffordshire alabaster, filled with sculptured figures of Castellino marble, and a pulpit of English oak and teak. All these works have been carried out by Messrs. Harry Hems and Sons, of Exeter, from designs by Mr. C R Baker-King, F R I.B A, of Spring-gardens, S.W.

The chapel of Our Lady in St. Osmond's R C. Church, Salisbury, has been beautified by the erection of a reredos and of a canopy over the statue of the Madonna. The screen in front consists of old oak work supposed to have belonged to a church in the neighbourhood some 300 years ago. The canopy above has been carved in oak by Mr. W. M. Batt. The pinnacles and crockets are gilded, and the ground work is blue, to correspond with the other portions of the altar, which is now rendered complete.

After a long discussion, the town council of Reigate passed a resolution at their last meeting approving the desirability of providing municipal buildings for carrying on the work of the corporation, and authorising a committee to suggest sites for the same. During the meeting it was asserted that there was no other corporation in the kingdom without a municipal home.

OBITUARY.

WE regret to announce the death of Mr. CHARLES THOMAS LUCAS, the senior partner in the eminent firms of Messrs. Lucas Brothers and Messrs. Lucas and Aird, railway and general contractors, of Great George-street, Westminster, and Belvedere-road, Lambeth. Mr. Lucas, who was in his 76th year, had long been ill, and died on Wednesday last at his country residence, Warnham Court, near Horsham. We gave his portrait in our issue for March 28th, 1890. The funeral will take place at Warnham to-morrow (Saturday) at 1 p.m.

MR THOMAS CUNDY, F.R.I.B.A., who recently died at Chichester-terrace, Brighton, was born in London in 1821. Both his father and his grandfather were prominent members of the same profession After being at Eton and subsequently a pupil in the office of the late Mr. Thomas Cubitt, he was associated with his father in various architectural works in the Metropolis and elsewhere. On the retirement of the latter from active work, Mr. Thomas Cundy devoted himself in great measure to church architecture, designing the church and schools of St. Barnabas, Pimlico, for the Rev. W. Bennett; St. Paul's, Wilton-place; St. Gabriel's, Warwick-square; St. Mark's, Hamilton-place; Holy Trinity, Blomfield-road; St. Michael's, Chester-square; and other churches and schools in the country. For many years surveyor to the London estates of the Duke of Westminster, he designed the improvements on the Grosvenor estate, carried out between 1863 and 1868, and introduced a Continental type of building, including, among other features, the Mansard roof.

THE death took place on Monday night, from heart-disease, of ex-Bailie JOHN YOUNG, architect and engineer, of Perth. Deceased, who was in his 70th year, up to last November had served six years at the council board of Perth. He received his training as a civil engineer and architect under his father, and his name in recent years was associated with several large undertakings in the county and elsewhere. Mr. Young acted as engineer in the construction of the Crieff and Comrie Railway. He was a member of the Dundee Institute of Architecture.

◆

CHIPS.

The peal of six bells in the parish church of Stisted, near Braintree, has been rehung and refitted by Messrs. H. Bowell and Son, of Ipswich.

The collection of oil-paintings in the City Art Gallery, adjoining the Guildhall, has been enriched this week by the addition of a portrait, by G. Patten, R A., of Sir Edward Banks, the builder of London Bridge. The picture has been presented by the City Chamberlain.

A new Primitive Methodist chapel, with lecture-hall, numerous vestries, and caretaker's house, was opened at Lancaster on Wednesday week. The buildings are entirely faced with stone, and the chapel will seat between 600 and 700 people. The cost of the whole has been £2,600. Mr. J. D. Mould, of Manchester, was the architect.

The congregation of Lady Glenorchy's, Edinburgh, have resolved to introduce an organ into the church, and an order for an instrument has been forwarded to Messrs. Forster and Andrews, organ-builders, Hull.

Wages at Johannesburg seem to be at high-water mark. Bricklayers recently struck successfully for 22s. 6d. a day.

The monumental bronze group, by M. Bartholdi, the well-known sculptor, representing Washington and Lafayette, was unveiled on the Place des Etats Unis, at Paris, on Sunday. The figure of Washington is barely 10ft. high, whilst that of Lafayette is some inches shorter. The French and American flags, composing the background, rise to the height of about 14ft. The extreme length of the group is 9ft., and the height of the pedestal nearly 12ft. The total height of the monument is about 25ft. Lafayette, who is in the act of descending a slight slope, is represented as warmly pressing Washington's hand.

The Duke of Westminster opened, on Saturday, a new Institute and Workmen's Club, which he has just presented at a cost of several thousand pounds to the parish of Handbridge, one of the most populous working-class districts of Chester.

At Chard, Somerset, on Thursday in last week, a new Wesleyan chapel, built from designs by Mr. F. W. Curwen, of London, was formally opened. It is Gothic in style, has a front to Fore-street, and is seated for 300 persons. Mr. C. Turner, of Honiton, was the contractor, and the cost has been nearly £4,000.

CONTENTS.

Shoreditch Baths and (Passmore Edwards) Library Competition ... 805
The Two Sides of Architecture... 806
Liability of Clients ... 806
Classic Details and their Application ... 807
Building News Designing Club ... 809
Mural Decoration ... 810
Notes on Approximate Estimates ... 811
Books Received ... 812
Builders' Benevolent Institution ... 812
Obituary ... 812
The Building News Directory ... xiii
Our Illustrations ... 813
Building Intelligence ... 832
Architectural and Archæological Societies ... 833
Competitions ... 833
Correspondence ... 834
Intercommunication ... 835
Legal ... 835
Legal Intelligence ... 835
Water Supply and Sanitary Matters ... 836
Our Office Table ... 836
Meetings for the Ensuing Week ... 837
Trade News ... 838
Tenders ... 838

ILLUSTRATIONS.

VENETIAN CARICATURES IN ALABASTER.—LADIES' GALLERY, MERCHANT TAYLORS' HALL.—"BUILDING NEWS" DESIGNING CLUB: DESIGNS FOR A COUNTRY HOUSE.—LITTLE MISSENDEN ABBEY, BUCKS.—PROPOSED HOTEL, NEWCASTLE, CO. DOWN.—"LOGGIA" AT THE METROPOLITAN CLUB-HOUSE, WASHINGTON.

Our Illustrations.

VENETIAN CARICATURES IN ALABASTER.

These spirited carvings in alabaster are of Venetian origin, and belong to the splendid collection of Sir Charles Robinson, to whom we are indebted for their loan. They were shown at the New Gallery in the Venetian Exhibition held last spring. These caricatures came from Brescia, in the old Venetian territory, and the sixteen medallions represent, writes Sir Charles Robinson, "'Le Arte de Venezia,' or 'Le Arte gue Vanno per Via,' as I have seen it phrased in an old engraved collection of similar figures published at Bologna, also about the middle of the last century. There seems to have been a fashion for representing the trades and common occupations of the people in the Italian cities in the last century. We also find 'The Cries of London,' about the same time, in sets of engravings. I think these caricatures are quite admirable in their way, and it is a pity there is no clue to their author."

CITY GUILDS.—NO. XIV: HALL OF THE MERCHANT TAYLORS' COMPANY.

In some respects, as is well known, the Ancient Guilds of the City of London are very rich in their possessions of plate and works of art, and among these treasures few things can compare in interest with the historic funereal palls which belong to the Vintners, the Fishmongers, the Goldsmiths, and the Merchant Taylors. The last-named guild is fortunate in owning two of these ancient hearse-cloths, which were used in olden days at the burial obsequies of a brother of the mysteries. Both are of Italian fabric, and are carefully protected by permanently glazed air-tight cases, thus rendering them as far as possible safe from injury; but, at the same time, owing to their fixed position below the skylight in the gallery over the hall, it is impossible to take good detailed photographs of the palls, inasmuch as the plate glass in front of the needlework acts as a looking-glass, and reflects objects in front so much as to obliterate the pall within. This is the reason why our present illustration, showing one of these beautiful hearse-cloths, represents it from the side as part of the general interior of the ladies' gallery, and even in this view the flutings of the pilaster to the right of the fireplace are seen distinctly reflected in the glass in front of the pall. This pall dates from c. 1490 to 1512. In the centre of the border is depicted the baptism of Our Lord, with St. John the Baptist kneeling as he performs the act of baptism, while an angel holds the Saviour's robe. On either side is an Agnus Dei surrounded by rays, with the Baptist holding The Lamb and a scroll, *Ecce Agnus Dei;* then angels bearing the head of the Baptist in a dish, with another scroll, on which is written "Caput iohis Baptist i disco." An open pair of shears is represented at each end of the design. On the shorter borders, one exhibits the Baptist's entombment, his headless body being placed in the sarcophagus by three men in rich dresses, and the other the decollation; and in the centre is the body, with the executioner exhibiting the head, and Salome holding the charger to receive it. The costume of the figures is of the period above given. Salome is dressed in a long gown, over which is a jacket trimmed with ermine. The hearse-cloth to the right is of somewhat later date, 1520-30. The centre is cloth-of-gold velvet: the pattern is in purple and gold, and the outer parts of the field are entirely covered with gold and silver embroidery, while the borders have subjects connected with the life of St. John the Baptist, the patron saint of the Company. Both these specimens of embroidery are of very fine workmanship, and were probably executed in England. The apartment shown in Mr. Sandell's plate is the Ladies' Gallery at the end of the hall, which is seen through the arched opening to the right of the picture. A portrait of William Pitt hangs over the fireplace, but the sheen on the picture prevented its proper representation in the photograph. This illustration completes our series from the Merchant Taylors' buildings, of which description and plan, with details, appeared in our issues for Oct. 25 and Nov. 1, and another view of the Hall on Nov. 22.

"BUILDING NEWS" DESIGNING CLUB: A COUNTRY HOUSE.

(See description on p. 809.)

LITTLE MISSENDEN ABBEY.

Not much remains of the original buildings at Little Missenden Abbey. The house had been altered and enlarged from time to time before it became the residence of the late Mr. Chas. E. Seth-Smith, C.B. Extensive alterations were recently carried out by him from the sketches of Mr. W. Howard Seth-Smith, and the work has been completed since his death. Mr. George Cook, of Great Missenden, has been employed as builder.

NEW HOTEL, NEWCASTLE, CO. DOWN.

This hotel, of which we give one of the premiated plans, was designed for the Belfast and County Down Railway Company, to be erected near their terminus at Newcastle, in Ireland. The position of the hotel was so placed that there would be a charming view overlooking the sea, and slight wings were thrown out to give the front some protection from the winds. Golf club-rooms were attached to the hotel, and fitted up with the most modern fitments, and were so placed as to be near to the golf club grounds. The hotel proper contained large lounge-hall, dining and drawing-rooms, billiard-rooms, rooms *en suite,* and 150 bedrooms. Electric semaphores were attached over each bedroom door, to save servants' time, whilst in the thickness of the bedroom walls next corridors boxes were formed for boots and hot water. A sea-water tank in basement, to fill at every tide with force-pumps up to tanks, was provided for baths. All corridors and every other floor was provided to be fireproof. The materials up to first floor intended to be used was blue granite, rough-faced, but with boasted edges. The projecting portions, as shown on elevations, V-jointed, sufficient to break and emphasise such parts. Above the first floor in the main block the work was in red Belfast bricks, with Irish limestone bands. This design, which was premiated, is by Mr. F. H. Tulloch, A.R.I.B.A., of Belfast, and Mr. Lionel Littlewood, F.S.I., of 49, Doughty-street, Bedford-row, W.C.

"THE LOGGIA," METROPOLITAN CLUB, WASHINGTON.

We give with our illustrations this week a sketch of an apartment from this American club-house, called "The Loggia," which, by reference to the plan shown in the corner of view, will be readily seen is a kind of adjunct to the reading and smoking-rooms. Though not a loggia strictly speaking, it is nevertheless a saloon adapted for use in sultry weather—with three large windows on either side, from which abundance of air and light can be obtained. Its size, too, admits of greater freedom than the more restricted spaces which the reading and smoking-rooms afford. For use in cold weather there is a capacious stone chimneypiece, which is carried up to the ceiling. The walls are finished inside with glazed bricks. Mr. W. A. Potter is the architect of the building, and we are indebted to the *American Architect* for the particulars from which our drawing was made.

CHIPS.

Various improvements are about to be made to the S.W. railway station at Eastleigh, including a high-level footbridge, 167ft. in length, and 14ft. 6in. wide. Messrs. Longley and Co., of Crawley, Sussex, are the contractors for the brickwork.

In the gallery of Zion Baptist Chapel, Slaithwaite, a new organ has been erected by Messrs. James Conachar and Sons, of Bath-street, Huddersfield, and on Wednesday week it was used for the first time.

At the Manchester Consistory Court held on Friday, a faculty was granted for removing the western gallery from St. Paul's Church, Paddington, Lancashire, in accordance with plans by Mr. J. Swasbrick.

Mr. Thomas Goodwillie, late road surveyor under the Wigtownshire County Council, has been elected to a like position at St. Andrew's.

The large five-light Perpendicular west window in Hatfield Peveril parish church has been filled with stained glass. The subjects are the Annunciation, the Visit to Elizabeth, the Song of the Shepherds, the Infant Saviour, the Worship of the Magi, and the Presentation in the Temple. Mr. C. E. Kempe was the artist.

The new seaside resort at East Runton, midway between Cromer and Sherringham is about to be sewered, from plans by Mr. R. M. Parkinson, of Peterborough. The contract has been taken at about £1,000, by Messrs. Bardell Brothers, of King's Lynn.

The Plans and Works Committee of Edinburgh Town Council considered, on Friday, the question of the vacancy in the firemastership of the city, created by the resignation of Mr. Wilkins, and also the relative matter of a retiring pension to that officer. It was resolved to recommend the council to grant Mr. Wilkins a retiring pension of £150 per annum. It was further recommended that the town-clerk should be instructed to advertise for applicants for the post, offering a salary of £300 with free house. Mr. Wilkins' salary was £400 with free house.

A strike of builders' labourers, which has lasted for eight weeks at Felixstowe, has been settled, the men having agreed to recommence work at 4½d. per hour.

At the Sussex Assizes at Lewes, on Thursday in last week, Wm. Meats (47), contractor, formerly of Clacton-on-Sea, where he undertook a contract for widening the pier, but had to file his petition in bankruptcy, pleaded guilty to obtaining credit from various wholesale houses to the amount of £230 without disclosing that he was an undischarged bankrupt. He was sentenced to six months' hard labonr.

According to the plans of Mr. Adrian Collins, consulting engineer, Old Broad-street, a complete installation of electric light is about to be fitted up at the convalescent home of the Middlesex Hospital. The contract price exceeds £3,000.

An adjudication in bankruptcy has been made in the case of Joseph Gay and Arthur Gooseman, trading as Gay and Gooseman, of Great Grimsby, builders and contractors.

A marble bust of Mr. Gladstone, executed by Mr. J. Adams Acton, was unveiled on Friday at the Liberal Club at Leeds.

The foundation-stone of New Town-road board schools being built by the Skirbeck (Boston) School Board was laid on Friday. The new schools will provide accommodation for 393 scholars, and the amount of the building contract is £2,881. Mr. R. H. Bucknell, of Boston, is the architect, and Mr. S. Sherwin, of Boston, is the contractor.

At Lamarsh, on the borders of Essex and Suffolk, the memory of the Rev. C. B. Teesdale, for 42 years rector of the parish, has been commemorated by a stained-glass window, placed in the east end of the round-towered parish church. The subject the Crucifixion, and the artists were Messrs. Britten and Gilson, of Southwark.

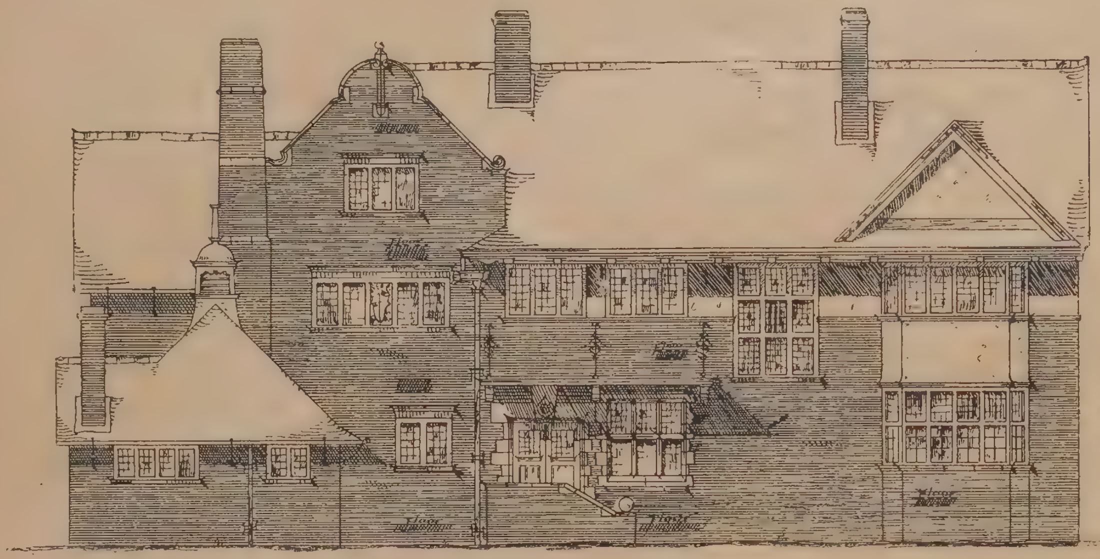
About two years ago the Government purchased from the corporation of Manchester a vacant piece of ground in Deansgate, Hardman-street, in that city, for the purpose of erecting new offices. The building has been completed, and has been occupied this week, the business connected with the Excise, stamps, and taxes departments being transferred there from Mount-street, Albert-square. The building is faced with Huddersfield stone, the plinth and columns being of Aberdeen granite. The architect is Mr. Henry Tanner, of H.M. Office of Works; Messrs. Robert Neill and Sons, of Manchester, are the contractors, and Mr. Searchfield is the clerk of works.

—·B.A.D.C:—

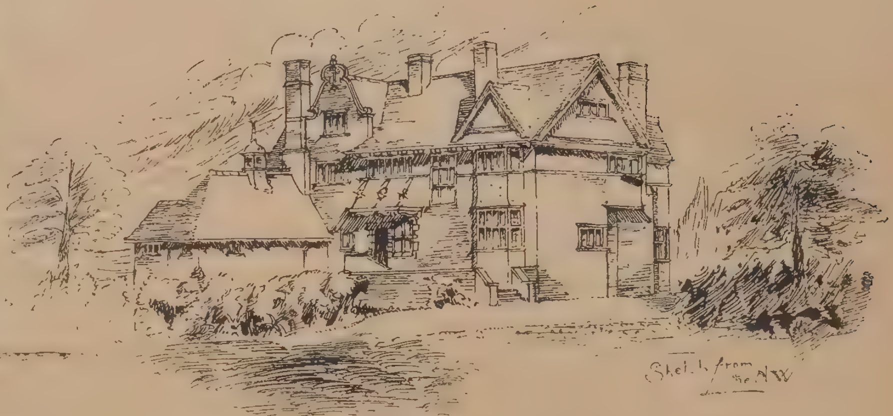
—— Design for a ·Country·House: ——

—— By Drawde ——

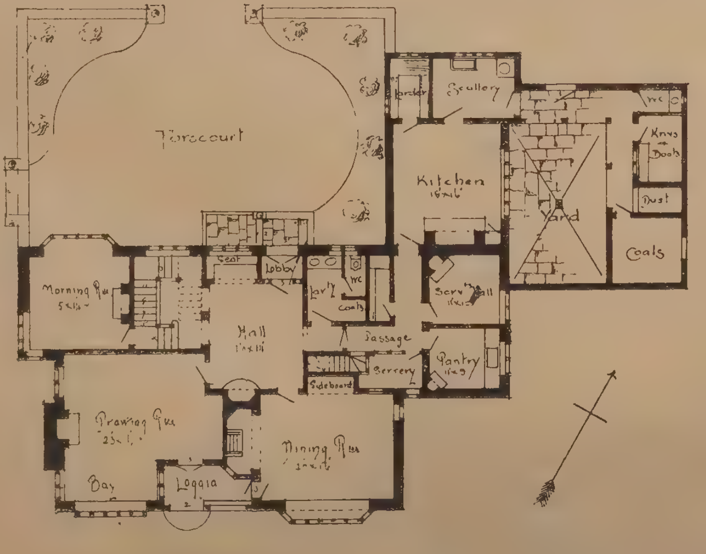
PLACED SECOND



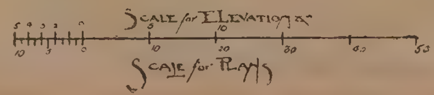
N W Elevation

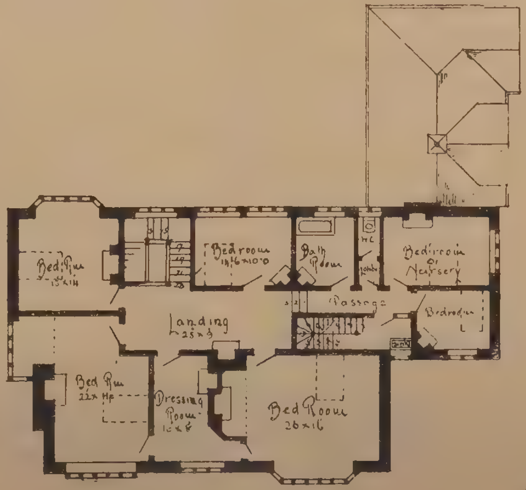


Sketch from the N.W.

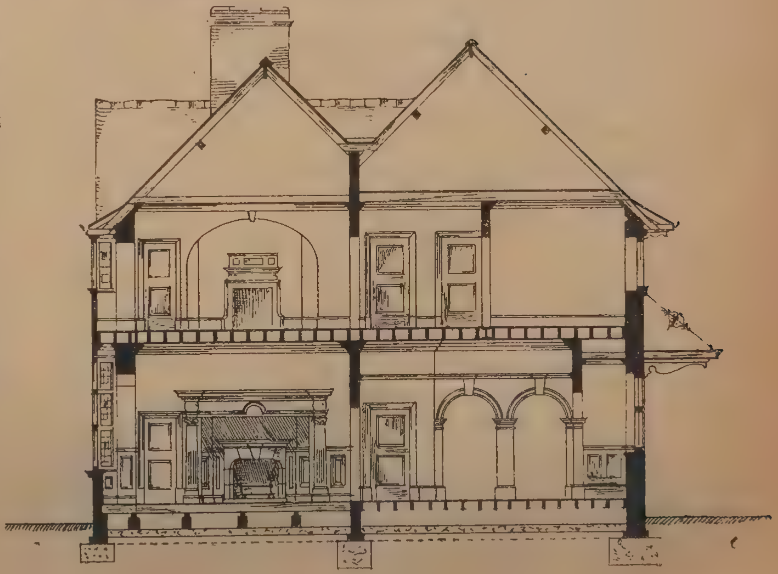


Ground Plan





First Floor Plan.



Section.

LITTLE · MISSENDEN · ABBEY · BUCKS · VIEW FROM · COURTYARD · W · H · SETH-SMITH · FRIBA · ARCHT

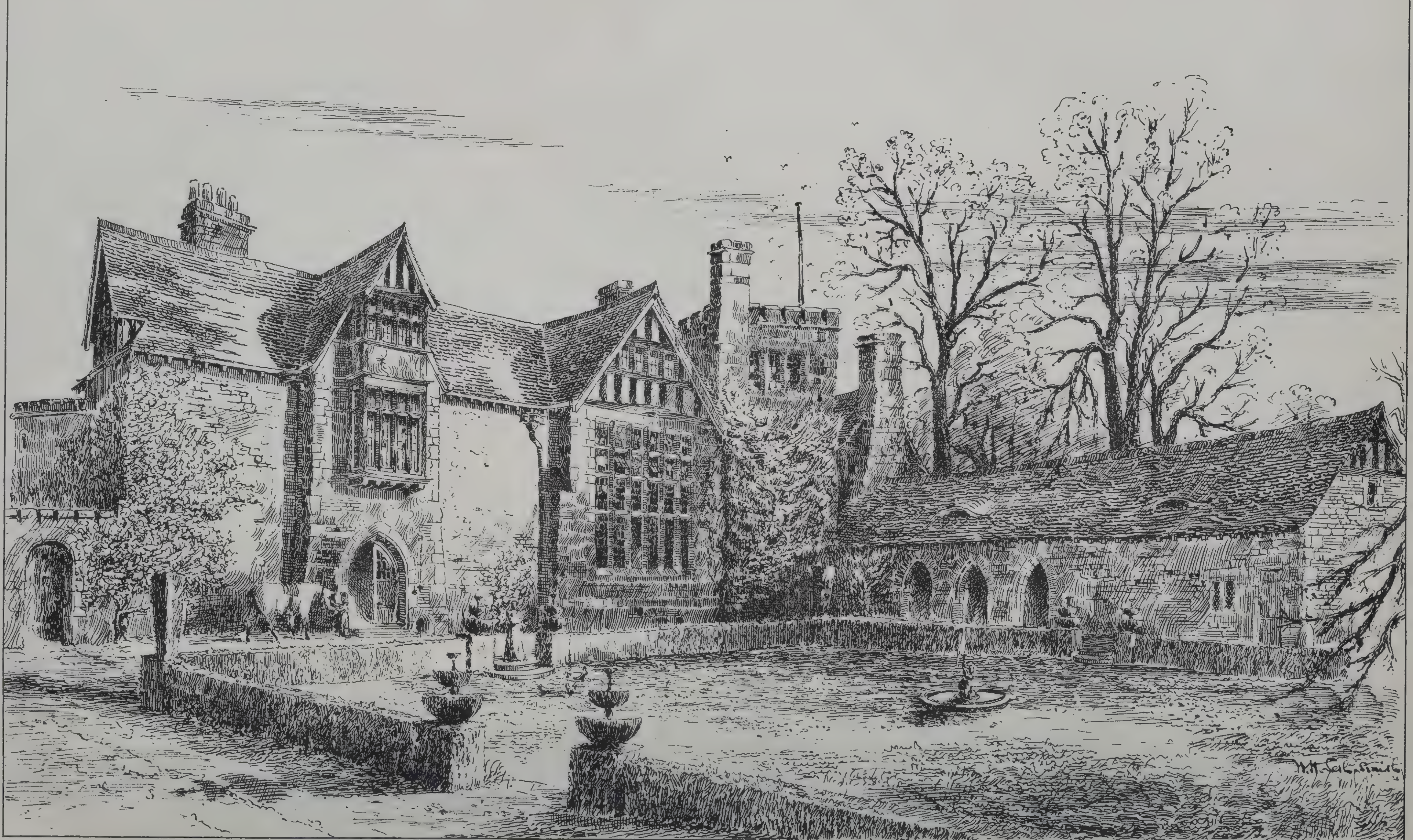
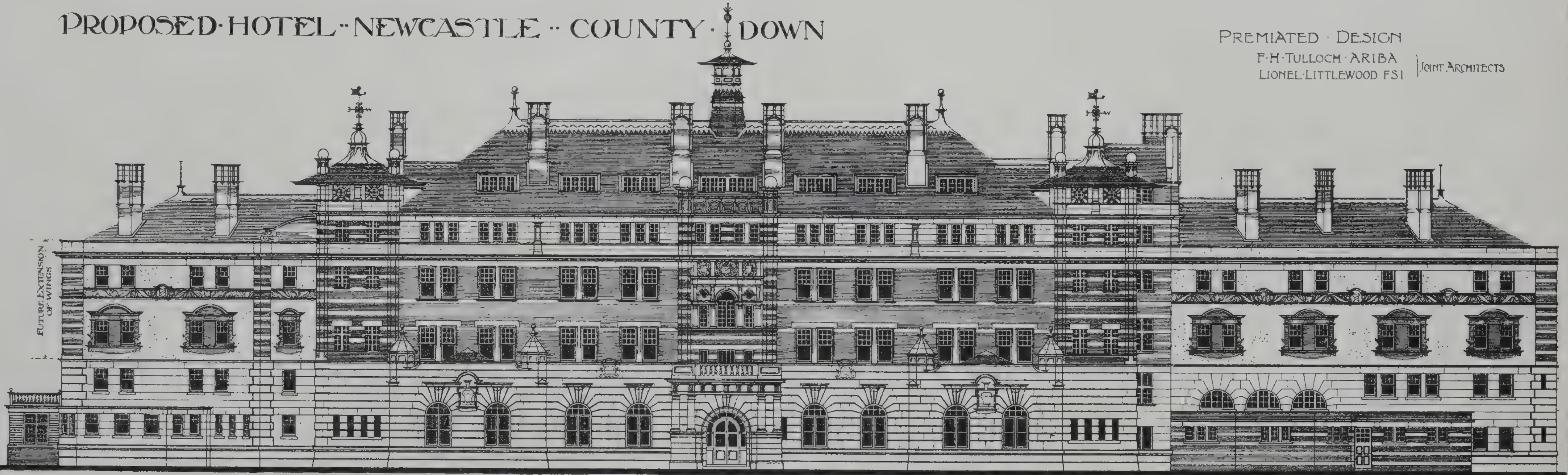


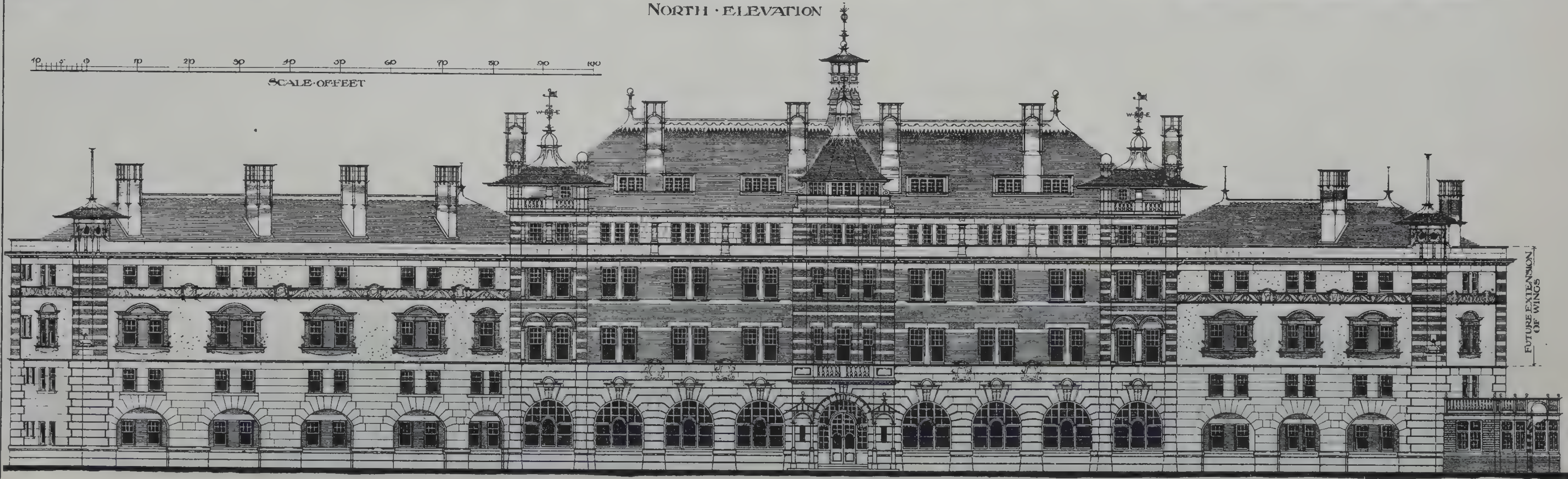
Photo Lithographed & Printed by James Akerman, 6, Queen Square W C

PROPOSED·HOTEL·NEWCASTLE·COUNTY·DOWN

PREMIATED · DESIGN
F·H·TULLOCH·ARIBA } JOINT ARCHITECTS
LIONEL·LITTLEWOOD FSI



NORTH · ELEVATION



SOUTH · ELEVATION · (FACING·THE·SEA)

·SCHEDULE·OF·COST·AND·ACCOMODATION·

FIRST·PORTION·TO·BE·BUILT

	£	s.	d.
CUBICAL CONTENTS · 693 588 ft at 7¼d	20·952	8	9
ELECTRIC LIGHTING HEATING AND OTHER ENGINEERING WORKS	3·250	0	0
LAUNDRY AND FITTINGS.	850	0	0
TOTAL OF PRESENT COST £	25·052	8	9

SITTING·AND·BED·ROOMS

GROUND FLOOR	BEDROOM	1	
MEZZANINE-FLOOR	BEDROOMS	8	
FIRST-FLOOR	BEDROOMS.	14	
DO DO	SITTING ROOMS.		3
SECOND-FLOOR	BEDROOMS	15	
DO DO	SITTING ROOMS		2
THIRD FLOOR	BEDROOMS	18	
FOURTH FLOOR	BEDROOMS	20	

TOTAL Nº OF BEDROOMS 76

DO DO · SITTING RMS 5.

FUTURE·EXTENSIONS

	£	s.	d.
CUBICAL CONTENTS 163932 ft at 7¼d	4952	2	3
EXTRA ENGINEERING WORKS	200	0	0
TOTAL £	5152	2	3

BEDROOMS

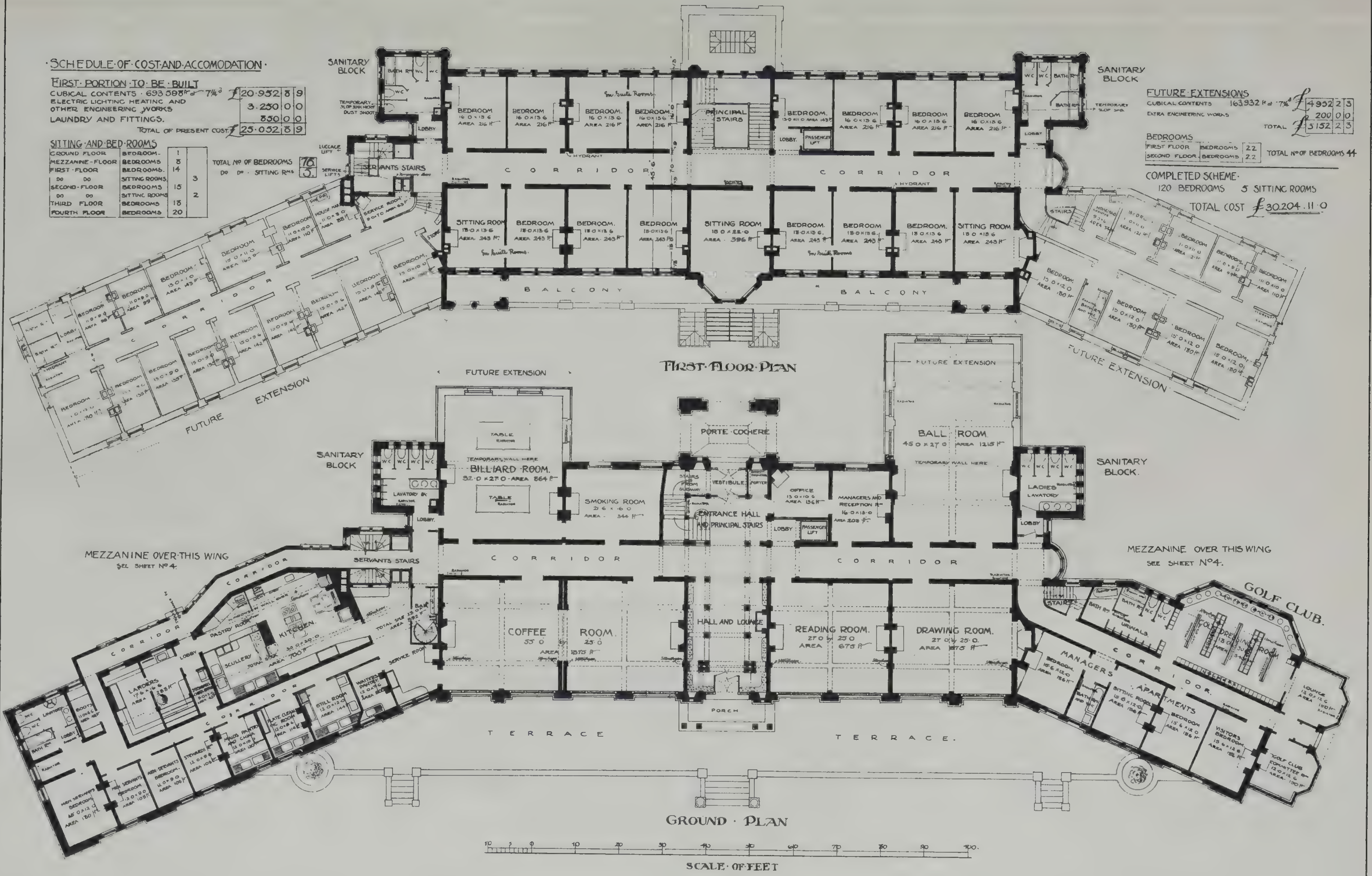
FIRST FLOOR	BEDROOMS	22
SECOND FLOOR	BEDROOMS	22

TOTAL Nº OF BEDROOMS 44

COMPLETED SCHEME·

120 BEDROOMS 5 SITTING ROOMS

TOTAL COST £30.204.11·0


SANITARY BLOCK
BATH Rm
W C
TEMPORARY SLOP SINK HERE DUST SHOOT
LOBBY
LUGGAGE LIFT
SERVANTS STAIRS
SERVICE LIFTS
SERVICE ROOM
HOUSE MAID
STORE
BEDROOM 16 0 × 13 6 AREA 216 ft
En Suite Rooms
PRINCIPAL STAIRS
BEDROOM. 13·0 × 11 0 AREA 143 ft
PASSENGER LIFT
HYDRANT
C O R R I D O R
SITTING ROOM 18·0 × 13·6 AREA 243 ft
BEDROOM 18·0 × 13·6 AREA 243 ft
SITTING ROOM 18 0 × 22·0 AREA · 396 ft
B A L C O N Y
STAIRS
BEDROOM 15 0 × 12 0 AREA 180 ft
BEDROOM 11 0 × 10 0 AREA 110 ft
FUTURE EXTENSION
FUTURE EXTENSION
TABLE
TEMPORARY WALL HERE
BILLIARD ROOM. 32·0 × 27·0 · AREA 864 ft
LAVATORY &c
SMOKING ROOM 21 6 × 16 0 AREA 344 ft
PORTE·COCHERE
STAIRS FROM SUBWAY
VESTIBULE
PORTER
ENTRANCE HALL AND PRINCIPAL STAIRS
OFFICE 13 0 × 10 6 AREA 136 ft
MANAGERS AND RECEPTION Rm 16·0 × 13·0 AREA 208 ft
BALL ROOM 45 0 × 27 0 AREA 1215 ft
LADIES LAVATORY
MEZZANINE OVER·THIS WING SEE SHEET Nº 4.
SERVANTS STAIRS
PASTRY ROOM
KITCHEN. 35 0 × 20·0
SCULLERY
TOTAL SIZE AREA 700 ft
BAR
SERVICE ROOM
LARDERS 17 6 × 16 6 AREA 288 ft
BOOTS
LOBBY
BATH Rm
STEWARDS Rm 12 0 × 9 0 AREA 108 ft
MAIDS PANTRY AND CHINA 12 0 × 10 0 AREA 120 ft
PLATE CLEANING ROOM 12 0 × 8 6 AREA 114 ft
STILL ROOM 12 0 × 12 0 AREA 144 ft
WAITERS PANTRY
MEN SERVANTS BEDROOM 15 0 × 12 0 AREA 180 ft
MEN SERVANTS BEDROOM 12 0 × 9 0 AREA 108 ft
MEN SERVANTS BEDROOM. 11 0 × 9 0 AREA 100 ft
COFFEE ROOM. 55 0 by 25·0 AREA 1375 ft
HALL AND LOUNGE
PORCH
READING ROOM. 27 0 by 25 0 AREA 675 ft
DRAWING ROOM. 27 0 by 25·0. AREA 675 ft
T E R R A C E
T E R R A C E.
STAIRS
URINALS
GOLF CLUB.
GOLF DRESSING ROOM
LOCKERS
MANAGERS APARTMENTS
BEDROOM 15·6 × 12·0 AREA 186 ft
BATH Rm AND W C
SITTING ROOM 15 6 × 12·0 AREA 186 ft
BEDROOM 15 6 × 12 0 AREA 186 ft
VISITORS BEDROOM 15 6 × 12 0 AREA 186 ft
LOUNGE 12 0 × 12 6 AREA 150 ft
GOLF CLUB COMMITTEE Rm 12 0 × 12 6 AREA 150 ft
10 5 0 10 20 30 40 50 60 70 80 90 100

FIRST·FLOOR·PLAN

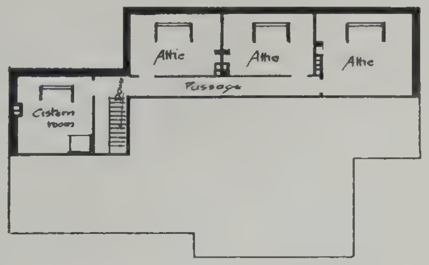
GROUND · PLAN

SCALE·OF·FEET

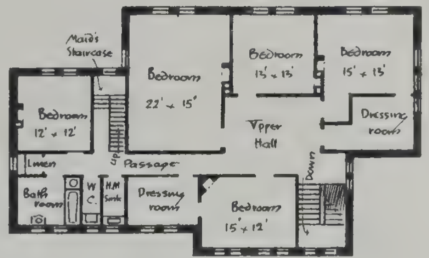
Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C.

B.N.D.C.: DESIGN FOR A COUNTRY HOUSE:

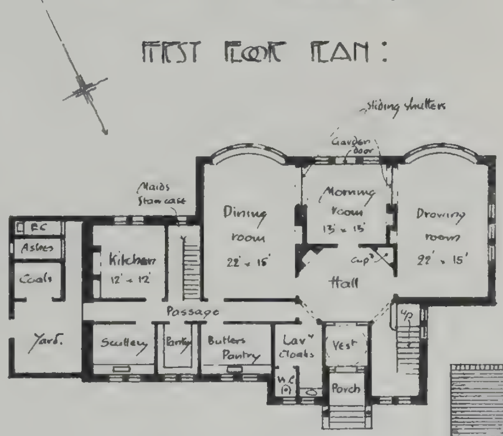
BY THE OWL:



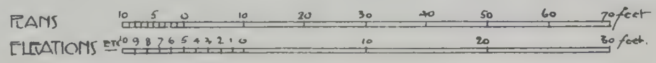
SECOND FLOOR PLAN:

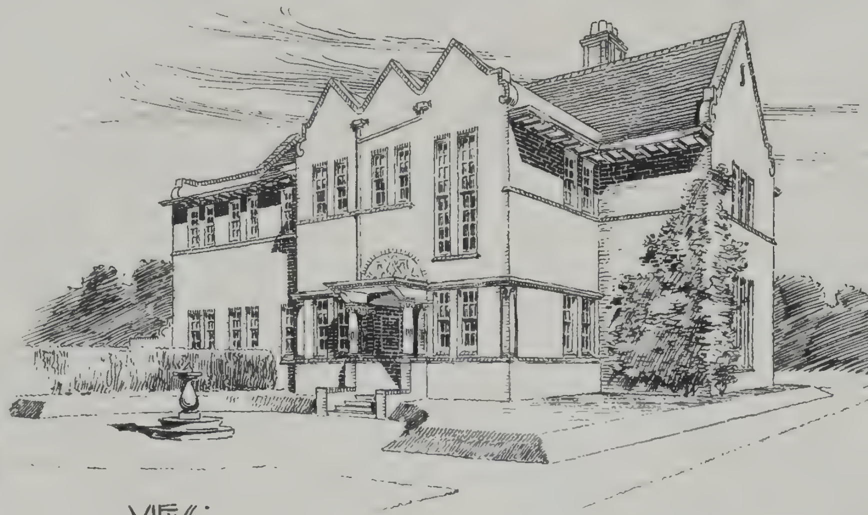


FIRST FLOOR PLAN:



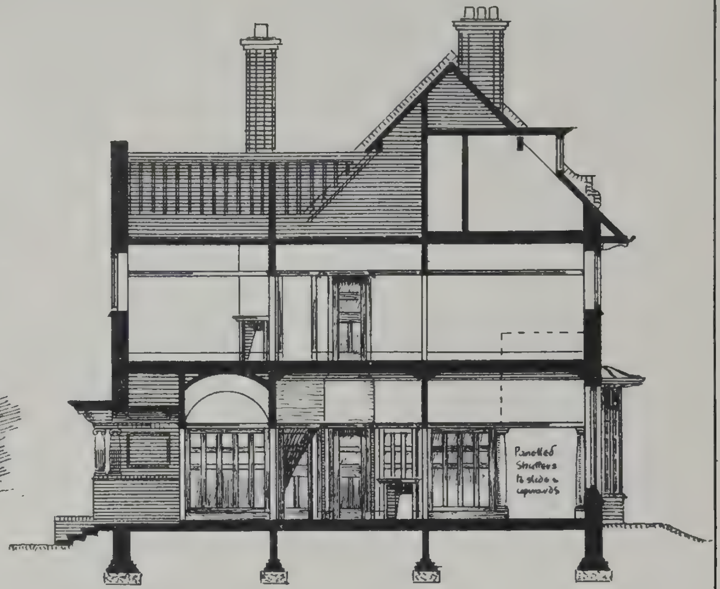
GROUND PLAN:


PLANS
10 5 0 10 20 30 40 50 60 70 feet
ELEVATIONS
ETC 10 9 8 7 6 5 4 3 2 1 0 10 20 30 feet.

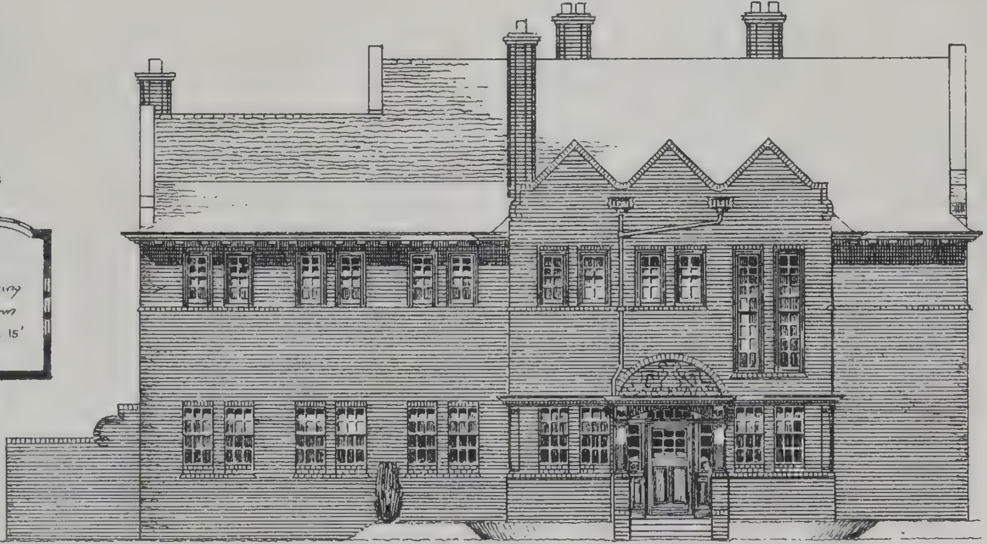


VIEW:

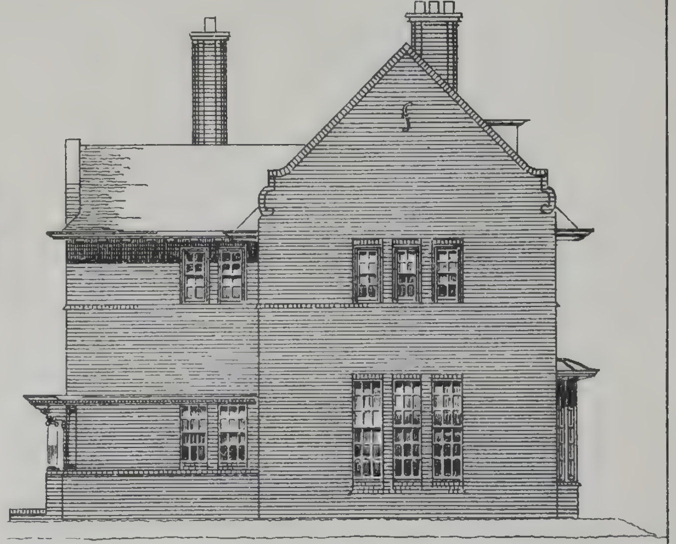
PLACED FIRST



SECTION:

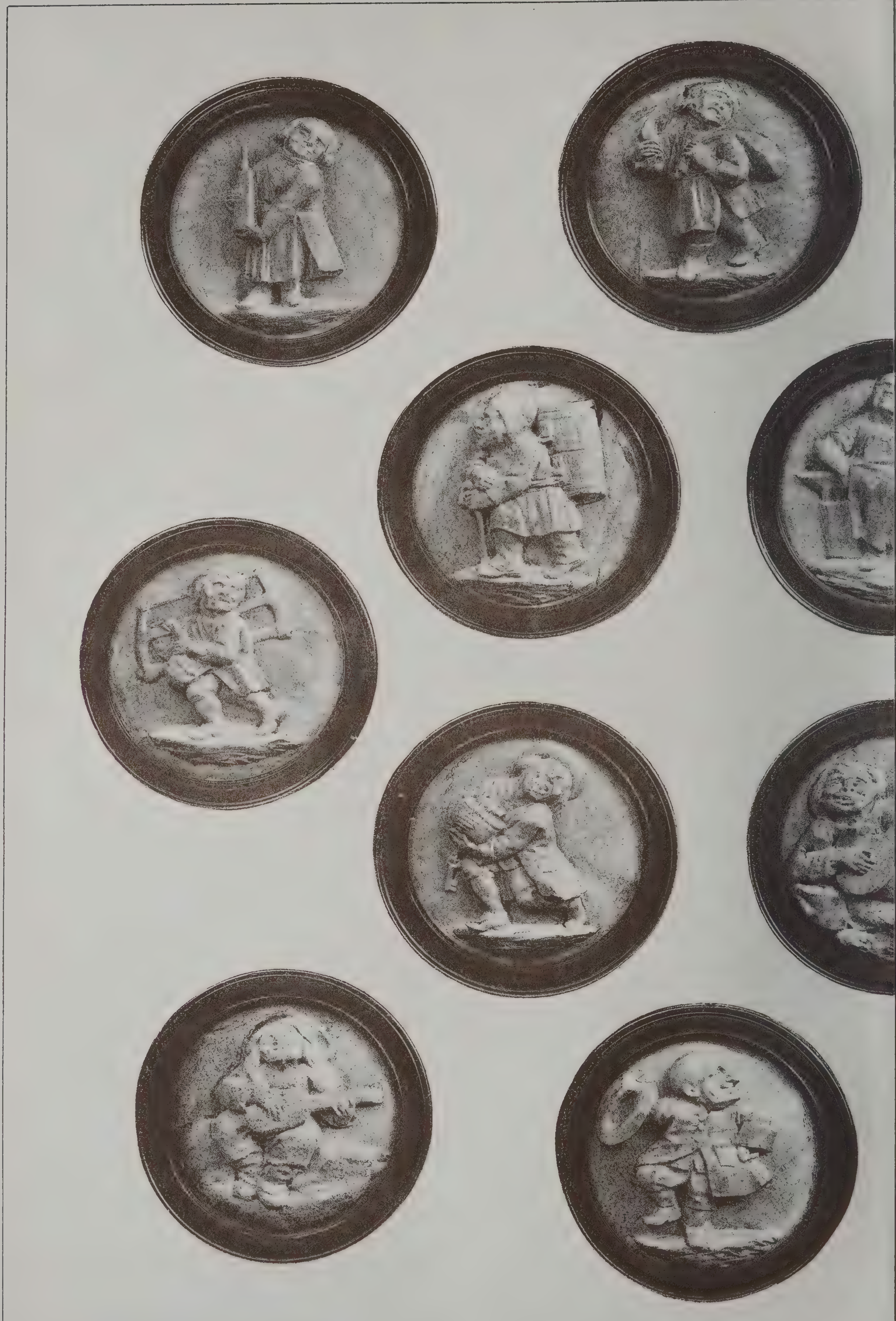


NORTH ELEVATION:

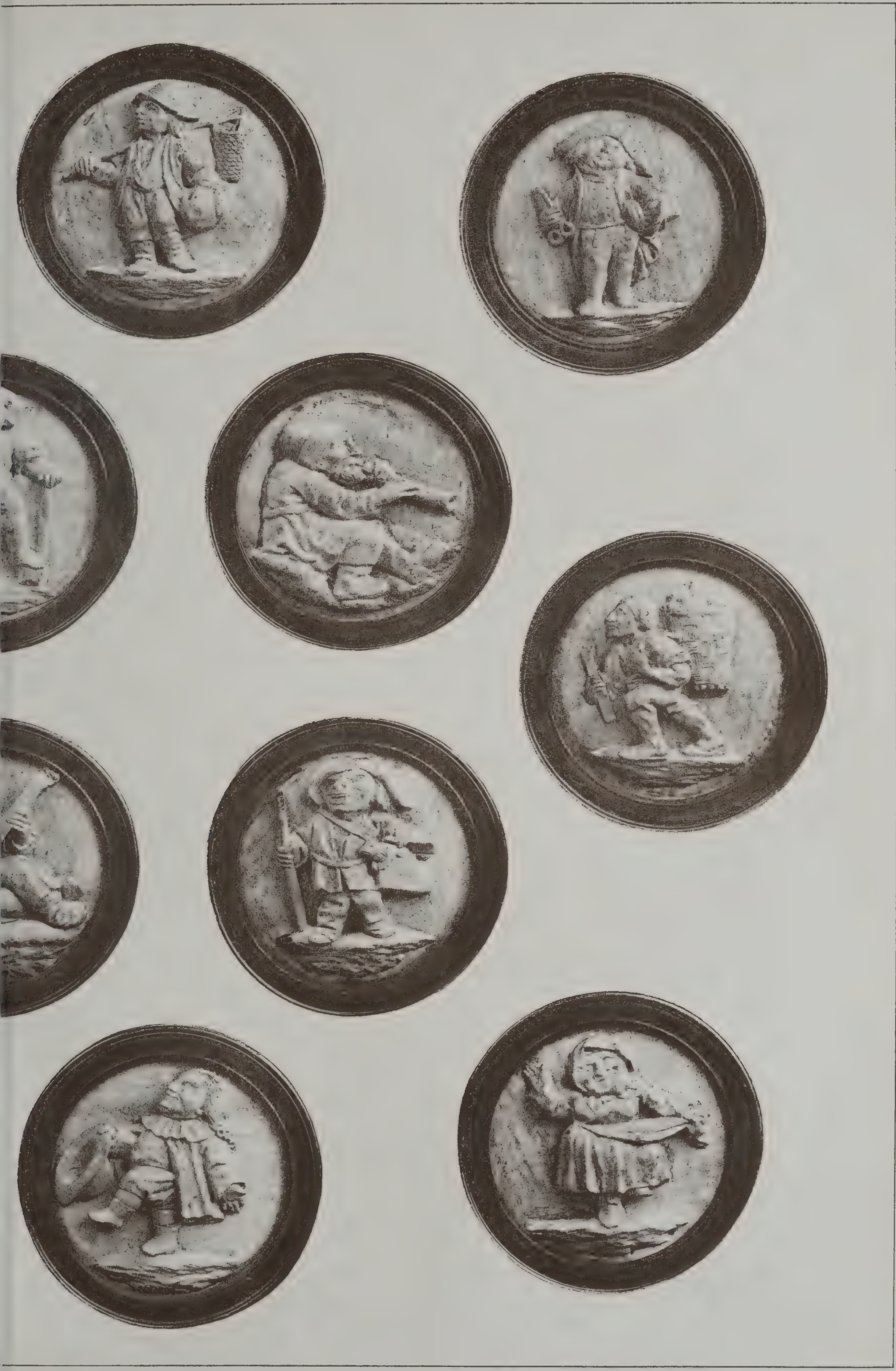


WEST ELEVATION:

Photo Lithographed & Printed by James Akerman, 6, Queen Square W.C.

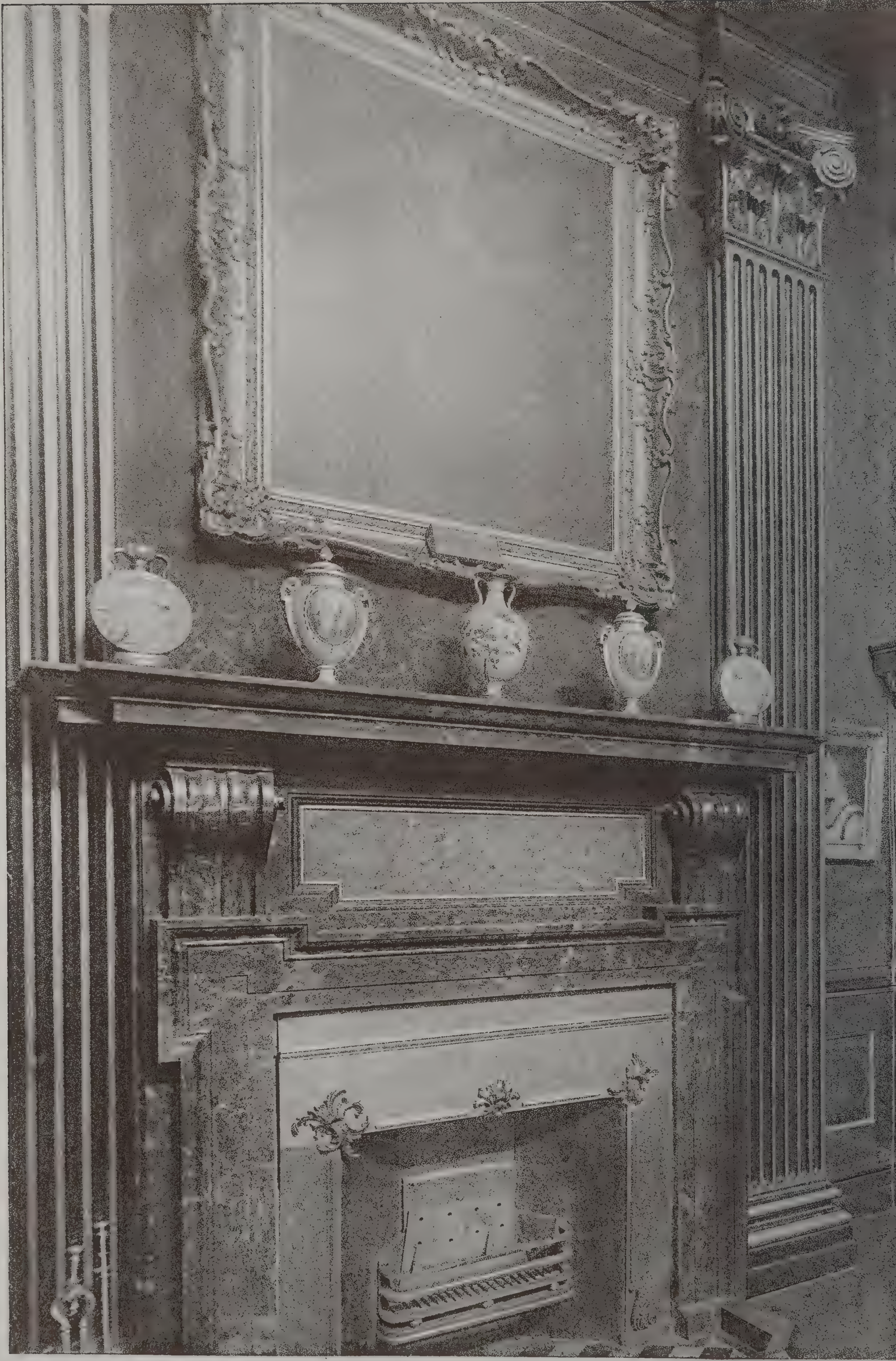


VENETIAN · CARICATURES · IN · ALABAST



"PHOTO-TINT," by James Akerman, 6, Queen Square, London, W.C.

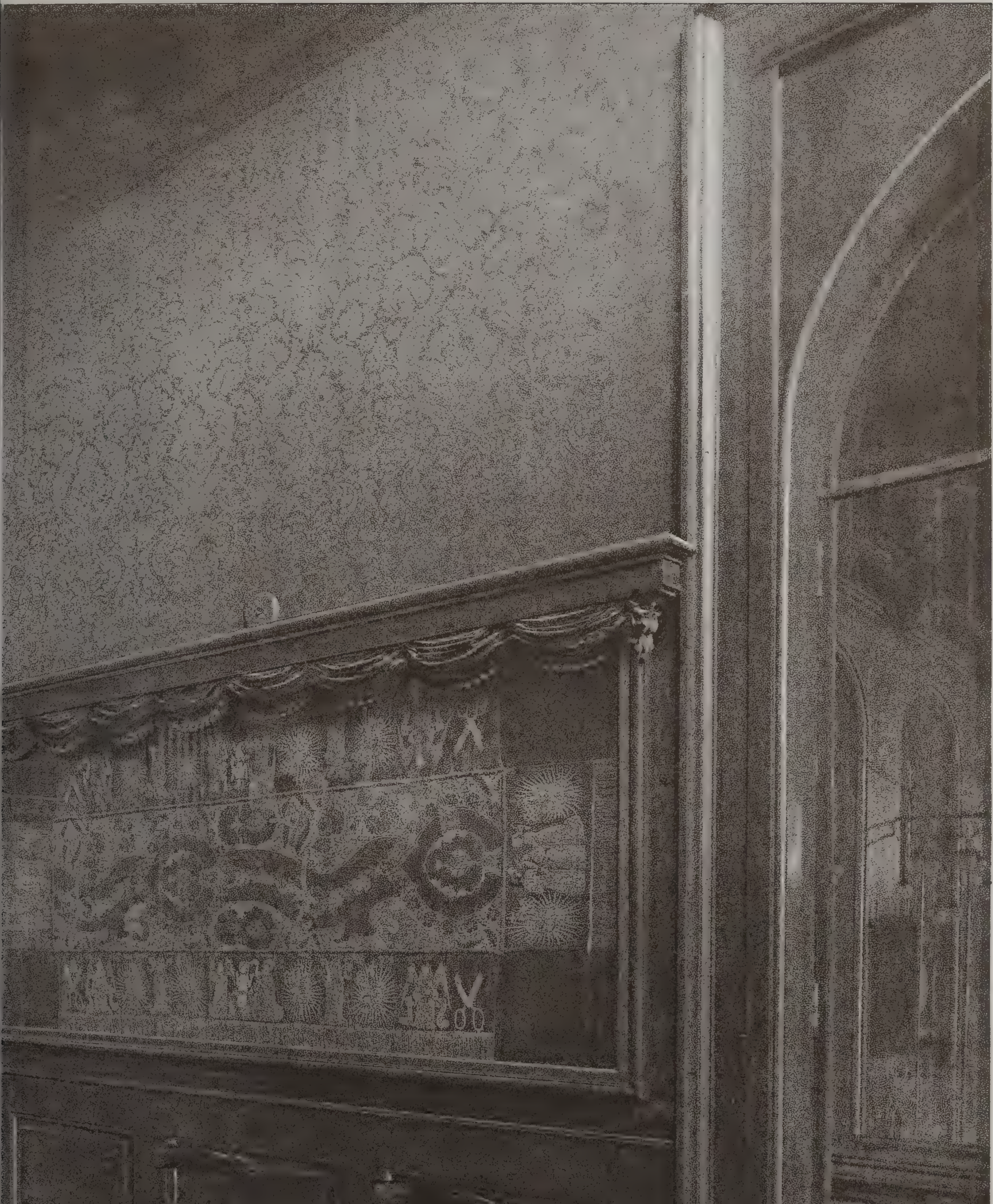
R· FROM·THE·COLLECTION·OF·SIR·CHAS·ROBINSON·



PHOTOGRAPHED WITH A SANDELL PLATE

THE · CITY ·

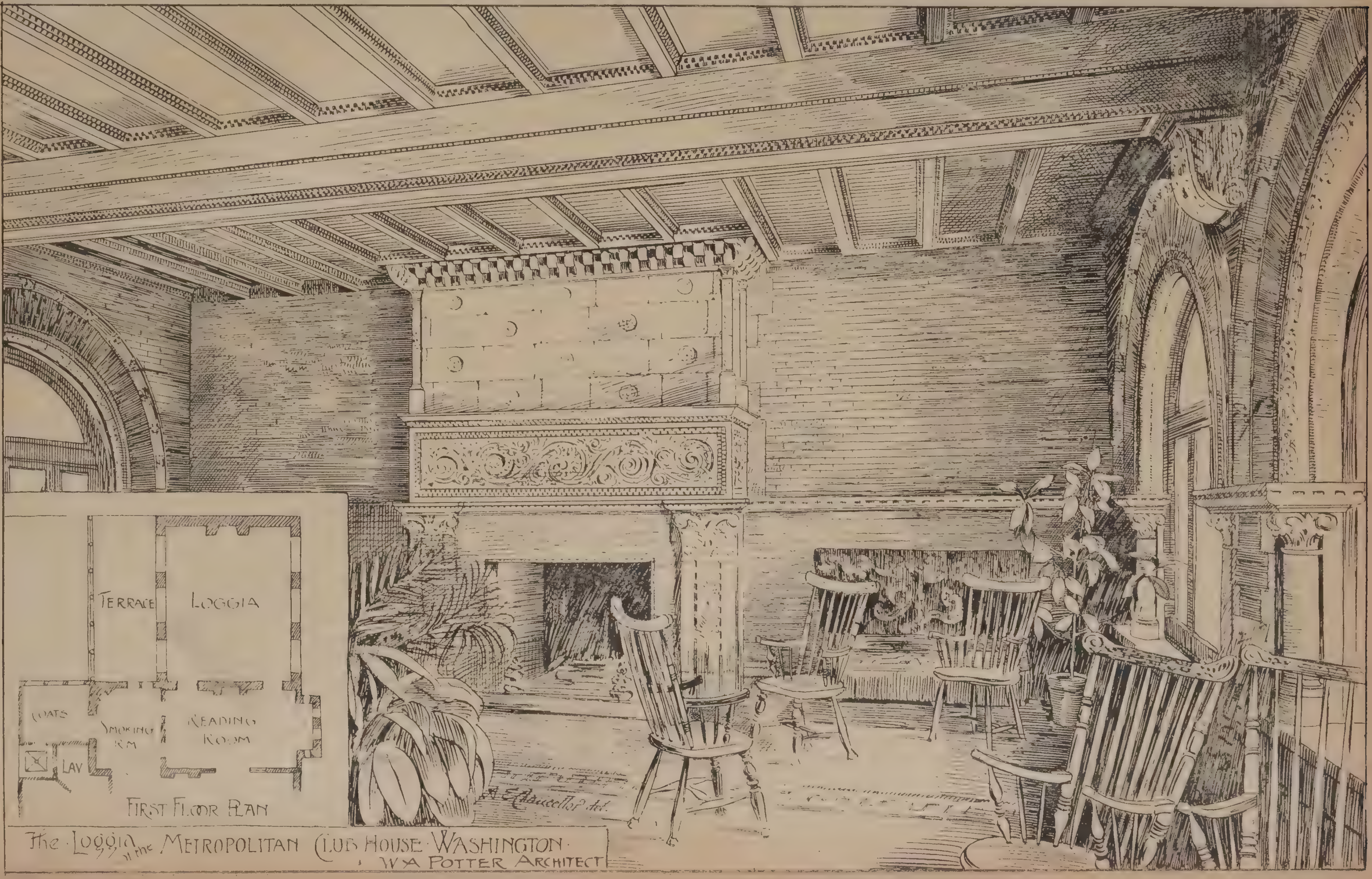
THE HALL OF THE MERCHANT-TAYLORS



"Photo-Tint," by James Akerman 6, Queen Square, London, W.C.

UILDS · No 14 ·

COMPANY · FIREPLACE · IN · LADIES' GALLERY



The Loggia at the Metropolitan Club House Washington. W A Potter Architect

Building Intelligence.

Birmingham.—At Quinton, near Birmingham, new premises are now completed for Mr. Griffiths, boot and shoe merchant. This building consists of large store-rooms, covered with matchboarding on walls and ceilings, and approached by large sliding doors. To this building a large and commodious residence is attached. The builder was Mr. Plaister, of Harborne. In the same locality a residence with painter's shop and store-rooms attached has been completed. This building is Gothic in style, with moulded brickwork, stonework, and woodwork. A short distance from the above building a new residence, blacksmith's shop, and laundry have been erected for Mr. Downing. This building is also Gothic in style. These two buildings have been erected by Mr. E. Airey; and the architect for the whole was Mr. J. Statham Davis, of Sparkbrook, Birmingham.

Bootle.—The Day Industrial School, which has been provided by the Bootle School Board, was opened on Monday. It is situated at the corner of Marsh-lane and Irlam-road, a large block of buildings originally erected as a convent, and subsequently made into artisans' dwellings, having been converted into the new school. The carrying out of the entire scheme will cost £11,500. The conversion of the old building has been carried out from the plans of Messrs. Sinnott, Sinnott, and Powell, architects, Liverpool and Manchester. Accommodation is provided for 300 children, the boys' department being in the southern portion of the building, while the girls are to be located at the north end. The building contains a plunge bath, arrangements for cooking, separate bathrooms and lavatories for boys and girls, a lofty schoolroom with classrooms adjacent, a drill-room, work-rooms, and a spacious playground.

Cumwhinton.—A new school which has been erected at a cost of £2,745 by the Wetheral School Board was opened last week. The buildings are faced with Cumwhinton stone, with dressings of red Howrigg stone. The roofs are of open timber work in pitch pine, and the wood finishings of the rooms are in yellow pine. The mixed schoolroom is 46ft. by 21ft. 6in. and 16ft. high to the tie-beam of roof, and the room accommodates 96 children. Ventilation is secured by air inlets through the walls, and air-pump extractors at the ridge, controlled by closing valves. The desks are of pitch pine in four graduated heights. The infants' room is 26ft. by 16½ft. and contains a gallery and seats for 46 children. Cloakrooms with lavatories have been provided. The playgrounds, which are each a quarter of an acre in extent, contain gymnastic apparatus. The buildings are fitted with hot-water pipes. A masters' house, built in corresponding style to the school, adjoins. The work has been carried out under the direction of and according to the plans selected in competition of Messrs. Johnstone Brothers, Lowther-street, Carlisle, the style of architecture being Classical Renaissance. The contractors for the school were:—Builders' work, Mr. James Beaty; joiner work and furniture, Mr. Joseph Hindson; plumber work, Mr. W. Forster; slater, Mr. C. J. Nanson; plaster and cement work, Messrs. S. Ferguson and Sons; painter work, Messrs. W. and G. Laidlow, all of Carlisle; heating apparatus, Messrs. Seward and Co., Lancaster. Mr. Robert Ormiston, Carlisle, acted as clerk of the works.

Edinburgh.—For several years important additions have been in progress at St. Mary's Roman Catholic Cathedral, Broughton-street, with the view of improving the internal appearance and of providing additional accommodation. Archbishop Smith sanctioned the first part of the scheme—viz., the addition of the space occupied by vestries, lobby, and gallery stairs, and the erection of the handsome porch in front. These were finished a few years since. Owing to the limited area of the site, difficulty was experienced in arranging for the extensions. The work now completed has been the erection of a new chancel with aisles and a side chapel, and vestries on the site of the former clergy-house at the west end of the cathedral, together with the erection of a baptistery at the south side of the Broughton-street front of the building. A new house for the accommodation of the clergy was acquired at No. 61, York-place, and a passage was built connecting it with the vestries of the cathedral, and passing under Chapel-lane. The sanctuary and high altar have always been situated at the west end of the church, and in connection with the alterations the west gable has been taken down and rebuilt. The new chancel is 50ft. in length by 26ft. in width, with a height to the ceiling of 40ft., the aisles being about 10ft. wide. The new vestries and side chapel are situated between the north aisle and Chapel-lane. The additions have been designed in the Gothic style of a somewhat Late period, so as to harmonise with the existing building. The work has been carried out from the designs of Messrs. Buchanan and Bennett, 24, George-street.—The city authorities have been granted a warrant in Edinburgh Dean of Guild Court to remove a portion of the inclosure wall at the north-east corner of the Observatory ground on the Calton Hill, and build on the site another Observatory building. The new structure, which is destined for the accommodation of the large telescope now at Murrayfield, will be octagonal in shape, and Classical in character, in keeping with the existing buildings. It is to be 35ft. in diameter internally, with a pier for the telescope, and the height to the crown of the dome will be 42ft. The structure will be of stone, with pilasters at the angles. Sir Howard Grubb, Dublin, is making for it a rotating roof of steel, covered with ¼in. thick papier-mache, which will be surmounted by an ornamental finial. It is proposed to introduce an electric motor to revolve the dome. The cost of the new Observatory, the plans for which have been prepared by Mr. Thomas Morham, City Superintendent of Works, is estimated at about £2,200.

Leeds.—A new Sunday school, which has just been built in connection with Richmond-hill Wesleyan Chapel, was opened on Saturday. Mr. G. Danby was the architect. The school, like the house, is of brick, with stone facings. A square tower at its north angle is a conspicuous feature. The school premises consist of a central hall, 64ft. by 35ft., seating 450 persons, with a recessed platform at one end. The cost of the building, including boundary walls, has been £2,900. The works were carried out by Mr. C. Myers (brick and stone work), Mr. T. Harrod (wood work), Mr. T. Barrand (plumbing), Mr. Pennington (plastering), Messrs. Pickles Bros. (slating), and Messrs. Holmes and Co. (heating).

Newcastle-on-Tyne.—The new police station in Scotswood-road was opened on Monday. The buildings have been erected from the designs and under the superintendence of the architects, Messrs. Marshall and Dick, 4, Northumberland-street, Newcastle, their plans having been selected from designs submitted in open competition. The main building is three stories in height, the principal front, facing the Cruddas Park, being flanked with gables rising above the roof of the central portion. The red brick facing is relieved by stone dressings, a deep frieze of stone above the second-floor windows running the full length of the main elevation. The accommodation provides for the housing of 30 single constables, six of whom are auxiliary firemen. An inspector will also reside on the premises, a house distinct in itself being arranged for him, and communicating with the main building only through his office. The ground floor of the main building is occupied by the charge room, parade room, inspector's and sergeant's offices, surgeon's room, six cells, stores, &c. On the first floor are the reading, recreation, and mess rooms, kitchen, boot and drying rooms, one large dormitory, two rooms for the messman, and large lavatory, bathrooms, &c., for the use of the constables. The top floor is occupied by the dormitories and bath and lavatory accommodation. A new feature is introduced by the dividing of the dormitories by partitions about seven feet high, so that each occupant has practically a room to himself, with bed, table, chair, and window. The basement contains the heating apparatus for warming the cells, and a coal store is provided in the yard. The contractor has been Mr. Alex. Bruce, of Newcastle, and Mr. Charles Dixon acted as clerk of works.

Peterborough.—At the annual meeting of the Cathedral Restoration Committee, the report of the executive committee was submitted, in which it was stated that in their last annual report the committee appealed for £4,000 for works certified by the architect (Mr. J. L. Pearson, R.A.), to be urgently required for the safety of the fabric. The response to this appeal had enabled the committee to enter into a contract with Mr. John Thompson, of Peterborough, for the necessary repair to the south gable and the south end of the eastern aisle of the south transept, for the sum of £694. The repair of the eastern and western faces of this transept, the extensive repair of the masonry of the north transept, and the underpinning and repairs to the north-east angle of the eastern chapel could not be proceeded with for want of funds. A sum of £3,000 was still needed for these works. With regard to the west front the committee submitted the substance of Mr. Pearson's report as to the work necessary to secure its safety, the repairs necessitated by the late storm to the spires, pinnacles, and other portions of the west front, which should be undertaken at once, amounting to £850. The cost of the work necessary for the preservation of the west front might roughly be estimated from £6,000 to £8,000. The committee reported that £1,947 10s. 6d. had been given or promised to the work. A contract had been entered into with Mr. J. Thompson for the erection of the necessary scaffolding to the west front for the sum of £385. The committee acknowledged with thanks the gifts of stalls from the Rev. W. H. Cooper and Mr. T. A. Argles. These, with the one given last year by the Rev. Thompson Yates, were now in course of construction, and only one stall remained to be provided to complete the required number. In concluding the report, the committee appealed for £12,000 for the following purposes:—To repair the damage done by the late storm, to secure the safety to the west front, and to execute the repair still needed in the transepts and eastern chapel. Towards the sum £2,644 4s. 11d. had already been promised, and of this amount £1,974 10s. 6d. had been specially devoted to the west front.

CHIPS.

The Archbishop of York consecrated, on Thursday in last week, the Church of St. John the Evangelist at South Bank, Middlesbrough.

A subscription bust of the late Professor Minto, executed by Mr. Joseph Whitehead, of London, has been placed in the library of King's College, Aberdeen.

Ansford parish church, near Castle Carey, Somerset, has this week been enriched by the addition of a stained-glass window in the south aisle. The window is divided into two compartments. In the right is a figure of Bishop Ken, while the left-hand one is occupied by St. Andrew. The figures are surmounted by canopies of the Perpendicular period. The window is the work of Mr. F. Drake, of the Cathedral-yard, Exeter.

St. Chad's Mission Church, which has been erected on the New-road, Rubery, on the Lickey Hills, was dedicated on Saturday. The church is a wooden structure, consisting of nave only, with campanile tower at the west end, and an annexe, which can be separated from the main body by a screen, and used as a Sunday-school. The nave affords sitting accommodation for 200, with provision for 100 more by removal of the screen from the annexe. The style is 15th century Gothic. Mr. Jeffrey Hopkins, of Worcester, is the architect, and Mr. Stanley Broom the builder. The cost, including fittings, has been about £700.

The lessee of the Theatre Royal at Leeds proposes to build a new theatre of varieties near the Bridge in that city. Mr. Frank Matcham, of London, has been appointed as architect, and the estimated outlay is between £70,000 and £100,000.

A bronze lectern was used on Sunday for the first time in the service at St. Cuthbert's Church, Edinburgh. The lectern is the gift of Mr. Alexander Ballantyne, in memory of his wife, who died in 1890. Designed and executed by Mr. D. W. Stevenson, R.S.A., the reading-desk is carried on a pillar of Renaissance design in harmony with the style of the church. The chief feature of the lectern is the figure of an angel with folded wings, which stands below and in front of the desk. The arms are carried upwards over the head, and in the hands, held horizontally, are sprays of palm-leaves and a scroll. The hands just touch the highest part of the reading-desk. The chiton is used as drapery, and the head is crowned with a wreath of olive.

St. James's new Presbyterian church, Alnwick, was opened on Sunday. It occupies the site of an old church, and is designed in the Perpendicular style. At the angle next the road is a tower, carried up to the height of 75ft. with angle turret, traceried belfry windows, and battlemented parapet. The accommodation of the church, including choir, is about 700. The building has been erected from designs from Mr. W. Lister Newcombe, F.R I.B.A., architect, of Newcastle, and the cost has been £4,000.

The Home Secretary has appointed Mr. Alfred A. Hudson a member of the Tribunal of Appeal under the London Building Act, 1894, in succession to the late Mr. Daniel Cubitt Nichols, M.S.A.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Birmingham Architectural Association.—The fourth general meeting of the current session was held on Friday evening last at the Exchange Buildings, New-street, Birmingham, the headquarters of the association, Mr. William Henman in the chair. Mr. C. Nicol was elected a member. Mr. Appelbee then read his paper, entitled the "Conduct of Architectural Competitions." Mr. Appelbee, in the course of his paper, said that, in his view, many competitors of late had not received the consideration they were entitled to, as competitions cost them, as a body, much more than the successful man would receive in commission for erecting the building. In order that a competition may be satisfactory to everyone concerned, it will be necessary, in his opinion:—(1) For the accommodation required to be very definitely scheduled. (2) That no unnecessary restrictions should be made as to where that accommodation should be placed. (3) If any restrictions have to be inserted, such as limit to cost or frontage lines, they should be most strictly adhered to in making the award. (4) And, most important of all, that the means adopted for making the selection shall be such that both promoters and competitors shall be convinced of its justice; and, therefore, willing to abide by it, and that the promoters shall see that it is not to their interest to go contrary to it. To obtain this end, a committee or jury was suggested, and its constitution and advantages over the single assessor discussed. (5) For the remuneration offered both for the competition drawings and services rendered of the buildings erected to be such as architects usually receive. And, lastly, to obtain more publicity towards the close, with a view to preventing bogus competitions, and illustrated these points by some recent examples.

Edinburgh Architectural Association.—The opening meeting of the session of this association was held on Thursday night in last week at the National Galleries on the Mound. Dr. Rowan, the president, in the chair. The President, in his inaugural address, devoted some attention to the question of the education of artists. He directed attention to the possible influence upon their Association of the action of the Royal Institute of British Architects in London in dividing up the whole kingdom into architectural provinces or districts, in which the present societies, to be allied to the central body, would be the respective centres. There was, he pointed out, an essential difference between their Association and others, in respect that while the latter existed almost exclusively for the benefit of architects, the Edinburgh Association existed for the benefit of architecture and the allied arts. For that reason, he considered that their own constitution was preferable, and that the larger the number of lay members they could induce to join them and to take an active part in the management of their affairs, the greater would be their strength and influence. Besides, he thought they knew their own business better than a body 400 miles away. But there was something more serious awaiting their consideration in the Bill now before Parliament of the Society of Architects in London, providing for the compulsory registration of architects. This brought him to the burning question of education and compulsory examination. Those who advocated the scheme said that the ranks were crowded with incompetent and badly-educated men, and that, consequently, the good men and their art suffered in prestige and public estimation, that the public should be protected from this incompetent class, and that the only way to do so was to insist on special education, tested by compulsory examination before one was allowed to begin business. But there were several points of great importance to be kept in view, one of which was that the possession of the creative and artistic power necessary to make an architect could not be discovered by compulsory examination, and another of which was that about 90 per cent. of the building executed in this country was done without the intervention of an architect. So far, therefore, as protecting the public against those who designed and erected buildings was required, it appeared to him that those who erected 90 per cent. of the buildings were the proper subjects on whom to impose a qualifying examination, because at present the public had little or no control in the planning or designing of what they are compelled to buy and to live in. If the business of an architect were to become a closed one—which was no doubt the object in view—its last state would be no better than the present one. The solution of the question seemed to him to lie in the increasingly high standard of education for all classes, and the greater elaboration of the Building and Police Acts and their stringent application by competent officials, alike to the architect, the builder, and the public. No amount of legislation could in the present state of matters protect the public from the effects of bad art. Indeed, by far the greater part of the public did not want good art. They wanted what pleased them, and plenty of it, for their money. Art and those who followed it could only flourish in absolute freedom. In conclusion, the President urged the claims of the Edinburgh School of Applied Art, and directed attention to the good and useful work it was doing. Professor Baldwin Brown afterwards explained a series of limelight views of "The Frescoes by Michael Angelo in the Sistine Chapel at Rome." In lucid fashion he explained not only the general features of the decorative scheme of the frescoes, but, treating their subjects in detail, pointed out their great interest and value as works. On the motion of Sir Henry Littlejohn Professor Baldwin Brown and the President were cordially thanked.

Northern Architectural Association.—At an adjourned meeting of the Association held on Nov. 27 in the Art Gallery Meeting Room, Newcastle, Mr. C. S. Errington, A.R.I.B.A., completed his paper on "Mediæval Mouldings, Features, and Ornament." The paper was illustrated by nearly 200 lantern slides, many of which had been prepared specially for the occasion. Mr. Errington traced the development of arches, jambs, and piers, from the Norman era, comparing the noble example at Durham with contemporaneous work at Ely, Norwich, Peterborough, Gloucester, and Winchester Cathedrals. The Transitional period was illustrated by reference to Fountains, Kirstall, and Selby Abbeys, and the Durham Galilee; while the Lancet period was demonstrated by descriptions of the work at Rievaulx, Whitby, and Fountains Abbeys, Lanercost Priory, and Wells Cathedral. The Decorated period was described and illustrated by numerous examples; and Mr. Errington concluded with a brief reference to the work of the Perpendicular era, which closed in the middle of the 16th century. The lantern was manipulated by Mr. Parker Brewis. A cordial vote of thanks was given to Mr. Errington for his paper.

Society of Antiquaries of Scotland.—The annual meeting of the society was held on Saturday, Dr. James Macdonald, vice-president, in the chair. The office-bearers for the ensuing year were elected as follows:—President, the Marquis of Lothian. Vice-presidents, Mr. Reginald Macleod, Queen's Remembrancer; Mr. James Macdonald, LL.D.; and Mr. J. Balfour Paul, Lyon King of Arms. Councillors, Sir George Reid, LL.D., P.R.S.A., and Mr. J. R. Findlay, representing the board of trustees; the Hon. Hew Dalrymple, Mr. Alexander J. S. Brook, Mr. John Taylor Brown, the Hon. John Abercromby, Mr. Charles J. Guthrie, Mr. Thomas Ross, and Mr. Gilbert Goudie; secretaries, Dr. D. Christison and Dr. Munro; secretaries for foreign correspondence, Sir Arthur Mitchell and Mr. Thomas Graves Law; treasurer, Mr. James Henry Cunningham. During the year twenty-two members, it was reported, had been lost by death, and twenty-seven new members added.

◆

At the Wolverhampton county sessions on Tuesday, William Mee, president of the Operative Carpenters' Society, was granted transfer of a license for a public-house of which he has recently become tenant. Mr. Mee is a Justice of the Peace for the borough, being one of a batch of workingmen magistrates appointed by the late Goverment; but he holds that as the house of which he has been granted a license is outside the borough boundaries, his occupation of it will not interfere with his magisterial duties.

At Tuesday's meeting of the London County Council, a recommendation by the Parks and Open Spaces Committee for the erection of a palmhouse in Battersea Park at a cost of £2,000 was opposed by Mr. Beachcroft, who moved a hostile amendment, which, after some discussion, was carried by 70 to 42 votes.—A Bill prepared by the Parliamentary Committee for the construction of a tramway over Vauxhall Bridge, as reconstructed, was approved. The link of tramway will connect lines on either side of the bridge, which will shortly fall into the hands of the council.

COMPETITIONS.

Aberdeen.—In the competition for the reconstruction of the municipal buildings the town council have appointed Mr. Young, F.R.I.B.A., of London and Glasgow, as assessor at a fee of one hundred guineas and expenses.

Siddons Memorial.—The committee who have undertaken to erect a memorial to Mrs. Sarah Siddons over her grave in Paddington Old Churchyard met on Friday, and, adopting the recommendation of Sir F. Leighton, selected from the models sent in by twenty-one competitors that of a statue designed by Mr. William Brindley, of Westminster Bridge-road. The work is to be executed by M. Chevalier, a French sculptor. The statue will be life-size, and carried out in white marble, the pedestal being of Portland stone. It will represent the distinguished actress in a sitting position, attired in Grecian dress, with a small coronet on the head, from which a veil falls over the shoulders. The cost will be £450.

CHIPS.

The death occurred at Paris, on Sunday, at the age of 72, of M. Charles Comte, the historical painter, who for the last 20 years has not exhibited his works, but has lived in strict retirement, mostly at Fontainebleau.

The London County Council are having the grounds of Lincoln's Inn-fields thoroughly drained, the arrangements in that respect having been previously of the most primitive and inadequate character, and the various paths are being levelled and gravelled. Later on the flower-beds will be overhauled, and in many instances replanted.

The Town Council of Southampton decided at the last meeting to construct a new main sewer from Simnel-street to the town quay, at an estimated cost of £4,000.

A reredos of Caen stone and marble has just been erected in the church of St. Mary, Shotesham, near Norwich. The structure is in the Late Decorated period of architecture, the central portion being carved in high relief with a representation of the Last Supper, after the style of Leonardo da Vinci. An elaborate canopy of pierced tracery and carved pinnacles rises above this, and the side wings form a series of panels with surface tracery in the same style. The work was executed by Messrs. Jones and Willis, of Birmingham, London, and Liverpool.

Mr. J. W. Taylor, F.R.I.B.A., of Newcastle-upon-Tyne, has, through the instructions of the Peoples' Palace Co., Limited, rearranged and reconstructed that building. The quantities were taken out by Mr. George Bell, quantity surveyor, 60, Collingwood-street, Newcastle, and the whole of the work is intrusted to Mr. Alexander Pringle, of Gateshead.

A meeting of the newly-formed Bury and District Master Builders' Association was held at the Grey Mare Hotel, Bury, Lancs, on Thursday evening in last week. Mr. R. Smith presided, and there was a large attendance of the various trades. A preliminary committee was formed for the purpose of drafting rules, and Mr. J. H. Thompson, of Messrs. Thompson and Brierley, was appointed secretary pro tem. of the local association.

Mr. William Johnson, the missionary who, with his wife, was murdered at the Friends' Mission Station at Arivonimamo, last week, was formerly an architect in practice in London, having previously acted as assistant to Mr. Edward Birchall, F.R.I.B.A., of Leeds. In 1871, Mr. Johnson went out to Madagascar, and a year later he married Miss Sewell. For some years he acted as head-master of the Friends' Foreign Mission High School at Antananarivo. He carried out the enlargement of the school buildings, and, besides drawing the plans for the London Missionary Society's High School for Girls, built a hospital which cost between £5,000 and £6,000.

Sir John Gilbert has presented to the Blackburn Corporation fourteen water-colour sketches, with a hope that they will prove of service to the art students of Blackburn, of whom he is pleased to hear so good an account. The drawings are stated to be fine examples of Sir John's earlier work, and of special value to students.

Mr. James Runnalls, of Penzance, an ex-councillor, and one who, as tenant of the Penlee Quarries, had become a large exporter of granite and macadam, died on Friday. Of a speculative turn of mind, and shrewd, and industrious, he turned his attention to the Penlee Quarries, granite from which was to have formed the proposed breakwater for Mount's Bay. Instead of that, in the form of macadam, a huge hole at the base of the hill, which leads to Paul Churchtown, has gone, under his management, to make and maintain thousands of miles of road. He leaves a widow, a son, Mr. James Runnalls, who has long superintended the business, and a daughter.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to The Strand Newspaper Company, Limited.

TERMS OF SUBSCRIPTION.

One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India, £1 6s. 0d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front-page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No Front-page or Paragraph Advertisement inserted for less than 5s.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page Advertisements and alterations in serial advertisements must reach the office by Tuesday morning to secure insertion.

Situations.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., LI., LIII., LIV., LVIII., LIX., LX., LXI., LXII., LXIII., LXIV., and LXV. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Received.—J. F. Woolney.—E. C. B.—W. N. and Co.—Antipodian.—E. S. (Cork).

Correspondence.

PROPOSED NATIONAL AND PROVINCIAL UNION OF BRITISH ARCHITECTS.

To the Editor of the Building News.

> " . . . We hear the fearful tempest sing,
> Yet seek no shelter to avoid the storm;
> We see the wind sit sore upon our sails,
> And yet we strike not, but securely perish."
> —Shakespeare.

Sir,—It would, perhaps, be too much to expect that that which has been neglected for so long should suddenly and spontaneously burst forth, and, presto! become an accomplished fact; that architects as a body should practically recognise the imperative necessity of showing a bold, united front to the enemy, whose name may well be called Legion, and which your correspondent, "One in a Mob," not without reason, despairs of ever seeing vanquished. And yet it is difficult to imagine that, as matters now stand, any thoughtful architect with any love for the well-being of his profession can hold back, and elect to go on still in the old ruts propelled by the obsolete machinery of half a century ago, and content himself to read the times with the aid of a farthing dip, when, with a little exertion, he might enjoy the luxury and brilliancy of the electric light. Is his profound love for antiquity—his deep reverence for Mediævalism—answerable for this?

A friend lately remarked to me: "I think less of architects now than ever I did, and they deserve all they get, and more, if they will not be at the trouble to protect themselves." What could I reply to this home-thrust? I could but acquiesce with the best possible grace at command. Yet I confess it makes one's blood boil to think of it, that even outsiders can express righteous indignation, while we apparently are content to sit in our arm—but not easy—chairs, outwardly indifferent as to how the wind blows.

Referring to your excellent leader of this week as to putting down the sham architect, may I ask who is responsible for his presence amongst us? The great bulk of the evils under which the profession labours and groans has been born of the apathy and indifference of architects themselves, and this example is no exception. Let us look the matter straight in the face and honestly acknowledge, it is we, and we only, that have erred and gone astray. The pseudo-architect is but representative of one of the weeds which have been allowed to grow and seed year after year in our unkempt garden, and whilst almost to a fault looking after our patrons and individual interests, we have, alas, entirely neglected our collective obligations in their most essential points. Don't let us try and escape conviction by throwing the blame on the pseudo-architect—"Lay not this flattering unction to your soul"—nay, every tittle of responsibility rightfully belongs to, and must in justice rest upon, the shoulders of the legitimatist himself. It is useless for the cause to blame the effect. In this case prevention is our only remedy; the question simply resolves itself into whether we elect to suffer another year's harvest of seedlings after this sort or not? And this is but a modicum of the rank undergrowth which is choking, blighting, and retarding the healthy growth of the legitimate tree. Again quoting from your leader "The essential weakness of the profession is its disintegrated state. There seems to be a mutual repulsion between its members, and nothing but gross ill-treatment from outsiders can bring them together." Thank you, Mr. Editor; you have certainly here hit the right nail on the head; grant that it may be driven home and "clinched on the underside." We had heard a great deal lately about the unity of the Empire, let us have a little about the unity of the profession. Let us away with, and for ever, this paltry, contemptible individual nursing of our pet selves, or our particular hobbies, this individual, suicidal exclusiveness, and despicable jealousies; this demon of selfishness, battening, as it does, on our very life-strings, and proving a fatal obstacle in our way to cherish and support all that we are in honour bound to defend and uphold. "Seek not thine own, but another's wealth." And, undoubtedly, imperative and vital as the necessity is for reform to architects themselves, and however great the relief it will afford them, yet it will be as nothing to the benefits likely to accrue to the public at large. And architects, in simple justice, owe it to the public as well as themselves, that a large measure of reform should be introduced, and that speedily. Architects should at least be placed equally upon an honourable footing and equality with the medical and legal professions, and depend upon it this can only be brought to pass by unity in strength and purpose; and which was very ably put forth by your correspondent "W. F. S." last week.

In reference to my letter which you kindly inserted in your issue of the 15th ult., wherein I advocated the uniting of all members of the profession into one solid and united body, and briefly —I am afraid in a somewhat crude manner—suggested one way in which this might be done. May I be permitted to thank those members of the Institute, Association, and others, who have responded to my invitation, to send me their names, and also for valuable information and data. I may state that the forwarding of names implies no further responsibility or liability, as the matter at present is simply in an honorary stage, and it need not cost the sender one penny, as a post-card will meet all requirements. The sending of names is only meant as an individual expression of conviction that the time has arrived when something must be done to protect and raise the status of the profession. In other words, that the time has now arrived when it is imperative that a forward movement be originated by the entire body of architects, and so voiced with such a force as to be irresistable. And who would not participate in such a consummation so devoutly to be wished?

May I ask that those who intend, but have not as yet sent in their names, would do so, and thus facilitate my being able to convey over the responsibility into more efficient, responsible, and fitting hands than mine can profess to be. And also, as everyone must agree, that the movement, to be successful, must, in the first place, be numerically strong. A committee could then be formed, representative of the Institute, Associations, &c., together with representatives of what we may term the *bonâ fide* unattached members of the profession, who will consult as to the forming of a union as above, or whether any other amalgamation or federation and general enlistment would be more desirable; whatever the result, it would then be submitted for approval to the general body. Such an inquiry, at least, could not but have a healthy influence in raising interest, and, let us hope, also a little enthusiasm. And, *sub rosâ*, there is no reason why the President of the Institute should not allow himself to be nominated for and elected chairman, and the presidents of the several associations and societies vice-chairmen; and would not this constitute a true "union of hearts"? Again thanking you in anticipation.—I am, &c.,

Durham, Nov. 30. George Ord.

P.S.—Referring to your correspondent "A.'s" letter of this week, I may inform him, that exactly to the week, 23 years ago, November, 1872, a letter of mine appeared in the Building News, illustrative of a very similar competition case, and every volume since then has kept on repeating the same old story. I am afraid he will not be able to derive much comfort and consolation from this fact; but, nevertheless, it conveys an important lesson, "he that runs may read."

G. O.

TECHNICAL TERMS.

Sir,—Referring to the letter of Mr. W. Simmons, he has probably noticed that workmen sometimes say "purline" for "purlin."

Is not *soffite* the proper word—not "soffit"? A well-known architect and linguist once told me that it was an old French word, meaning the under-side.

I have heard many arguments as to the word "facia," or "fascia."—I am, &c. H. L.

CHIPS.

The West Hartlepool School Board have decided to erect a school in Brougham-terrace, at a cost of £16,522, to accommodate 1,375 children, or nearly £13 per head.

Mr. G. W. Willcocks, M.Inst.C.E., an inspector to the Local Government Board, conducted on Friday an inquiry in the Huddersfield Town Hall, with regard to the application of the corporation for permission to borrow £50,000 for electric lighting purposes. The town clerk explained that the corporation had previously obtained power to borrow £50,000 for electric lighting; but under the order then made their operations were confined to a prescribed area, which did not include several outlying districts within the borough. The present electric works, sufficient for the requirements of the prescribed area, had exhausted the borrowing powers. Mr. A. B. Mountain, electrical engineer, produced plans of the present works, and gave detailed estimates of the cost of the proposed extensions.

The city council of York resolved on Monday to retain the services of Professor Kennedy, F.R.S., as electrical engineer to the corporation, (1) the professor to submit a comprehensive scheme for the lighting of the city, with estimates of costs, annual expenses, and probable income, for a fee of 100 guineas and out-of-pocket expenses; and (2) the professor to accept the appointment of engineer to the corporation electric lighting undertaking, and to prepare detailed plans and specifications, and to supervise the execution of the work, for a commission of 5 per cent., and the fee of 100 guineas to merge in the same commission.

The markets committee of the Leeds Corporation paid a visit to the Kirkgate Market on Monday, and decided upon a scheme for the partial reconstruction of those premises. Instructions were given to the city engineer (Mr. T. Hewson) to prepare plans for a new frontage to Vicar-lane and Kirkgate, for the covering in of the present blocks of fruit and provision buildings, and for the construction of a road from Vicar-lane through the present covered portion to the lower end of the market.

The foundation-stone of a new Roman Catholic church, Park-road, Peterborough, was laid on Tuesday week by the Bishop of Northampton. The complete church of which the first section is now in hand, will consist of nave, north and south aisles, north and south transepts, chancel, and north and south porches, &c. The church will be built of Stamford stone in the Decorated style. Apart from land, the portion at present being erected will cost about £4,000. At the west end a presbytery is being built. It, too, is of stone, and runs at right angles to the church, which it joins. Mr. Leonard Stokes, of London, is the architect, and Mr. Hammond, of Peterborough, is the builder.

A four-manual organ, built by Messrs. Wordsworth and Co., has been placed in the parish church of Epping. It is said to be the largest instrument in an Essex church.

Intercommunication.

QUESTIONS.

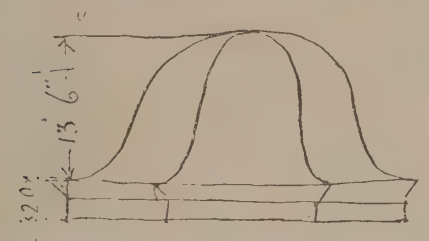
[11459.]—**"Building News."**—I should be glad if anyone would inform me if there are any portfolios made for a volume (half-year), the price, and where I can get them? It seems to me it will be better and cheaper than having them bound up in the usual way. Should be pleased to have any suggestions.—Student.

[11460.]—**Dormitories.**—What amount of cubical air-space should be allowed in planning dormitories for children and for adults? Does the Education Department make any definite regulation upon this point in schools over which they have control?—C. H. Channon.

[11461.]—**Whitewash.**—What is the best method of cleaning an accumulation of successive coats of whitewash from old carved stonework without injury to the surface and tooling?—Doubtful.

[11462.]—**Hot-Water Heating.**—Will some reader kindly give me name of a good inexpensive book which fully explains heating by hot water, and what size and amount of pipes, &c., are required to heat given areas?—Student.

[11463.]—**Wind-Pressure.**—Will any reader kindly give me the method of measuring wind-pressure on an ogee roof thus: octagonal on plan, and 30ft. diameter?—Architect.



REPLIES.

[11454.]—**Skittle Alley.**—The room should be about 40ft. long and 18ft. wide; the table (about 5ft. 3in. square, set diagonally 2ft. from the end) should be of 2in. oak, bedded in clay and concrete 2ft. thick. The channel from the first skittle should be 21ft., and 2ft. 9in. wide, 2½in. below floor with curb. The well next player should be 4in. deep, and the space for player from well to wall 10ft.; remainder of room boarded or cemented.—H. Lovegrove.

CHIPS.

The Town Council of Bodmin have decided to invite competitive designs for the Passmore Edwards Free Library to be built in that town.

The managers of the British schools at Truro have instructed Mr. Silvanus Trevail, M.S.A., of that city, to prepare plans for two schools to accommodate 450 children, and to cost about £2,500.

The Château d'Amboise, bought by the Duc d'Aumale at the sale of the property which formerly belonged to the Comte de Paris, is to be transformed into an asylum for the old servants of the Orleans family.

The directors of the London, Brighton, and South Coast Railway Company have appointed Mr. Charles L. Morgan, assistant engineer of the Great Eastern Railway, to be chief resident engineer of this company, in succession to Mr. Frederick Dale Banister, who retires on the 1st of February next.

The premises of Messrs. M'Gaws and Co., woodmoulders, 77, 79, and 81, York-road, Lambeth, were destroyed by fire on Friday night. The workshops of two floors, covering 60ft. by 30ft., were burnt out, a block of timber stores 30ft. square was destroyed, and other buildings were greatly damaged by fire.

The Leeds Corporation have instructed the city engineer (Mr. Thomas Hewson) to get out tenders as early as possible for the erection of five new blocks of hospital buildings upon the Manston estate. These will include premises for the treatment of smallpox, scarlet fever, and typhoid fever patients, a small sanatorium, a disinfectant station, and a caretaker's house. This is but part of a scheme, for carrying out which the Leeds Corporation have asked the sanction of the Local Government Board to borrow £63,000.

The reopening of St. Anne's Roman Catholic Cathedral in Leeds took place on Sunday. The interior has undergone at the hands of painters and decorators a complete transformation from its dingy hue to a lightness of tone, while the sanctuary has been ornamented, the panelling gilded and chased, and the walls adorned with representations of the implements of the Passion, after an ancient marble monument at Ravenna. The work has been done under the direction of Mr. J. F. Bentley, of London. The painting has been executed by Mr. N. Hitch, of London. The installation of the electric light, which has just been completed, was carried out by Mr. Edmondson, of Kirkstall-road, Leeds. The expenditure on the decoration and lighting amounts to £700.

Legal.

REGISTERED DESIGNS.

Under the present law a "new or original design not previously published in the United Kingdom" can be registered, and so protected against infringement. This is, of course, a very important matter, for there are many things for which a valid patent could not be obtained, but which, nevertheless, might be made copyright by registration under the Act, and so secured from legal imitation at all events. In a recent case between rival lamp-makers (*Times*, 20 Nov.), which went to the Court of Appeal, the article in question was an oil-stove. The plaintiffs were the proprietors of a registered design for an oil-stove which they sell as the Cathedral stove. This design simply consists of a traceried window applied to the sides of an hexagonal case of metal in which is placed an oil-lamp for heating purposes. The defendants also sold oil-stoves of the same shape, with a church window similarly applied. The plaintiff's design was registered in accordance with the Patents, Designs, and Trade Marks Act, 1883, and the action was brought for an injunction and damages for the infringement.

At the trial Mr. Justice Kekewich held that there had been no infringement, and so he dismissed the action. Upon plaintiff's appeal this decision was reversed, and an injunction and an inquiry as to damages were granted. The Lord Chancellor pointed out that the eye was the true test in all these cases, and that the question of infringement be decided by placing the designs side by side, and asking whether they are the same, or whether the one is an obvious imitation of the other. But to this simple rule he added that, as a design to be registered must be "new or original," it was necessary to take into account the state of knowledge at the time of the registration, and in what respects the design was new or original when considering whether any variations that appear in the alleged infringement were substantial or immaterial. It seems probable that this protection by registration of designs might be more often enforced by action than is done if proof of infringement is so easy, and the design can be so readily shown to be "new or original," as appear to have occurred in this case.

Fred. Wetherfield, Solicitor.

1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

Perplexed.—Partnership.—Premium.—The value of a share in a partnership depends upon so many conditions, that it is quite impossible to lay down any rule. For a new business, about two years' purchase would probably be reasonable.

Doric.—Additions.—Building-Line.—The question seems to come to this: Which is the building-line? If the new houses are taken, you would be right; if the old frontages are followed, these would be wrong. It seems to me that the Council are acting unreasonably, and probably the Court would interfere.

H. H.—Contract.—Defects.—Foundation.—If you can prove that the defect was in the made ground upon which you built, and not in your work or materials, you would not legally be liable.

J. C.—Contract.—Extras.—Architect.—By the clause quoted, these extras would be claimable, I should say, provided you obtain the architect's certificate as to their value, in accordance with the contract.

Mr. G. W. Willocks, M.I.C.E., held an inquiry at Wakefield, on Friday, as to an application to the Local Government Board by the City Council for permission to borrow £25,000 for providing electric lighting. There was not the slightest opposition. Mr. Robert Hammond, electrical engineer, London, has been consulted by the City Council, and is to superintend the erection of the intended works. The site of the proposed works is Calder Vale, and they are to be carried on in connection or combination with the proposed sewage works. The estimated cost of the plant is £15,280.

On Wednesday evening last the managers of subcontractors and all the foremen engaged on the new building (about 40 in all) were entertained at dinner by the Council of the Institution of Civil Engineers at the Ship Hotel, Charing Cross, on the occasion of the commencement of the session 1895-96. A capital musical programme was provided, in which Messrs. Court, Cook, Clark, Tyler, and West took part. Owing to the unavoidable absence of Mr. Charles Barry (the architect), the chair was taken by Mr. R. Stephen Ayling, with Mr. H. Hadfield, clerk of works, in the vice-chair.

LEGAL INTELLIGENCE.

A Redhill Arbitration Case.—At the Surveyors' Institution, Great George-street, Westminster, Mr. Henry Currey, F.S.A., F.R.I.B.A., has sat as arbitrator in the claim for £19,900 for compensation which had been made by Mr. G. B. Rennie, C.C., from the London, Brighton, and South Coast Railway Company, who have obtained Parliamentary powers to purchase, among other properties, the Hooley Estate, near Redhill, for the purpose of constructing their new line between Croydon and Redhill. The estate comprises 14½ acres. The claimant purchased the property in 1874 and 1885 for £8,600, and had since spent considerable sums on improvements, including an additional £830 for further land. Mr. Robert Vigers, F.S.I., said land in the neighbourhood of Redhill was in great demand for building purposes. He valued the property at £19,500. It would fetch £600 a year at 20 years' purchase. Mr. E. Tewson, F.S.I. (Messrs. Debenham, Tewson, Farmer, and Bridgewater), 80, Cheapside, E.C., placed the cost of reinstatement at £19,000. Mr. F. T. Galsworthy, F.S.I. (Messrs. Chinnock, Galsworthy, and Chinnock, 11, Waterloo-place, S.W.), believed the price should be £15,635. Quite recently he had sold land at Redhill at the rate of £800 an acre. Mr. A. Garrard, F.S.I. (Messrs. V. Buckland and Garrard, 8, Frederick's-place, Old Jewry, E.C.), valued the property at £16,903; but these figures did not include the fixtures of the house, the sand which was being removed, or the land which would be left after its removal. Sir John Whittaker Ellis, Bart., F.S.I. (Messrs. Farebrother, Ellis, Clark, and Co., 29, Fleet-street, E.C.), called on behalf of the company, gave as his opinion that the property would not fetch more than £4,000 or £5,000, owing to its peculiar position. His valuation totalled £8,220. His figures were based upon 20 years' rateable value. Mr. Daniel Watney, 33, Poultry, E.C., believed that if the Hooley Estate was put in the market it would not fetch £6,000. Mr. Bousfield (Messrs. E. Fox and Bousfield, 99, Gresham-street), placed the full market value of the property at £7,500 in round figures. Mr. Moon (Messrs. Fuller, Moon, and Fuller, of Croydon, Guildford, and Epsom) valued the estate at £6,930. The decision of the arbitrator will be made public in due course.

Breach of Electric-Lighting Agreement.—In the Queen's Bench Division, on Friday, before the Lord Chief Justice and a special jury, the hearing was concluded of an action brought by the Fareham Electric Light Company, Limited, against the Fareham Urban District Council to recover damages for an alleged breach of an agreement whereby the defendants undertook to buy from the plaintiffs their electric-lighting installation at Fareham, at a price to be fixed by arbitrators, and which was subsequently fixed at £4,866 3s. The defendant board had declined to carry out the agreement, and during the hearing of the case it was stated that this was due to a change in the composition of the board, by which a majority was returned in favour of gas-lighting instead of electricity. The jury found for the plaintiffs, with £3,800 damages, and judgment was entered accordingly, execution being stayed till Jan. 15.

In re G. H. Ilett, Warsop.—The first meeting of the creditors of George Henry Ilett, builder, of Warsop, near Mansfield, was held on Nov. 27 at Nottingham. The statement of affairs showed gross liabilities £171 1s., all of which was expected to rank for dividend. His assets debtor estimated at £33 18s., leaving a deficiency of £137 3s. He only commenced business in May last, his capital being £50.

Curious Sequel to a Joiners' Strike.—The hearing of the action brought against Mr. Græme Hunter by the Chorley Master Joiners' Association for breach of contract was concluded at the Chorley County Court on Friday. Mr. Hunter entered into a contract in June last to supply the master joiners with thirty men to take the places of men who were on strike. The sum of £30 was paid to him for that purpose, but he failed to carry out his contract, which was ultimately rescinded by the Masters' Committee, damages being claimed. After hearing witnesses, his Honour Judge Coventry withdrew any imputation of bad faith against Mr. Hunter, which there had seemed grounds for making at the previous hearing. It appeared rather, he said, to have been Mr. Hunter's misfortune that through pressure of work he was unable to carry out his contract. A verdict by agreement was taken, the defendant to pay £20 and costs on the higher scale.

Railway Arbitration at Leicester.—Mr. Thomas Fenwick, C.E., sitting as umpire in the arbitration inquiry of "Gouty v. the Manchester, Sheffield, and Lincolnshire Railway Company," at the Surveyors' Institution, gave an important decision on Wednesday. The claimants, a firm of dyers in Leicester—sought to obtain from the railway company the value of the whole of their works, submitting that the company could not take a portion of the property without material injury to the whole, they having scheduled the property as excluded from the benefit of section 92 of the Lands Clauses Act. Mr. Littler, Q C., for the company, contended that the claimants should accept a new entrance to their works under one of the railway arches, but this contention was resisted by Mr. Bidder, Q C., for the claimants, and cases were cited to show that the company had an indefeasible right to the occupation of the arches for all time and under all conditions. The company relied upon the practice of letting their arches all over the country, but it was pointed out that serious injury had been done to some railways by fires which had taken place in these arches, and that in some cases companies had actually gone to Parliament for power to retake arches which they had let under conditions similar to those now proposed. The umpire, after a two days' hearing of this preliminary point, gave, on Wednesday, the following decision:—"First, if the land taken by the company under their notice to treat prevents all access to claimants' works through or under the viaduct, the company must purchase the entire property; second, if the company have power to give the access offered by their counsel through the archway which has been constructed from the street to the claimants' yard, I hold that there is not such material detriment to the property as to entitle the claimants to claim that the company must purchase the whole; third, believing that there is nothing to prevent the roadway offered by the company from being accepted by the claimants as a means of access, I propose to hear the parties on that basis as to the compensation to be paid by the company for the land they take and for the damage sustained by the claimants in consequence thereof." A case will be stated for the hearing and settlement of the legal questions involved, but meanwhile the arbitration proceeds, in order to find the amount of compensation to be given in view of alternative legal decisions.

Defective Drains.—Mr. F. Funkenstein, builder, of Upper North-street, Poplar, was recently summoned at the Thames Police-court for causing a water-closet and drain to be so repaired as to become a nuisance and dangerous to health. James S. Dunn, sanitary inspector to the Poplar Board of Works, said on the 12th September he inspected 54 and 56, Arcadia-street, and found the drains defective. On the 30th September he again went to the premises, and found the drains defective. On the 30th October the drain had been covered in. He tested it, and found it defective. At both houses the joint between the closet trap and the pipe was defective. The repairs still left the drain a nuisance and injurious to health. Mr. O. C. Hills, architect, said on Tuesday last he saw the ground opened. A new trap, pan, and pipe had been put in, but there was a defect where the old and new pipes joined. Cross-examined: He advertised for tenders for the work, and the defendant's tender was accepted. He tendered upon a specification which was furnished him by the witness. The only defect, so far as the specification went, was in the fixing. Dr. Alexander, medical health officer, corroborated Mr. Dunn's evidence. The defendant's answer to the summons was that he came within the saving clause of the section—viz., that he had so repaired the water-closets as not to render himself liable. Mr. Dickinson, at an adjourned hearing of the case, fined defendant, for No. 54, £7 and six guineas costs, and for No. 56, where defendant seemed to have taken steps to remedy the defective workmanship, £1 and 2s. costs.

* * *

The burgh commissioners of Dumfries have decided to construct a new main sewer, which shall intercept the whole drainage of the town and discharge it into the Nith at a point a little below Kingholm Cottage. The commissioners of the burgh of Maxwelltown contemplate at the same time carrying out a main drain down the opposite side of the river to near the same point. The estimated cost of the Dumfries scheme is £5,074.

Mr. H. Tulloch, M.I.C.E., held, at the instance of the Local Government Board, an inquiry at Middlesbrough, on Friday, into an application from the Tees Port Sanitary Authority for sanction to borrow £1,000 for the completion of a retaining wall for the protection of Tees Floating Hospital. Mr. Tulloch also held another inquiry into the proposed loan of £100,000 for the erection of an asylum to make provision for the pauper lunatics from the Middlesbrough Union. The asylum is now in course of erection at Grove Hill.

A crematorium and chapel, in the Western Necropolis of Glasgow, near Maryhill, were opened on Friday. The building is on two levels, the chapel on the higher and the incinerating chamber and attendants' room on the lower. Cruciform in shape, the chapel has a front elevation of 14ft. by 36ft. high, with buttressed doorway surmounted by three lancet windows. The catafalque occupies a central position in the chapel. The total cost of the crematorium and chapel and their equipment has been about £3,000.

WATER SUPPLY AND SANITARY MATTERS.

Halifax.—Mr. Arnold Taylor, formerly an inspector to the Local Government Board, visited Halifax a few weeks ago, at the request of the corporation, with the view of expressing an opinion upon a system for the treatment of the sewage of the town. In his report, he advises the corporation not to put any company or patentee in possession of their sewage outfall works. With regard to the system of the "Oxygen Sewage Purification Company," Mr. Taylor is of opinion, after seeing it in operation at Salterhebble on the 11th of October, that it will not purify the sewage of the borough as to comply with the provisions of the Rivers Pollution Prevention Acts.

CHIPS.

A building to be known as the Union Chambers is being erected at Aberdeen, on the site so long occupied by the Song School, from designs by Messrs. William Henderson and Son. The alterations and additions will cost about £6,000, and the purchase-money paid for the old premises amounted to another £12,000.

At the meeting of the British Archæological Association, held on Wednesday night, the Rev. J. Cave Browne, M.A., read a paper on "Purbeck and its Marbles."

At the last meeting of the City Council of Exeter, Councillor Linscott said it was his very painful duty to report that the Bucknill Memorial, on Northernhay, which the council took over last July from the subscribers, was in a very dangerous state. The base was evidently not supported on a sufficient foundation, and, in sinking, the memorial had broken the corner of one of the granite slabs. The matter was referred to the city surveyor and town clerk to investigate and report upon it.

The city council of Liverpool accepted, on Wednesday, a donation by Mr. John Duncan, on behalf of the executors under his father's will, of a copy in marble of the Warwick Vase and a marble bust of Canning by William Spence.

The Manchester, Sheffield, and Lincolnshire Railway Company have decided to carry out certain dock extensions at Grimsby, with a view to increase the accommodation for the fishing industry. The proposed works are estimated to involve an expenditure of £150,000.

The Boston Town Council, sitting as the Harbour Trust, on Monday decided to deepen the river from the dock to the sea—a distance of 3½ miles—to a uniform depth of 2ft. below the dock sill, with a minimum width of 80ft. It is estimated that the cost will be £5,000. Fifteen months are allowed in which to execute the work.

The Archbishop of York reopened on Tuesday, after restoration, the parish church of All Saints, Barlby, near Selby, and during the service dedicated the new chancel, which was part of the work of restoration.

The orphanage and imbecile asylum at Baldovan, N.B., is about to be enlarged under the direction of Mr. Alexander Hutcheson. The chief contractors are Messrs. Robertson and Macpherson for masonry, and Mr. Alexander Young, of Lochee, for joinery.

On Thursday in last week a new church was consecrated in the parish of Christ Church, Woking, by the Bishop of Winchester. The building is dedicated to St. Paul, and will take the place of an iron room where services have hitherto been held. The church was designed by Mr. Purday, partner of the late Mr. Ewan Christian, and is built of red brick, to accommodate about 300 worshippers at present; but at some future date aisles will be thrown out. The church, including site and furniture, has cost about £3,120.

The pavilion on the Warwickshire County Cricket Ground is being enlarged at a cost of £1,500. Mr. Baker, of Broad-street Corner, Birmingham, is the architect, and Mr. Bishop, of King's Heath, is the builder.

In the Chancery Division, on Tuesday, before Mr. Justice Stirling, an application was made by the plaintiff in the case of "Graydon v. Bassett" to restrain the defendant from constructing a gigantic wheel at Blackpool, on the ground of alleged infringement of the plaintiff's patent at Earl's Court. The defendant submitted that his wheel was a scheme of his own, and that there was no interference with the plaintiff's patent. The motion stood over for a week, with a view to an arrangement if possible.

The Vice-Chairman of the London School Board opened, on Friday, the new buildings recently erected in connection with the Yerbury-road Board School, Upper Holloway. He said that the school had been enlarged at a cost of £5,280. By the extension accommodation had been provided for 1,590 children. The new portion of the school included a laundry and a manual training school.

Our Office Table.

The negotiations between the Carpenters' and other City Companies and the Architectural Association have been satisfactorily completed, Professor Banister Fletcher having represented the Companies, and Messrs. F. T. W. Goldsmith and Owen Fleming the Association. The result is that the Trades Technical Schools in Great Titchfield-street are definitely opened to students of the Association, who are admitted by the Carpenters' Company on the same terms as craftsmen actually working at their trades. Instruction is given in carpentry, joinery, masonry, brickwork, lead-work, plaster-work, and wood-carving, and a smith's forge is about to be opened. The instructors are craftsmen who have skill in their various crafts. In future, any authorised member of the Association will be able, at an expense of a few shillings a term, to obtain an actual knowledge of materials in a way that has been hitherto closed to him. There will be no expense for materials and tools, these being found by the Company.

During the past five years the Gresham Committee have had in view a scheme for decorating the panels around the ambulatory of the Royal Exchange. Mr. Deputy Snowden inaugurated the movement in 1890 by offering to fill in the first panel at his own expense, and Sir Frederic Leighton, P.R.A., simultaneously promised to paint and present another. These gifts were accepted by the committee, who called in Sir Frederic Leighton, Mr. Calderon, R.A., and Mr. Poynter, R.A., to assist them in arranging a plan for filling in the remaining 22 panels, and in selecting the artists and the subjects of the frescoes. The two first panels, at the west end of the Exchange, were unveiled last June—the one painted by Mr. Macbeth, A.R.A., and depicting the opening of the Royal Exchange by the Queen in 1844, and the other by the President of the Royal Academy, entitled "The Phœnicians trading with the Britons." The corporation, acting through the Gresham Committee, have now commissioned Mr. Seymour Lucas, A.R.A., to fill in a panel with a representation of "William the Conqueror Granting a Charter to the Citizens." Mr. Carl Meyer, of New-court, has promised a panel representing "The Offer of the Crown to King Richard III. in Baynard's Castle," to be painted by Mr. Sigismund Goetze; and Sir Samuel Montagu, M.P., has offered a panel portraying "Charles I. Demanding the Five Members at Guildhall," by Mr. Solomon J. Solomon. The Mercers' Company will contribute a panel representing "The Opening of the Royal Exchange by Queen Elizabeth"; but they have not yet selected the artist. The subjects of the remaining 18 panels have also been selected by the committee and their art advisers.

At the adjourned inquiry into the proposed demolition of the Trinity Almshouses in Mile End-road, held before Mr. G. S. Murray on behalf of the Charity Commissioners at the close of last week, Mr. Jarvis, the surveyor, stated that the almshouses were badly planned, and that the basements were very damp; he did not consider the houses were fit for occupation. In answer to Mr. Hopkinson, he said he had never mentioned these points before in any of his reports. The Right Hon. G. J. Shaw Lefevre, M.P., Mr. J. MacVicar Anderson, F.R.I.B.A., and Mr. F. C. Penrose, P.R.I.B.A., gave evidence against the demolition, the latter witness remarking that the buildings were a unique example of Sir Christopher Wren's period, and were, in all probability, the work of that famous architect. They were also of great value to students as a chaste model. Mr. C. R. Ashbee championed this view of the case, and was supported by Mr. Spencer Charrington, M.P., and Mr. Kerwin. Mr. Armstrong, solicitor to the Trinity Corporation, said that of late the almshouses had been found to be a white elephant, and a hindrance to the extension of their charities. He suggested that the buildings should not be pulled down, but purchased for the purposes of a school of architecture. The case as regarded the Mile End almshouses then closed.

The vestry of Camberwell have unanimously adopted a report by a committee, consisting of Lady Burne-Jones, Mr. T. Wyke-Bayliss, and Mr. Paxton, recommending that the commissioners of public libraries and museums for Camberwell undertake the management and maintenance of the South London Fine Art Gallery in Peckham-road. This institution has hitherto been maintained at a cost of £600 a year by voluntary contributions. The principal room, it will be remembered, was erected from the designs of Messrs. Ernest George and Peto at the sole cost of Mr. J. Passmore Edwards, and was opened by the Prince of Wales Oct. 9th, 1893, in which week illustrations were given in our pages.

THE Commissioners appointed by the Board of Trade to inquire into the condition of the navigation of the Lower Thames resumed on Tuesday their sittings, which were adjourned in January last to admit of a complete survey being made of the area of the river from the Nore to the East and West India Docks. Mr. J. Wolfe Barry, C.B., the chairman, stated that the survey had been executed partly at the instance of the Admiralty by Commander Pirie, and partly on the instruction of the Commissioners and the Lower Thames Conservancy by Captain Jarrad, and that the navigation channels had been found to be considerably better than they were supposed to be according to the chart of 1883. Captain Jarrad gave evidence confirmatory of this statement, and said that the shoals were all diminishing, the depth of the navigable channels increasing, and, owing to the action of the ebb tide, there was a tendency in the channel still further to improve. After some further evidence had been given the chairman announced that the commission did not propose to sit further in public at present, or to enter into the financial part of the subject. They had first to make up their minds whether they were going to recommend any works, and, if so, what works. The inquiry was then adjourned *sine die*.

MR. G. W. WEBB, F.R.I.B.A., the chairman of the Survey Committee of the Corporation of Reading, has made an interesting find of plate belonging to the Corporation, which had been lost sight of for several generations. While searching the basements of the Municipal buildings his curiosity was aroused by the sight of a wooden chest with iron mountings in one of the recesses of the vaults. Mr. Webb opened the chest, and found therein some pewter circular plates and dishes, black with age. There are three sizes, the largest being 2ft. in diameter, and the others (dinner plates) in two sizes. On the large dishes the Borough arms are cut on the front, and on some of the others the words "Corporation of Reading" run round nearly half the edges, and on others the Borough arms are stamped. The plate-marks on the back are exceedingly good, the maker's name, "Ebly," and "made in London," being quite clear. The stamps also include a stag (part of the crest of Berkshire), the rose and crown, Britannia and the lion (the latter being not unlike the silver stamp). There are altogether three or four dozen plates, all very thick and heavy, and their probable date is 1710. About nine dozen quaint pewter spoons were also found, with "C of R" ("Corporation of Reading") on them, and 19½ dozen old Sheffield plate large spoons, inscribed with the Borough arms. The plates and spoons most probably figured at municipal banquets in the last century, but certainly have not been used by the Corporation for 70 years. The chest was stowed away when the Corporation offices were removed from Watlington-street to Blagrave-street.

LORD KELVIN, Mr. W. H. Preece, and Major Cardew, the committee of experts appointed by the Board of Trade, have presented their report on the questions referred to them as a result of the recent conference on the proposed new electric lighting regulations, presided over by Sir Courtenay Boyle, the Permanent Secretary of the Department. The principal matter on which the committee were asked to advise was as to the definition which should be officially laid down to constitute "low pressure." As presented to the conference, the revised regulation of the Board of Trade proposed that a pressure which could not at any time exceed 300 volts, if continuous, or the equivalent of 150 volts, if alternating, should be deemed a low-pressure supply; but the Institution of Electrical Engineers urged that 600 volts should be accepted as the low-pressure limit. Dr. Hopkinson stated that, with the five-wire system, electricity was already being supplied in Manchester at a low pressure of 400 and 450 volts, without any serious consequence. The Electrical Committee of the London Chamber of Commerce advised that the low-pressure limit should be raised to 500 volts, and other experts considered that in view of the advance made in electrical science, it was no longer necessary to draw any distinction between alternating and continuous currents.

THE chief feature of the winter exhibition of pictures at the Corporation Art Gallery, Bradford, opened on Monday, is a series of eighty-five works in oil and water colours by Byron Cooper, illustrating "Tennyson Land," including landscapes in Lincolnshire, the western corner of the Isle of Wight, Surrey, and north Cornwall. Other landscapes are contributed by J. Buxton Knight and Anderson Hague, seascapes by C. Napier Hemy, and examples of *genre* by W. A. Howgate, of Leeds.

◆

The Admiralty have appointed Mr. Whateley Eliot, who was recently engaged on the construction of the Manchester Ship Canal, to be superintending civil engineer for the important dock extension scheme at Devonport provided for in the Naval Works Act. A large body of workmen has been engaged for several months in making preparations for the actual operations, which will be commenced shortly. The scheme, which will cost over £2,000,000, will occupy about ten years. The Admiralty intend to provide three additional large docks, besides one of smaller size, and two great basins, the whole covering an area of nearly 44 acres.

At the opening meeting of the session of the Edinburgh and East of Scotland Branch of the National Association for the Registration of Plumbers, held on Friday night in the Philosophical Institution, Edinburgh, Provost Shanks, Barrhead, lectured on "Modern Sanitary Appliances." Sir Henry Littlejohn presided. The lecturer dealt in detail with some of the later developments of sanitary science affecting private houses and public institutions. Bath-rooms should not be the dark, cold dungeons they were in many houses in Glasgow and Edinburgh, but should be well-lighted and comfortable apartments. He hoped the time was not far distant when landlords would have to provide, even in workmen's houses, suitable places for washing.

Messrs. A. Waterhouse and Son, FF.R.I.B.A., London, the architects of the new buildings for the Prudential Assurance Company in St. Andrew-square, Edinburgh, and Albert-square, Dundee, have placed the contracts for the fireproof construction (under Mr. Boyd Wilson's patent), including the whole of the structural steel and iron work of the buildings, with Messrs. Arrol's Bridge and Roof Company, Limited, Germiston Works, Glasgow.

Mr. Christopher Oakley, the arbitrator appointed by the Board of Trade, resumed in London, on Friday, the consideration of the claim made against the Manchester Corporation by the trustees of the late Peter Todd, for the loss of water from their estate at Wheelton, through the construction of the Thirlmere aqueduct. Mr. Boyd Dawkins, professor of geology, and an expert in questions of underground water, was further examined on behalf of the corporation as to the geological formation of the strata through which the aqueduct passes.

The plans for the new asylum for Lancashire, at Winwick, prepared by Messrs. Crisp and Oatley and Mr. H. S. Skinner, of Bristol, whose design was selected in competition in July, 1894, have now been approved by the Lunacy Commissioners. A Local Government Board inquiry will be held shortly into an application by the Lancashire County Council to borrow £250,000 for the buildings.

William Thomas Singleton, described as an architect and surveyor, and James Frederick Livesay, a baker, were, at Liverpool Assizes on Monday, charged with having conspired together to defraud a number of Liverpool solicitors by obtaining money under false pretences. The *modus operandi* of the prisoners was of a simple character, and the same in each case. They called on the solicitors, represented that they had purchased properties near Manchester or Stalybridge, produced spurious documents to bear out their story, and, engaging the solicitors to act for them in the transactions, obtained advances ranging from £15 to £60. The jury found both prisoners guilty, and Mr. Justice Collins sentenced them each to twelve months' imprisonment with hard labour.

At the recent election in the State of New York the people voted in favour of the proposition to expend nine millions of dollars towards the improvement of the Erie and other canals. This canal connects the waters of the great lakes with the Hudson River at Albany, and so on to the Atlantic Ocean.

Mr. George Barstow, of Pontefract, a practical builder, and formerly for many years a member of the corporation, died suddenly on Friday. Mr. Barstow was seized with an apoplectic fit in the Market-place, and was carried into the Conservative Club, and died in a few minutes.

MEETINGS FOR THE ENSUING WEEK.

MONDAY.—Surveyors' Institution. "The Working of the Agricultural Holdings Act, 1883," by F. Punchard, F.S.I. 8 p.m.

Society of Engineers. Annual Meeting. 7 30 p m.

Liverpool Architectural Society. "Some Thoughts on Old Furniture," by Guy Dawber, A.R.I.B.A.

TUESDAY.—Institution of Civil Engineers. Discussion on "The Physical Properties of Iron and Steel." 8 p.m.

Sheffield Society of Architects and Surveyors. "Norman Architecture," by Dr. H. C. Sorby, F.R.S.

WEDNESDAY.—Society of Arts. "Water Purification by Means of Iron," by F. A. Anderson. 8 p m.

Northern Architectural Association. "Adam, and his Style of Architecture," by Percy Fitzgerald, M.A., F.S.A., of London. 7.30 p.m.

◆

CHIPS.

At the parish church of Hatfield Broad Oak, a stained-glass window has been erected in memory of Sir William Wiseman, ninth baronet. It is of three lights, and the subject is Christ stilling the tempest. Messrs. Hardman, of Birmingham, carried out the work.

The construction of the southern extension of the Liverpool Overhead Railway is proceeding at a satisfactory pace. Two-thirds of the entire length are all but completed, and the extension will be opened within a period of six months. The terminus is in Park-road.

Works of street improvement are being carried out for the urban district council of Scunthorpe, at a cost of £1,300. Mr. Robertson is the surveyor, and the material has been supplied by the Croft Granite Company.

Mr. Edwin Farber, surveyor and architect, of Hightown, Crewe, died on Wednesday week. He was for many years a prominent member of the Crewe Alexandra Cricket Club, holding the position of treasurer down to the time of his death.

Tenders are being invited for boring a tunnel about 800 yards long, 8ft. high, 7ft. wide, through slate rock from Delabole Slate Quarries to the seashore, so as to unwater the quarries and make them profitable.

The new goods station erected by the North-Eastern Railway Company in Prior-street, Gateshead, was informally opened on Monday. The cost of the station, including the land, has been about £50,000. The contractors were Messrs. Blackett, of Bishop Auckland.

A new altar and super-altar, of oak, with grey Cornish granite slate, have been placed in Mawnan Church, Cornwall. Both have been executed by Messrs. Harry Hems and Sons, of Exeter.

Mr. Arthur Grimwood, of the firm of Grimwood and Sons, builders, Sudbury, was recently elected town councillor of the borough, and a few days later was made an alderman. To celebrate the double event, he invited the workmen and many friends, to the number of 400, to a public dinner at the Drill Hall on Tuesday evening in last week, and on the following day Ald. Grimwood entertained 300 ladies at tea in the same hall.

A scheme of water supply for St. Austell has just been carried out for the urban district council of that town. The work has been undertaken from plans by Mr. J. Samble, surveyor to the council, and the water is obtained from Carne Stent. The reservoir is placed at Trenance, and has a capacity of 800,000 gallons. It was built by Messrs. Delbridge and Son, of Camborne, and the pipes have been laid by Messrs. R Francis and Son. The total outlay has been £5,200.

The London local authorities are being urged by the Amalgamated Society of House Decorators and Painters to give out as much painting work as possible during the winter months.

Mr. John Thorman, engineer to the West Ham Gas Company, died on Thursday in last week, after a few hours' illness, aged 48 years.

The parish church of St. John, Chadderton, near Manchester, is about to be reseated in pitch-pine, when the present lights will be replaced with new windows of cathedral glass, and the organ and heating apparatus will be enlarged.

The works at Truro Railway Station, for which Mr. Arthur Carkeek, of Redruth, has secured the contract, include the erection of the first three arches of the granite bridge which is to span St. George's-road in the place of the present wooden viaduct, and also alterations and additions to the goods shed, the cattle pens, and the horse and carriage landings. In the station itself, the up-platform will be widened, and new refreshment and waiting rooms will be erected thereon. The present roof will be removed, and the remodelled station will be covered over the buildings and platforms only.

Trade News.

WAGES MOVEMENTS.

North Wales Slate Quarries.—Lord Penrhyn's agent, Mr. E. A. Young, announced on Monday to the men employed at the Penrhyn Slate Quarries that their wages would be advanced 5 per cent. on and after the 24th of December. The advance affects about 3,000 men and boys, and is promised to all classes alike.

CHIPS.

The dedication of the new east window in the parish church of Ashbourn took place on Wednesday week. The window is Perpendicular in style, and has been designed by Mr. C. E. Kempe.

At a cost of upwards of £5,500, new malting-cellars are about to be constructed for Russell's brewery at Gravesend, according to the designs of Messrs. Arthur Kinder and Son, architects and engineers, Suffolk House, Laurence Pountney-hill, Cannon-street.

A reredos of Caen stone and marble has just been erected in the church of St. Mary, Shotesham, near Norwich. The structure is in the Late Decorated style, the central portion being carved in high relief with a representation of the Last Supper, after the style of Leonardo-da-Vinci. A canopy of pierced tracery and carved pinnacles rises above this, and the side wings form a series of panels with surface tracery in the same style. The work has been executed by Messrs. Jones and Willis, of Birmingham, London, and Liverpool.

The extensive additions to the county asylum, Prestwich, near Manchester, are being warmed and ventilated throughout by means of Shorland's patent open fireplace Manchester stoves, the large number previously supplied having proved very satisfactory.

The contract for the new technical and art schools at Leicester, which are to be built from the design of Messrs. Everard and Peck, has been let to Messrs. T. and H. Herbert, builders, of Leicester. The ground and first floors and all the corridors are to be fireproof on the "Mark Fawcett" system.

On Friday, Mr. W. J. B. Clerke, M.I.C.E., held an inquiry at Tunbridge Wells, on behalf of the Local Government Board, into proposed loans by the Corporation of £23,200 for the purchase of lands for the purpose of municipal buildings, technical institute, public library, museum, and street improvements; and £7,200 for the erection of public baths. No opposition was offered to the proposals.

The parish church of St. Hilda, Hinderwell, is being restored, at a cost of over £1,000, from plans by Mr. R. Lofthouse, the diocesan surveyor. The works include reseating, new roof, floor, and windows.

The statement of affairs of Messrs. Guy and Gosseman, builders, of Grimsby, shows liabilities £4,982 11s. 9d., and assets £1,750 2s. 6d., leaving a deficiency of £3,232 9s. 3d. The Official Receiver states that Guy offered 7s. 6d. in the pound on the joint estate; but Gosseman would not agree to this.

M. Alexandre Dumas has bequeathed his portrait by Meissonier to the Louvre.

The return at the Estate Market, Tokenhouse-yard, for 1895, will show a considerable advance on the preceding two or three years. The excellent aggregate of £127,080 was returned last week as the proceeds of the six days' sales.

Steps are being taken to invite the Prince of Wales and the Secretary of State for the Colonies to visit Toronto in August, 1897, when the British Association will meet there, to open the new municipal buildings, which by then will have been completed, at a cost of £500,000.

Red Trias —Deep Red Distemper for Outside Walls. Impervious —Randall and James, Kentish Town; 2, Crown-court, Cheapside, E.C.

HAM HILL STONE.

The attention of Architects is specially invited to the Durability and beautiful Colour of this material.

Quarries Well Opened; Quick Despatch Guaranteed; Stonework Delivered and Fixed Complete. Samples and Estimates Free.

Address:—
THE HAM HILL STONE COMPANY,
NORTON, STOKE-UNDER-HAM, SOMERSET.
London Agent:—
Mr. E. A. WILLIAMS, 16, Craven-street, Strand, W.C.

W. H. LASCELLES and Co.,
121, Bunhill Row, London, E.C.
TELEPHONE No. 270.
HIGH-CLASS JOINERY.
LASCELLES' CONCRETE.
Conservatories & Greenhouses.
WOODEN BUILDINGS.
BANK, OFFICE, & SHOP FITTINGS.
CHURCH BENCHES & PULPITS.
ESTIMATES GIVEN ON APPLICATION.

WM. OLIVER & SONS,
MAHOGANY, WAINSCOT, WALNUT, TEAK, VENEER, and FANCYWOOD MERCHANTS,
120, BUNHILL ROW, LONDON, E.C.

The most extensive Stock of every kind of Wood in Planks and Boards, dry and fit for immediate use.

TENDERS.

***** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender; it adds to the value of the information.**

Blaby.—For glass-houses, Blaby, Leicestershire. Messrs. Goddard and Co., 6, Market-street, Leicester, architects:—

Sendall and Co., Cambridge ...	£229	0	0
Tucker, D., Tottenham	199	15	0
Hardy, Bruin, and Co., Leicester*...	186	1	3

* Accepted.

Bromyard.—For alterations and additions to The Firs, Bromyard, for Mr. E. Sampson. Mr. F. R. Kempson, of Hereford and Cardiff, architect:—

Newbold, A., Bromyard (accepted).

Hot-water works:—

Mann and Son, Worcester (accepted).

BURMANTOFTS SPECIALTIES

in TERRA COTTA
Buff. Tawny red. Red & GREY COLORS.
FAIENCE
Constructional & Applique for Exterior and Interior Decorations.
TILES
for all Purposes

in GLAZED BRICKS
Burmantofts Ivory White & Good Selection of Colors.
SANITARY WARE
HOLROYDS PATENT TROUGH CLOSET
POTTERY
Pedestals, Vases, Flower Pots, &c. In Majolica. Paté Sur Paté. ETC ETC

Produced at the Burmantofts Works
of the LEEDS FIRECLAY Co. LTD.
Burmantofts LEEDS.

LONDON offices and
Showrooms
16 Charterhouse St. E.C.

TELEGRAPHIC ADDRESS
BURMANTOFTS LEEDS and
BURMANTOFTS LONDON.

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXIX.—No. 2136.

FRIDAY, DECEMBER 13, 1895.

VILLAGE BY-LAWS.

THERE are many points of view from which building matters may be considered. Amongst them are stability, safety from fire, healthiness, and relative position. How far it is wise or necessary to legislate about them was the subject dealt with by Dr. Longstaff, the chairman of the Building Act Committee of the London County Council, in his very fair and reasonable address at the Architectural Association two or three weeks ago. Dr. Longstaff is neither a builder nor an architect. His opinions are those of an educated member of the public with special knowledge of the matters he is talking about, and he seems to agree with a considerable section of our profession in thinking that building, just now, is rather over than under regulated. If this is the case even in London, where the crowding together of houses makes rules and by-laws a necessary evil, it happens much more where the population is comparatively scattered; for the one idea of suburban authorities has been to make the London Building Act a basis for their rules, and instead of relaxing them, to add in many needless ways to their severity.

Take first the case of stability. It is very rare for cottages to fall, except by gradual decay, and still rarer for anybody to be hurt when they do fall. The same thing is true of larger structures in country places. It is in our towns, where Acts and regulations abound, with district surveyors, and local surveyors, and borough surveyors to make them obeyed, that we read of buildings collapsing, and terraces falling, and people being crushed to death. In part, it is that very solidity of building which such Acts and regulations enforce, that makes these calamities possible. Acts and regulations can compel thick walls to be put up; but, as Dr. Langstaff says, they cannot, in practice, compel them to be built soundly. Now a thick wall built unsoundly is a great deal more dangerous than a thin one. The thin one, especially if it is held together by timbers, will last a long time, and weather a great many storms, even after it has bulged here and sunk there; and when it does come down, its fall is comparatively a trifle. But to pile up a thick mass of brickwork, with mortar that never sets properly, to a height of 40ft. or 50ft. is a very different thing. There is no cohesion in a wall of this sort; it has not got the timbers and wooden ties which old village walls have. It is, in reality, only so many thousand bricks set on each other with little or nothing to hold them together, and when it comes down it does come suddenly, and with terrible force.

Of course, what the framers of Acts and by-laws intend is, that the walls should be properly bonded and built with good mortar. If they were, no doubt thick walls would be both stronger and warmer than thin ones. But even then there is another side to the question. A thick overcoat is stronger and warmer than a thin one. And if it is for reasons of health and durability that thick walls are to be compulsory, it is hard to see why thick overcoats should not be so, too. No builder, under the fashionable regulations, is allowed to put up a house with less than a certain thickness of brickwork. In consistency, therefore, no tailor should be allowed to make an overcoat with less than a certain thickness of cloth. The public health is concerned in the one case as much as in the other. But even our sanitarians do not go as far as this. They see that if it were a choice between thick overcoats or none, the result, to a large part of the population, would be none. They can understand that thick cloth makes a coat dearer, but they do not realise as plainly that thick walls make a house dearer. Yet the fact is certain; and it is equally certain that dearness in building means dearness in rent. But people fail to notice this, because high rents do not force the poorer classes to do without houses altogether. They only force them to do with the smallest houses possible. If cottages might be built cheaply, the working man, and the man who does not "work," but who merely stoops over his account-books for 9 or 10 or 11 hours a day, might have rooms big enough to sit in and sleep in with safety. As it is, he and his family are crowded together in about half the space they properly require. The mania for thick walls affords him warmth, but denies him air. Then, if he or his children have any tendency to consumption, they are placed in the precise conditions to favour it; and the good sanitarian wonders, after all he has done for the public health, that consumption, unhappily, is still so prevalent.

Sanitarianism has done, and is doing, good. Unfortunately, however, it has reached the stage which most good causes arrive at sooner or later: the stage in which they give up thinking, and set up, on the strength of past performances, for being infallible. "But," the sanitarian will say, "the last thing we want to do is to keep people without air. We make a great point of ventilation, and in particular we provide in every room that a certain area of window must be capable of opening." Yes, we reply, you may provide the means of ventilation, but in what way can you compel people to use them? It is a good thing to insist on windows that can be opened, but what power have you of making tenants open them? Those who live in crowded rooms acquire a distaste for fresh air. Every surveyor who has had to prepare schedules of dilapidations in the slums knows this. Some thirty years ago, for instance, there were scores of houses near Shoreditch let out to families in single rooms. These houses were old, but originally well built: they belonged to a great City Company. Some single rooms were occupied day and night by a family of six, some by eight or nine; in one were found seven persons, old and young, and eight Maltese terriers, which they kept for sale. Every room had a sash window, and a large one; but, even in the height of summer, no window was ever found to be open, and the smell, unconquerable by tobacco and cigars, still comes across the years as nauseous as ever. Probably there are not many places so bad as that now. But where there are small rooms, and few of them, the tendency still is to shut out the air. Legislation can provide windows, but it cannot force them to be opened, and the more the tenants ought to do it the less they do. To give people room enough is the only certain way of giving them air enough.

The fact is, that London Building Acts are a very unsuitable model for village by-laws. Not only in the matter of walls, but in a great many other matters, the difference of conditions ought to produce a total difference in rules. We agree with Dr. Longstaff that meddlesome interference with building, as with other businesses, is an evil in itself. It is a thing to be kept at a *minimum:* a thing to be resorted to only in cases where we are really driven to it, as we are, to some extent, in towns. The wise course, even there—and much more in country places—is not to see how much interference the patient British public will put up with, but, on the contrary, what is the very smallest amount that will be of any use. If rules are adopted, it should be not because they have them in London or Birmingham or Manchester, but because some definite evil, going on or likely to go on in the actual village, cannot be dealt with in any other way. By-laws, to be practical, should grow up bit by bit; each bit devised for some solid reason, and meant to produce some definite working result. But this plan does not suit the theorist. He wants his set of "Model By-laws" cut and dried—invented, like foreign constitutions, by a clever man at a distance, and as certain to suit all localities as Puffaway's pills are to cure all diseases. Here the local theorist gets the warm support of the would-be local surveyor. The more by-laws there are, the more need there will be for a surveyor to see them carried out, and the better worth having his post will be. His salary will swell the rates, or his fees will make building dearer; but the accession of dignity to the village will be worth all the outlay. It will then be able to talk of "our surveyor," and will feel that it is one step nearer to a civilisation like that of Wapping, or Whitechapel, or Bethnal Green.

Suppose some increasing village—far off as yet from being turned into a town—were to startle the world by showing that it had a soul of its own. Suppose its council were to say: "Our village is not part of London, and we do not want it to be. Half of us live here just because it is not: just to get away from all the triteness and wearisomeness and formality that London Building Acts lead to. Shall we be foolish enough to bring them here after coming all this way to get rid of them? Not at all. Let us see what we can do for health and safety on lines of our own. Let us benefit the parish at large by keeping down the rates, and do all we can for the poorer householders by not running up building expenses, and, consequently, rents." What, broadly speaking, would such a council do?

One great opportunity before them would be to try what can be done for health by letting building remain cheap. Thick walls are not everything. Millions of people live and thrive without them, and even in military hospitals it has been found long since that it is better to have no walls than no air. However poor a man is, in the country he ought, at least, to have room. When freehold land is being sold at 60s. an acre, there is no excuse in the cost of village sites for cramping and crowding. Where it is done, it is too often imported by-laws that lead to the doing of it. Our self-reliant council would encourage the spending of a little more on roofs and floors, even if this meant a little less on bricks and mortar. It would not set up the cry of "Fire!" and insist on guarding against it by brick walls, unless there was some real danger. For one person who dies by fire in villages, hundreds die because rents are dear, and they cannot afford sufficient room to live in. The council would deal with the real evil, not with the imaginary one. There is a pressing need of saving people from being burned to death in seven-story houses, but not in two-story cottages. To have the latter built under the same rules that safety requires for the former is a mere mimicking of London, which does good to nobody except the local surveyor, who by this craft has his wealth. The council would recognise this, and would not insist on brick walls for detached and semi-detached cottages. As regards them, they would just leave matters as they are for the present. If any special evil proved after a little while to need repression, they would make a special by-law to repress it; but they would not start by enforcing, in semi-rural places, all the "shalts" and "shalt-nots" that are wanted where the inhabitants are a hundred thousand to the square mile. When, or if, the village houses begin to be built in rows—an undesirable practice as regards light and air, which the encouragement of semi-detached ones would greatly prevent—it might be wise to insist on bricks, stone, or concrete for the wall material, not wholly excluding wood framing, but not allowing it to run through or across the party-walls. Barns, sheds, and buildings of the warehouse class, if detached and at a reasonable distance from other premises, might be built as they now are. Even councils and boards cannot regulate everything. If they insist on fireproof sheds, they will still have to stop short of fireproof haystacks.

On the other hand, it is easy and useful to provide for a certain amount of spare ground to each new domestic building, and especially to prevent the building of houses and cottages back to back. But rules should be as few and simple as possible, and those directed to these ends should be so framed as not to result in rigid formality of line. This may be natural in the crowded part of a city, but it is simply hateful in a place which is resorted to only as an escape from cities. Plenty of light and air, but no formal frontage lines, are the conditions which make a beautiful village, and a village wholesome for body and mind. Sensible men without education have always seen this, and have made our old villages what they are; people of cultured taste see it still. But the village boy, who gets a little, and only a little, education, fails to see it. He wants something grander, more regular, more like the town; something with straight streets and even frontages, with all the footpaths paved, and all the houses alike and equidistant, as if they had been dibbled in by a string, like so many cabbages. We may call this the Board-school boy's ideal; an ideal which he will outgrow if ever he gets much above the standard he finally passed in,—but which he will cling to more and more through life if he remains a melancholy example of arrested development.

SHOREDITCH BATHS AND (PASSMORE EDWARDS) LIBRARY COMPETITION.

It is hardly possible for one architect to produce the best plan for each of the distinct buildings required; but it was this principle of adjudication which the assessor and the commissioners seem to have thought necessary. If their idea was to make a façade that was homogeneous and uniform, and that, therefore, the architect who sent in the most satisfactory united façade ought to be selected, one need only say such an opinion is contrary to a correct architectural conception. Every building, if possible, should tell its own tale, so that people wanting to find out the public baths should not mistake which are the baths and which the library. We might have both departments combined in one elevation, but so distinguished in character and detail that each could be distinguished. But it appears the commissioners were desirous of awarding the first premium to the author of a joint design, the consequence of which is that they have not been able to secure the best skill or plan for both the baths and the library. It would have been wiser to have divided the premiums for the two schemes, and have obtained the plans of experts for each building separately.

The question has again arisen whether the commissioners or their assessor have fairly complied with the London County Council requirements as to the first-class swimming-bath, and we hear that Mr. Tiltman and other competitors are taking steps to inquire on what grounds the decision has been arrived at, so far as the utilisation of the large swimming-bath for entertainments is concerned. A clause in the conditions distinctly affirms that "none of the designs for baths will be considered accepted until the L.C.C. have approved of the first-class bath as a public building for entertainments," and it is for the commissioners to show, if they can, that their selection of a design is in accordance with these regulations. Till the plans have been submitted to that body, and their license provisionally obtained, no definite decision can be arrived at.

Last week we had only the opportunity to describe the general arrangements of two of the selected designs, and therefore our comments in respect of them must be accepted with this explanation. We had not the advantage of comparing them with others, and therefore could not judge of their relative merit in the competition. We have to add to our general remarks on the selected design that a closer examination of the plan has revealed some points of weakness. The inadequate means of exit and staircase communication from the large hall or bath will make it difficult to be used, especially as a public hall. The stairs at the end do not communicate directly with the street, are insufficient for the use of a large assembly, and would not pass the requirements of the London County Council. Two staircases, at least, are necessary. The two north-side emergency exits to Bowling Green-walk are scarcely sufficient for the egress of a large crowd, and the entrances to hall at the west end on ground level would be better if they were more central, and not confined to the corner of hall, as they are now, by the women's first-class slipper-baths, which might have been better placed elsewhere. If these doorways have to be closed by iron doors, easy egress would be impossible. The doorways to large hall or bath are certainly small. Another point to which exception may be taken is the position of the club-room at end of corridor on the south side of large bath. They would have been better in a more central position. The library arrangement is, on the whole, better, with the exception of the space for the public to which we have referred, and the position of book-store on first floor and the access to it. The news-room and lending-library are in good relative positions, both on the ground floor, a point which has been overlooked in many other good designs. Book borrowers constitute a large class of those who attend libraries, and it is undesirable that they should have to ascend a flight of stairs where proximity to the entrance is necessary. The basement windows in front, close to Pitfield-street, are objectionably close, and liable to be broken. We publish the chief plan and elevation this week.

As we said last week, Mr. A. Hessell Tiltman's design had been withdrawn by that gentleman, and one could give only a very brief notice of it. Having since had the opportunity of inspecting the plans and details, we have no hesitation in expressing our opinion that the design is a very able one, complying more fully with the actual requirements than any which have been selected, while the author has brought his own expert skill and judgment to bear upon the problem. Mr. Tiltman has complied with the first condition in planning his large bath in the matter of entrances and exits, whereas the plan selected, whatever its merits, fails to do so, and on this ground he resents the commissioners' decision. The license of the L.C.C. for the use of first-class swimming baths for assemblies and entertainments cannot be given unless certain structural requirements are carried out. But there are other features of the plan which have apparently been overlooked by the assessor. The quadrangle introduced in this plan, though it may be thought by a few to be inapplicable here, is really the only practicable means of economising the labour and cost and reducing the length of corridors. As a master of administration and structural detail, the author knows every item in the working arrangement of these establishments, and several advantages of the quadrangle accrue; privacy to the regular bathers is secured; the street *gamins* and objectionable loafers cannot intrude within the actual precincts, for at the street entrance to the quadrangle a porter is stationed; no man or woman who enters can make a mistake; there is no long corridor to bewilder one, but only one short corridor to his or her bath; the ticket-office is central, and serves for both sexes; the administration is simplified, and labour is reduced. These advantages are made evident on examining the exceeding simplicity and concentration of this plan of entrances and corridors, and the grouping together of the subordinate offices. A waiting-room for women is immediately in front of the ticket-office, where they can obtain their tickets and proceed to their baths, by which all confusion is avoided. A spacious hall opening direct from the quadrangle gives access. Near the large bath, and adjoining lobby, is a spacious gallery staircase, which serves both as entrance and exit. There are three exits from large bath or hall into Bowling Green-walk, besides two staircases, one at each opposite angle, so that they divide the gallery equally. It may be mentioned, that two staircase exits at one end cannot divide the people in the gallery equally, and may lead to panic. We notice, also, that provision is made for a tea-and-coffee room next the outer gates, a matron's store, and the arrangement of women's slipper-baths is so managed that one woman attendant can see to the slipper-baths on first floor; the waiting-room is arranged between the slippers. The board-room is over part of commissioners' offices, and we notice that the club-rooms are convenient to the entrances and baths. At the east end of large swimming-bath we notice a swimmers' corridor, which forms also a performers' entrance and a retiring- or club-room, which corridor can be used for boy swimmers. In the fittings of washhouses, baths, and engineering details, the author has introduced a number of special features which a long study and experience have found to be of value. The washhouse is next Coronet-street, and the planning is well-studied in its detail. The main elevation is broadly and characteristically treated, the two portions being made outcomes of their respective plans. A gable and cupola at the side are features in the library front, and the building is intended to be carried out in red brick. We shall give the block plan and perspective of this design next week.

In the third placed design (Messrs. Groll and Todd) we notice several good points, especially the engineering arrangements in the basement, the provision for the connection of electric-light supply from central station, also the isolation of large bath or hall, which does not touch any of the adjacent buildings, the authors allowing the full distance of 21ft. from the end of bath to library. Gallery stair exits are shown at both ends of large hall, and an entertainment crush-room is shown at west end of hall; corridors are fully of the required width to meet the regulations. The first-class slipper-baths for men are on the first floor, and are "hung up like a vessel in a dry dock." The large-scale detail of elevations are well drawn. On the other hand, we see the lending-library is on the first floor, which is undesirable, and the borrowers' space looks rather small. The book-store is on the second floor, over lending-library, and is accessible by a spiral iron stair open to all the floors at one end. The elevations have been conceived in a Renaissance style, and the details are well drawn, and distinctly of North German character.

A strong plan, especially for its baths arrangement, is No. 31, by Messrs. Spalding and Cross. The large bath or hall, 121ft. by 59ft., can be used separately for entertainments, and is placed with its longer axis north and south, its end abutting on Coronet-street, where there are two public entrances and two gallery entrances direct from street. In addition to these are the two main corridor entrances from Pitfield-street for men and women, which corridors lead into large rectangular round-cornered halls, useful as crush-rooms, which give access to the large hall. A staircase to gallery and board-room is provided between these. Then there is a separate staircase to gallery at north-east corner of hall and a men's second-class exit from hall to Bowling Green-walk. The front ticket-office and corridors on each side of the men's first-class slipper-baths and the general planning of the entrances and exits are well arranged. The second-class bath is placed next to the Bowling Green-walk, with its slipper-bath between it and the end of large bath. The male swimmer can enter by his corridor in Pitfield-street and go straight to the first-class swimming-bath, or turn to the left by a short corridor from the same hall and enter the second-class bath. The women's first and second slippers are at the south end of large bath. The laundry is in rear, cut off by a suggested men's second-class exit from hall into Bowling Green-walk. The library plan shows a main entrance from Pitfield-street, with boys' room and lending-library on south side and the news-room on the north side of entrance. The position of librarian's room and porter insure supervision of this floor. Ample space for borrowers is shown in the lending-library. Above is the museum at the north corner over the newsroom, and the librarian's house is in front, with reference-library over the lending-library. The board-room and official department is above the main entrance, and disposed round the slipper-bath skylight. On the second floor is the book-store to reference-library, which has a gallery round it, and the librarian's rooms are in front. The basement plan shows the engineering arrangements and drainage. Brick and stone are used; the style selected is a sort of Renaissance. There is a want of unity and coherence between the two blocks; the library front having an ornamental gabled treatment over the main entrance. The section shows an elliptical roof, with lantern-light over the large bath.

The design numbered "2," by Mr. F. J. Smith, has also many strong points. The large swimming-bath has been planned with reference to its use as an assembly-hall, and is placed next the Bowling Green-walk. It has three emergency exits, and main entrance at the west end, through corridor from Pitfield-street. There is a vestibule to the hall, also a direct entrance from the side walk at the west end of the bath. There are four exits from gallery—two at each end. The second-class bath is next to the large one, and parallel to it; the men's first slipper-baths adjoins the second-class swimming-bath; the women's second-class are placed next entrance, between the corridors and the men's, at the back of the old houses. The washhouse and laundry adjoin, with entrance from Coronet-street. The library is also well arranged in the general location of the departments, and these appear to be under control. There is a good hall and vestibule from Pitfield-street, and the lending-library and public space are convenient in size. On the east boundary there are two areas for light and air over the ground floor; the stair-landing gives access to the magazine-room and museum in front, both on the north side, and a reference-library, with librarian's room, on the other side. These are well lighted from the front and north side. The reference-library has a good gallery, and the librarian's house is on the second-floor. A spacious book store is provided in the basement below the lending library. One merit of this design is the separation of baths and library buildings. These are treated also separately in the elevation, the former being kept low and plain. The façade is broken by bay windows, the library building being set back with bay windows to reading-rooms. A well-drawn ink perspective accompanies this set of plans, which are neatly finished, and show all the fittings of baths and library. The corridor to women's baths is narrow. No. 7 has a well-thought-out plan; the large bath, or hall, has two hall and gallery entrances from Coronet-street end, and the author has taken care to consult the separate use of the hall, and its means of ingress and egress for swimming and entertainments. The second-class large bath is placed parallel, and next to Bowling Green-walk, at right angles to the first. Spacious corridors, and hall through waiting-rooms are shown. There is a central entrance-hall and stairs. We do not like the position of ticket-office where shown, between the corridors. The second-class men's slipper-baths are between the large baths and men's first-class on first floor at side of large bath, and the women's on the other side. In the library plan there is a good borrowers' space behind entrance hall, with magazine-room in front on the right-hand side of entrance. The museum occupies the corner above. The elevations are in a commonplace Classic style, a distinct treatment for each building, though in one. The basement plan, showing inspection corridors round baths and engineering details, is prepared with some practical knowledge. No. 8 (Messrs. Gibson and Russell) has the two large baths, as in the last, at right angles, the larger one its end towards Coronet-street, with three exits and stairs to gallery; the second-class bath is placed along the north side. There is a good entrance-hall and corridors for men and women, the latter to the right of public staircase. Between the corridors are the second-class men's slipper-baths, and the first-class for men on the first floor, and the women's are next to large bath at south end. The laundry and ironing-room are in the rear, with entrance from Bowling Green-walk. The library is faulty, the lending department is on first floor, and reading-room at corner of site. The museum is over the entrance. On the floor above is the reference-library and book-store—not very convenient, and the librarian's house is in front, and occupies the upper story as well. The details show study; the elevation is of suitable Free Renaissance character, and a separate treatment of buildings is shown in it.

A few other designs call for brief notice. No. 1, in its external perspective and elevation is of imposing Classic design, with massive corner towers; the large bath is in the centre, with the washhouse on north side, and the smaller swimming-bath at right angles, with end abutting in Coronet-street. The front entrances have large elliptical-shaped inner halls and waiting-rooms for the two sexes. The entrances and exits to large hall are inadequate; the men's first-class slipper-baths are on first floor over washhouse, and those for ladies over entrance-hall, approached by stairs from it. No. 10. In this plan the large hall is also north and south, with end "escape corridors" to Coronet-street; the other swimming-bath is next Bowling Green-walk, and washhouse in rear. The library is not satisfactory in arrangement. No. 18 has a large bath, or hall, with three exits on north side; but the corridors are devious. The second-class swimming-bath is detached, with end to Coronet-street. The entrance to large bath is cramped. A clever ink perspective artistically treated is sent. No. 34 is also a well-drawn and artistic elevation of English Renaissance. The large hall is on north side, with entrance and exits from Bowling Green-walk; the second-class swimming-bath is alongside Coronet-street, with washhouse between; this is an unsatisfactory arrangement. The library is better than the bath planning. No. 28 has the large bath north and south, with exits in Coronet-street, and the other bath is parallel to north side, with workhouse in the rear. The entrances are not satisfactory, and the elevation is heavy and ill-balanced, and of ambitious character.

No. 24 (Messrs. Hall, Cooper, and Davis) shows the large bath with its end to Coronet-street, with two exits and three entrances on the western side approached from the Pitfield-street entrance. These entrances to large hall are in a cross corridor, which forms a kind of hall, and the corridors giving access to it are ample and direct. The slipper-baths for men are between the entrance corridors from the street, and the second for women are placed between the large bath and the small swimming-bath, which latter is placed along the north side. The planning is generally good, and the washhouse is placed on the east side. The library plan is is even better, and the authors have complied with the condition as to windows in the wall between library and baths by providing a passage-like area for light and lighting the lending-library from it. The plan sacrifices space, but is one way of satisfying a condition that, to say the least, could not be easily complied with. Some of the plans have shown windows above the roofs of baths.

Other plans of more or less merit we can only glance at. No. 35 (Messrs. Chas. Bell and Cheers) has some good points in the bath planning. Nos. 5, 6, 9, 13, 14, 19 have carefully drawn plans; but they have all some defect, either in the baths or library. A few of them have artistically-drawn perspectives. Had the conditions been less particular and rigid, allowing more option on the part of competitors, better results might have been obtained.

* * *

INACCURATE QUANTITIES.

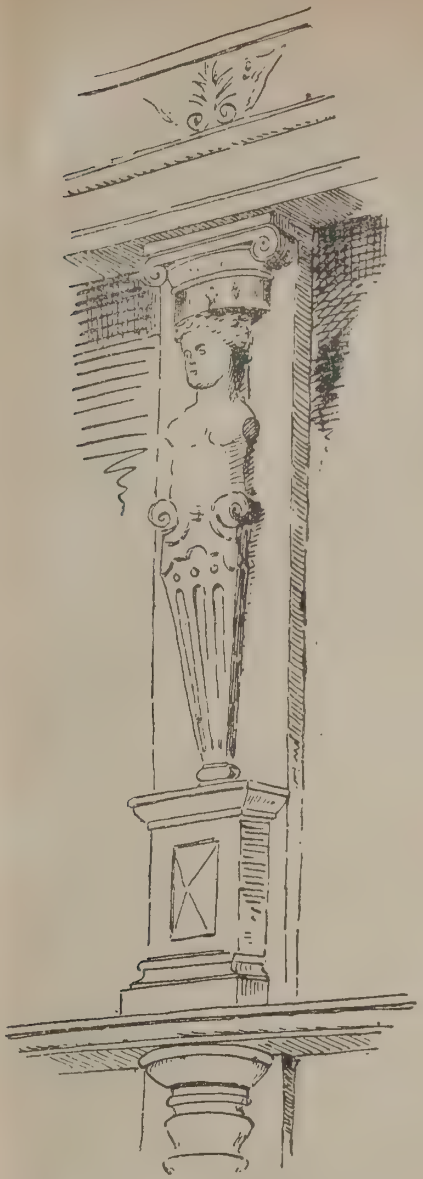
No one can expect the quantity-taker to be infallible. We may affirm, indeed, that very few bills of quantities are not without defects of omission or excess. The architect or surveyor may do his best to insure accuracy; but accidental circumstances will arise, which he cannot foresee, and throw out his calculation of material or labour. Is he to be made liable? The Courts have held pretty clearly that a builder cannot recover for inaccurate quantities against a quantity surveyor unless there is some contract between the surveyor and the builder by which the former agreed to render services for reward; and such a ruling is quite justifiable, for if the surveyor is to be made the victim of every disappointed builder who finds an omission, his life would be a sorry one, and he would be constantly at the mercy of the unscrupulous under-bidder or speculator. When the quantity surveyor has been employed by the architect for the building owner, for the usual purpose of getting in tenders and of obtaining a careful estimate of the cost, for the joint advantage of both parties to the contract, it is unfair to expect that extreme accuracy which some builders imagine they should obtain. In the recently-tried case of "Priestley *v.* Stone" the principle was affirmed that the surveyor should not be made liable for inaccuracies arising by custom. The quantities are prepared for a given purpose—to enable the builder to give a tender upon a certain statement of materials and labour, and are not guaranteed by either employer or his architect. The builder takes the whole risk of the accuracy of the quantities. If there is any omission or excess, the contract provides means for adjustment. Sometimes the architect is sued for supplying inaccurate quantities. The custom is frequent in certain localities. We do not think the practice unassailable. It may be unobjectionable in small works; but if the builder pays, the architect is placed in a much less independent position, should differences arise between the builder and himself. The case of "Scrivener *v.* Pask" is important. Where a builder entered into a contract according to plan and specification upon an erroneous statement of quantities which were taken out by the architect, it was held that the builders had no claim for more than the contract price in respect of extras beyond what he supposed would be necessary, inasmuch. as the architect had not acted as agent of the employer in taking the quantities out, nor was the latter responsible for mistakes. To avoid any disagreement we think the rule laid down at the Conference of architects and surveyors on this question is a good one—namely, that when an architect supplies quantities, he should do so with the concurrence of the employer, and that the architect should be paid by the latter, rather than by the builder. For it would seem, from one decision, "Bolt v. Thomas," that where an architect takes out quantities, and is paid by the builder, he may be made liable, unless he can show an employment by the building owner express or implied. An architect was sued for supplying inaccurate quantities by a builder. The former advertised in the usual way that plans were to be seen and quantities obtained, and the builder obtained a copy of these quantities, which were to be paid for by the successful competitor, and upon the quantities furnished the builder made his tender, which was accepted. The latter also stated that the architect had told him that he, the architect, was responsible for the quantities. In summing up, the Judge said that, as the architect had stipulated that the plaintiff should pay him for the quantities, and having been paid for, he was liable to compensate him if the bill was not reasonably accurate. But where the architect takes out the quantities of the work for the owner with his knowledge, then the builder cannot sue the architect for inaccuracy or negligence. In one case ("Young v. Blake") the architects were ruled to occupy a quasi-judicial position, and could not be sued for negligence. The builders alleged that they employed the architects for reward, and that the latter warranted the accuracy of the quantities; but the judge held that there was no warranty of accuracy by the architects. These are instances of the judgment of the Court cited in legal handbooks, and they serve to indicate the principle that when an architect takes out quantities for his client, and with his concurrence in the usual manner, the law protects him from any charge of inaccuracy made by the builder; but when a builder employs the architect directly, there is an implied contract that the quantities are to be accurate; hence the importance of these documents being made a part of the contract. Quantity surveyors never guarantee the accuracy of their bills, but generally introduce a clause to the effect that, should any error be found, the architect is to have the power to measure the work. An agreement between owner and surveyor as to payment for the quantities. with a clause protecting the former against mistakes, is necessary.

BOARD SCHOOL ARCHITECTURE.

At the meeting of the Manchester Society of Architects on Tuesday week, a paper was read by Mr. Charles H. Wyatt (clerk to the Manchester school board) on "Requirements in the Planning of Board Schools." Mr. John Holden (president of the society) was in the chair. Mr. Wyatt disclaimed any pretension to be a master of the many technicalities which are necessary for the man who would successfully design a public elementary school. He was not an architect; but the views which he would lay before them were based on a practical acquaintance with school life and on the experience he had acquired as to the working of public elementary schools in Manchester. The first necessity for a school was a suitable site, and at this point, particularly in large towns, there was often a difficulty. But presuming that they had a piece of land, an acre or an acre and a quarter in extent, upon which it was proposed to build a school for about 1,000 or 1,200 children, they would have ample space for playgrounds, and there would be no necessity to consider the matter of roof playgrounds or any utilisation of basement space for this purpose. The building should, if possible, face the south, and it was desirable that the school itself should stand as far as possible from the main thoroughfare giving access to the premises. At one corner of the site, preferably at the front, he would place the caretaker's house, so arranged that he could from his windows overlook the greater part of the playgrounds. The best surface for the playground that he had seen was that known in Scotland as granolithic pavement. Asphalte playgrounds were common in England; but care should be taken that the ground was allowed to settle before the asphalte was put upon the surface, and the work should be carried out under a rigorous specification giving the thickness of the various ingredients composing the asphalte. At Bolton the playgrounds were flagged, and members of that board regarded the method as satisfactory. Coming to consider the school premises proper, Mr. Wyatt said that the ideal limit of the cost of erecting a public elementary school was that fixed by the Education Department for the purpose of the loan, and unless there were exceptional circumstances, this was placed at £10 per head. Some boards, however, did not go to quite this limit. In Manchester £9 per head was thought sufficient to cover the cost of erection and equipment of an ordinary elementary school. With this limit of cost in view, and allowing for the provision of extensive playgrounds, boundary walls, offices, &c., it was clear that such a limit of expenditure did not provide for any extensive basement. There should, however, be in the basement a kitchen for the caretaker, for in the case of a school in a poor locality, where, through private munificence, free meals were provided for poor children, it was almost a

THE COURTYARD, HEIDELBERG CASTLE.

PORTICO OF THE RATHHAUS, COLOGNE.



MULLION, HEIDELBERG CASTLE.

A STREET CORNER IN MAYENCE.

necessity to have a roomy apartment where these meals might be served. The lecturer went on to illustrate the design of a school by means of lantern slides prepared for the purpose. The classrooms should invariably be lighted from the left. He was a firm believer in plenty of window space for schools. There should be ample cloakroom accommodation for the children, and for this purpose iron fittings were preferable. Some arrangements, too, ought to be made by which the cloakrooms could be aired. In the case of a school belonging to a board, something of its municipal character should appear, and he would have inserted in the windows the armorial bearings of the town. Much art might be shown in the design of such windows. Heavy stone mullions were objectionable, and he had seen a very happy effect obtained by light wooden divisions designed to represent a slight column intersecting the divisions of large end windows to central halls. In speaking of warming and ventilating, he knew himself to be on dangerous ground; but open fireplaces had obvious advantages over other methods. Every classroom and cloakroom should be provided with a ventilating flue, and each central hall should have at least three such outlets formed into the walls, except those on the top floor, where they could be taken by means of tubes from the ceilings. The ventilation of the classrooms might be improved by means of glazed, draughtless ventilators fixed in the lower portions of the window-sashes. In Manchester it was not allowed to introduce any patent apparatus without the express consent of the Sites Committee. Hot and cold water supply should be laid on each floor. As to school furniture, Mr. Wyatt said that it was very seldom one saw a properly arranged museum in a school, though one might often see cupboards with glass doors, and the shelves so high that their contents were almost out of the view of the children. A museum, particularly for infants' use, should not be much above dado height, and the glass should be brought down within the nearest possible distance of the floor. It was of serious importance that the cost of school erection should be reduced within the most reasonable limits. He did not mean that the schools should be imperfectly built; the materials and structure should be sound in every part; but much money might be expended on outside ornament which, considering the limits, did not bear money value. In Manchester there had undoubtedly been an attempt to carry out a type of school which some might think planned on lines too severe. He granted that no attempt had been made to achieve any great architectural feature; but a building suitable for the purpose, and one of no disgrace to any locality, might be erected at a cost well within the limit laid down by the board—viz., £9 per head. They wanted substantially built schools, well equipped with everything necessary for the instruction and healthy recreation of the pupils, avoiding, however, anything in the shape of unnecessary outlay and extravagant design.

THE LONDON COUNTY COUNCIL.—MR. BLASHILL'S RETIREMENT.

At Thursday's meeting, the General Purposes Committee reported the receipt of a letter from Mr. Thomas Blashill, F.R.I.B A., the superintending architect to the Council, intimating that he had attained the age of 65, at which, by the standing orders, he should retire. The committee recommended that, having regard to the peculiar circumstances of Mr. Blashill's case, and as his retirement would cause inconvenience to the public service, he should continue to hold his appointment for another year, and that meanwhile the committee should report what (if any) changes in the work of the architect's department were desirable. This was agreed to. The report of the Main Drainage Committee, recommending extensive additions to the main drainage system of London north of the Thames, came up for consideration. The scheme contemplated the construction of an additional outfall sewer between Old Ford and Barking, a new intercepting sewer from Paddington to Old Ford, and relief works. The total expenditure for these additions was estimated at £745,000, and the works would not be fully completed for about four years. Mr. M'Dougall moved as an amendment that the general enlargement of the main drainage system was not now necessary, but that local floodings needed immediate attention. After considerable discussion the amendment was carried by 55 to 18 votes. A recommendation for the execution of certain relief works at an estimated outlay of £50,000 was agreed to. The consideration of the report of the Parliamentary Committee with reference to the water question was postponed till next week. A long discussion ensued, on a recommendation of the Main Drainage Committee, that the tender of Messrs. Gwynne and Co. for £2,272 for centrifugal pumps for Heathwell pumping-station should be accepted, when there were three lower tenders. It was pointed out that Messrs. Gwynne and Co. were the original patentees of these pumps and were a London firm. The lowest tender came from a firm with little experience of the manufacture of these pumps, the next was informal, and the third was only £72 below that of Messrs. Gwynne. An amendment to refer the report back was defeated, on a division, by a majority of 31, and an amendment that the contract should be given to Mr. J. Cochrane at £2,200 having also been defeated, the recommendation of the committee was agreed to.

CLASSIC DETAILS AND THEIR APPLICATION.*

By G. A. T. Middleton.

XX.—GERMAN RENAISSANCE.

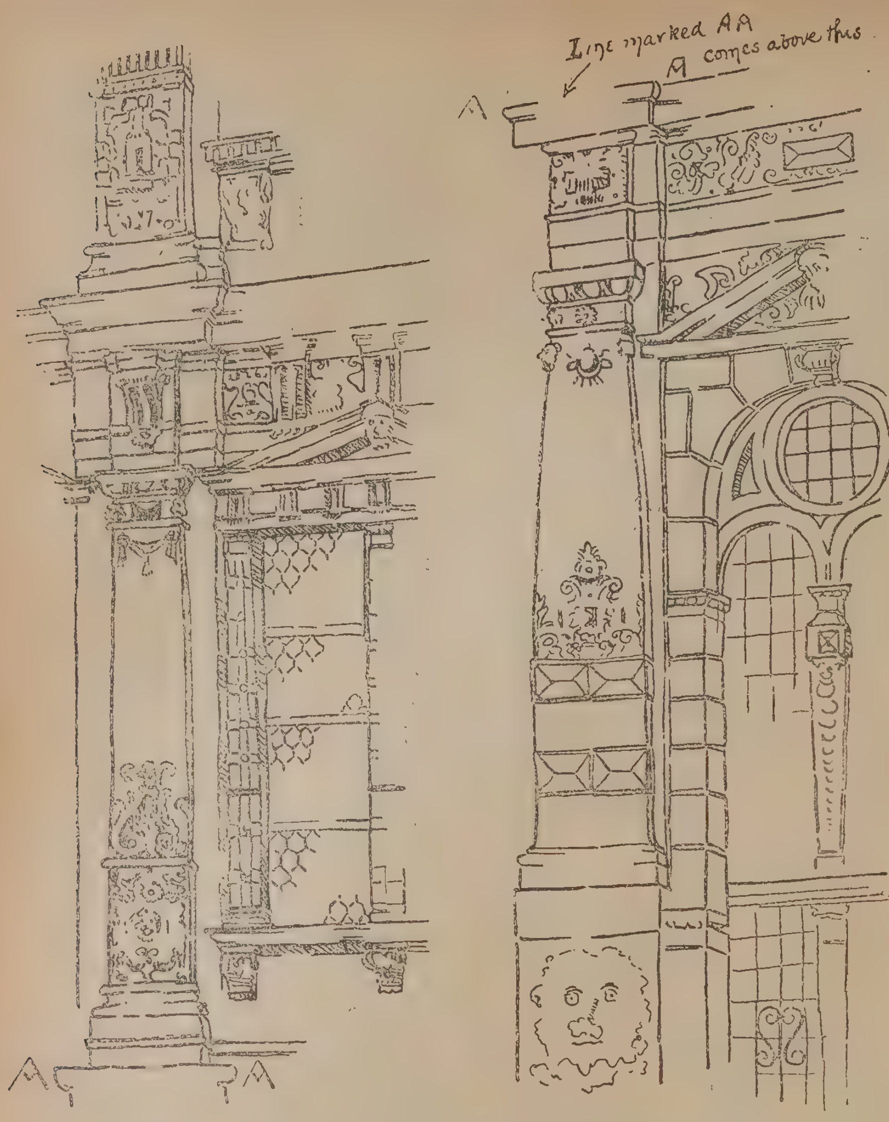
THERE are so few buildings of the Renaissance in Germany, and the style was adopted there so late, and deteriorated so rapidly, that it would be of little importance had not the deterioration been upon fresh lines, resulting in domestic work of a character which it has been fashionable of late years to imitate, and, it is to be hoped, to improve upon, in England.

Omitting the beautiful Rath-haus at Rothenburg from consideration, as being rather French than German in its characteristics, one of the earliest, and at the same time purest, works in Germany is the Portico to the Rath-haus at Cologne. It is of two stories, with an order (Corinthian) to each story, the columns being raised on pedestals having carved panels. Its peculiarities lie in the combination of the order of the upper story with the pointed arch, in the heavy modillions in the upper cornice to give it power and so to fitly crown the building, and also in the carving of the lower portions of the upper columns. In the employment of the pointed arch it is unique, the combination, owing to a prejudice against it as never having been employed in Roman work, being unpopular; why, it is difficult to say, for there is nothing in its use at Cologne to hurt the eye or cause shock to the most fastidious. Less skilfully treated, however, it is easy to understand that the lines would clash with those of the entablature.

The Castle at Heidelberg is generally pointed to as the typical example of the German Renaissance, and, though it undoubtedly owes much of its charm to its romantic situation, it is well worth study, especially as the two Renaissance wings are of different dates, and show how the typical German grew out of the imported Italian style. In the view given of the courtyard, the wing on the right-hand side, now dismantled, is early, and of Italian character, while the inhabited wing on the left, with the tall gables, is essentially German. This is most evident in the details. In the mullion from the earlier portion, which is illustrated, for instance, in spite of the peculiar forms which the Doric and Ionic Orders assume, there is an elegance of feeling and proportion which marks it at once as the work of a Latin,

---

*All rights reserved.


Line marked AA comes above thus
A
A
A
A

DETAIL OF PORTION OF FACADE, HEIDELBERG CASTLE.
(*From a Sketch by* Mr. E. R. Barrow.)

and not of a Teutonic, race. The novel position for the Orders—in a window mullion—might also have been looked for in the earlier times in France; and even with so small a division between the two as is formed by the narrow transom, and with so insufficient a base as there is to the caryated figure, they yet form beautiful adornments, perhaps the most universally employed of any in the whole range of architecture, and this when their constructional function has been quite lost sight of.

Mr. Barrow's sketches of the pilasters are from the later, the more characteristically German, portion of the castle; and here we find the Doric Order superimposed upon itself, and of an entirely new form—the lower with excess of taper and entasis, the column banded in two places with raised panels, and enriched with carved ribbon-like scroll-work, the capital carved with the egg-and-tongue, the architrave in two faces, and the frieze carved with the scroll-work again; while the upper is raised upon a slight pedestal, having the columns void of either taper or entasis, and enriched with carving for about a third of its height, where it is banded with a simple roll, and having a frieze of triglyphs and metopes, while a console takes the place of the triglyph over the column. The effect is rich and massive, as far removed from the original simplicity and dignity of the Doric, as it is also from the refined delicacy of French or Italian work, and this effect is heightened by the crowding of the windows, themselves full of heavy ornament, against the pilasters, and the breaking of the pediment in the upper story window through the frieze of the order. It is unrestful, overladen, and yet in its way satisfactorily massive.

As to what this resulted in in the smaller domestic buildings, a glance at the sketch of a street corner in Mayence is sufficient to show. There is a tall gable enriched with coarse scroll-work and banded at intervals with cornice mouldings, and there is an oriel window at the corner similarly enriched. It is the domestic form of the German Rococo, displaying wealth but lacking in refinement, and when this deteriorated both in form and detail, as it did in "quaint" Holland, the terrible badness of the result may be imagined. Yet, founding their work upon this, selecting its good points, and designing with care, modern English architects have produced much which is admirable.

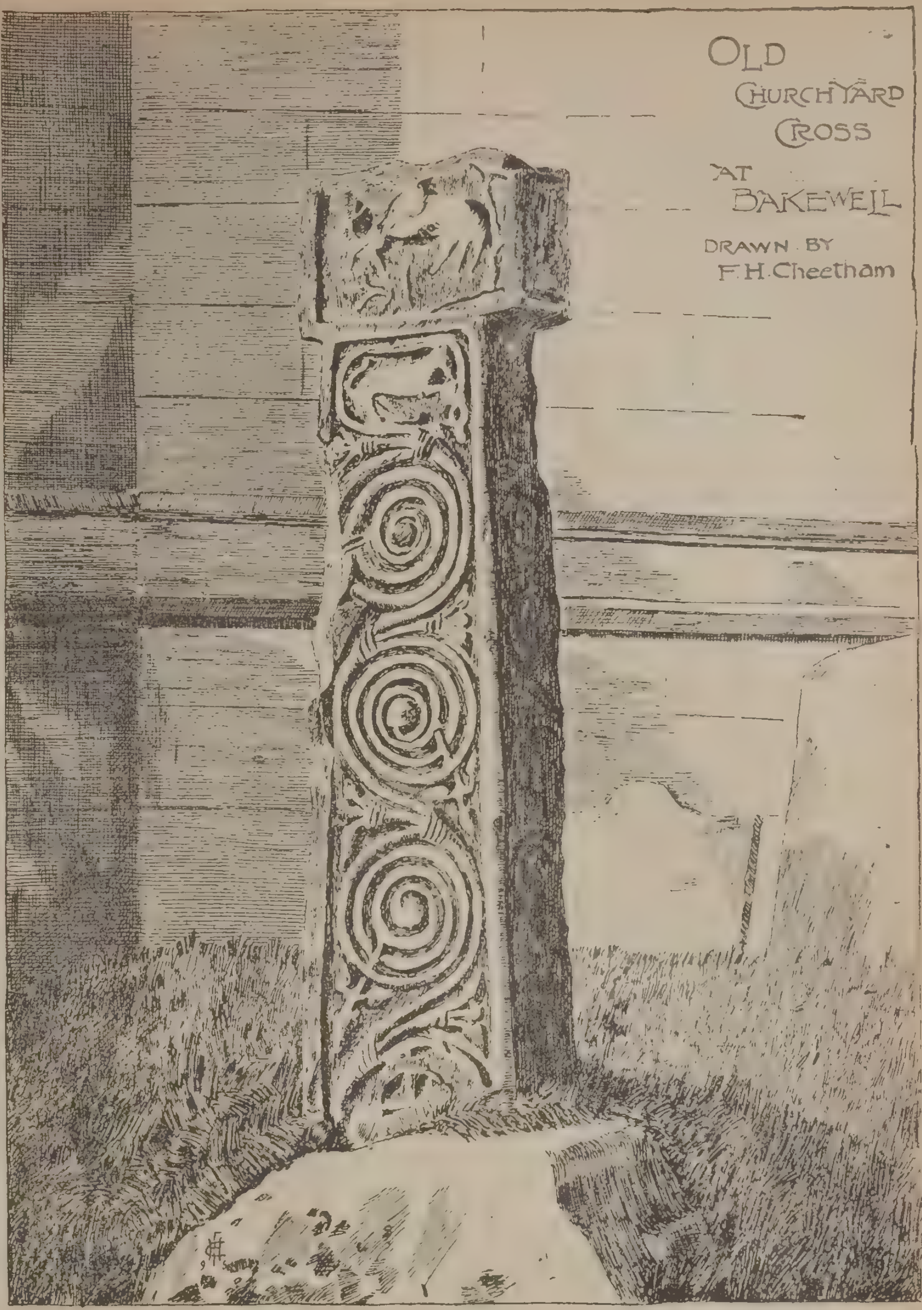
◆

THE ARCHITECTURAL ASSOCIATION.

THE fourth ordinary meeting for the present session was held on Friday evening. The President, Mr. W. D. Caröe, M.A., F.S.A., who occupied the chair, announced that a tour to Greece would start on Wednesday, December 18th, under the guidance of Mr. Hugh Stannus, and that the Committee had decided to open the new Handicraft Class to all their students, irrespective of their belonging to the Class of Design or not.

SCENIC ART.

A paper on this subject was read by Professor Hubert Herkomer, R.A., and at its conclusion the President announced that, at the lecturer's request, there would be neither a vote of thanks nor a discussion. Mr. Herkomer said that, though he did not set himself up as an architect, or even pose as a reformer, he thought, as a worker, there were many reforms that could be suggested in the matter of the theatre, and he wished to give those present the benefit of his thoughts and reflections, and might suggest many changes. Treating the subject of scenic art from the point of view—first, of the auditorium; second, realism on the stage; and, thirdly, the lighting of the stage—he pointed out that the semi-circular shape of the auditorium of the present theatre had its prototype in pre-Christian structures in Greece, where the auditorium was scooped out of the rock. The Roman theatres were copied from the Greek originals, but were constructed on level sites. Then there was a change in the well-like shape of the theatre in the Middle Ages owing to the temporary accommodation needed by the strolling players. The deep, well-shaped theatre had thus been bred into our natures for many hundreds of years, and it would necessarily take some time to breed it out; and in looking at its conveniences and inconveniences he argued that the principle attending its construction should be to provide seats from which the full intention both of the actor and the scenic artist could be perfectly seen by the audience. No doubt for economical reasons the builders of theatres had been compelled to adhere to the old form of auditorium, which was nothing more nor less than a great well. He was fully aware that the form of auditorium in Wagner's theatre at Bayreuth (which to the lecturer was the only correct form) was not easy to carry out in London or Paris. Still, he believed that a modification of this principle was possible, and that some form of auditorium with an entirely new method of distributing the seats could be invented without encroaching too much upon ground space, and at the same time without reducing the number of seats required to make the theatre pay. Here was a chance for the budding architect! In any case, the principle should be to provide seats from which the full intention of both actor and scenic artist could be perfectly seen by the audience. An actor should study his actions as much as his tone of voice, and in many cases his meaning should be made clear to his audience by his movements alone. But how was it possible to make his movements convey at the same time the right meaning to the person who sat 30ft. or 40ft. above him and the person who sat lower than his feet? The lecturer showed that the hanging committee at the Royal Academy, in criticising the drawing and painting of a picture, had the picture placed in front of them, and according to their position in the semicircle the views of the onlookers with regard to the drawing of the subject varied. The reasonable placing of the spectator at the theatre was of equal importance in judging, not only of the movements of the actor, but of the efforts of the scenic artist. Positive realism on the stage was an impossibility. The foundation of scenic art was an artificiality, and open-air plays could never be satisfactory. The actuality of nature and the artificiality of the actor's situation could never blend. The real secret of perfect scenic art lay in illusion, in deception, in not allowing the eye of the spectator to see the means by which the semblance of reality was obtained. Thus the make-up of the background should be held to be of equal importance with the actor's personal make-up; if they dispensed with the one, they might as well dispense with the other. It was through his craft that the actor made one realise nature, and it was through artificiality that his craft became expressive. Many people who witnessed one of the lecturer's plays took it for granted that he had opened out the background so as to bring actual nature into the line of sight, for to them the distance looked too real to have been artificially produced. After the performance he allowed them to come on the stage to see by what means the illusion had been obtained, and it was curious to note the tendency to resent the "trick" whereby their eyes were deceived. Some even seemed to doubt his honesty, and might have gone away with the idea that he did not show them the real method whilst they were on the stage; but they hardly realised how, through the management of lights, the strangest deception could be practised upon the visual organs. By means of absolute control of the lights, they arrived at mystery, and without mystery the very backbone of scenic art would be broken. It was this want of mystery, through the presence of daylight, that caused the Oberammergau "Passion Play" to appear so unnatural to the lecturer. He regarded the stage as a medium through which the greatest truths in nature could be brought most direct to the minds and hearts of the people, and all the arts in their fullest capacity could be united in this form of expression. He bore testimony to the valuable work of Sir Henry Irving in the direction of scenic improvement on the stage, and remarked that the scenic work, even as they saw it at its best at the Lyceum, was still on the old lines, and hence the greatest capabilities of art could not be reached. The scenic artist must be a born experimenter, with the faculty of seizing artistic accident: the inventor of ways and means; he must be of an imaginative as well as of a practical turn of mind, strong in body, and indefatigable in his energy, and withal a first-rate artist. It was to the scenic artist that the actor should look for the completion of his dramatic situation; the scenic mood thould be consistent with the play, and it should reflect that of the actor, or strengthen it by force of contrast. The lighting of the stage was a momentous question; but here, again, traditions stuck to the stage more than to any form of art. In this department be did not undervalue the enormous difficulties which beset the theatre authorities in pleasing a mysteriously constituted public. Yet some radical changes could be made in the lighting of the stage. Take the sacred footlights. The footlights were simply the survival of a period in which the lights had to be given with but poor material. Footlights were convenient; but they were chiefly to blame for the false and unnatural aspect of the stage. In discussing where to place the lights, Professor Herkomer mentioned his own experiments at his theatre at Bushey when engaged in the production of his pictorial music play. He found that the shadows on the faces of the actors could be softened by a group of lights placed a short distance at the side, and level with the actors' faces. These lights he afterwards boxed up, so that they were perfectly hidden from the audience, and only gave their light to the stage. The result was, to the judgment of a painter's eye, as nearly as possible that of diffused daylight. He admitted that in adopting this plan more generally the prejudices of the actors themselves would have to be got over, while the amount of illuminating power and the height of the lights from the ground would have to be adjusted by careful experiment to each stage. The lecturer considered further that the proscenium should be to the stage picture what the frame was to the easel picture; it should separate the picture from the surroundings on the stage picture just as a painted picture should reach the frame. In most cases the proscenium was built so high that there was a considerable space which had to be covered with curtains. Indeed, year after year theatres were built without the designers apparently inquiring what might be the real function of the proscenium. The result was practically the same as if artists were to send their pictures to the Royal Academy with frames a foot too high for the pictures, and the intervening space covered with a piece of "Liberty" silk. He suggested that the proscenium should be made o contract and to expand, the lecturer illustrating his argument by a wooden model of his own construction, whereby, by means of a handle at the side, the sides and top contracted and expanded to suit the requirements of the stage representation. But with the fixed proscenium as at present constructed, the room of a cottage or a garret had to be represented on the same scale as the palace. The house was first represented, and then a room in that house; but the room was often much larger than the house. The eye of the spectator was never properly prepared for the great climax of the scene, because the trivial incidents leading up to it had been represented on such a large and disproportionate scale. If his suggestion, on the other hand, were adopted, the scenic artist could carry out all the laws which governed pictorial composition in art; the lower side boxes could not see less than they did now, and as for the higher side boxes, let them perish. Again, the curtain should not be raised, but should be opened from the centre. His own efforts at Bushey had been directed to realise the painter's view of nature, and he maintained that the stage picture should call forth the highest powers of the painter. Scenic art should not be held to be an inferior art to that of painting, and the greatest painter of the day should find some pleasure in such work. In conclusion, Professor Herkomer described his effects of lighting as carried out at Bushey. Daylight was not, he urged, garish; and in no light in nature was every object fully lighted up at any one moment. Yet so crudely were lights—electric lights especially—employed on the ordinary stage, that every device, every artifice, was cruelly shown up, and then good-bye to quality. Brilliancy was not to be obtained by extravagant lighting, which would only result in garishness. Pictorial brilliancy was obtained by the very economy of light. Why were they so afraid of leaving some parts of the stage picture suggestive and indistinct, as artists left parts of their pictures? The actor's intentions ought to be made to harmonise quite as much with the intentions of the scenic artist as the artist's painted figures were made to harmonise with the backgrounds of his pictures.



CROSS AT BAKEWELL.

IN his "Churches of Derbyshire," Dr. Cox writes as follows of the Cross at Bakewell:—"The fine cross that stands in the churchyard of Bakewell, near the east wall of the Vernon Chapel, is 8ft. high, exclusive of the base, and about 2ft. in width. . . . The east front, which has at the top a mutilated representation of a man riding (perhaps Christ's entry into Jerusalem), and the two sides are sculptured with an elegant spiral scroll pattern; the west front has a series of sculptures down the whole face, the upper one representing the Crucifixion. . . . There is nothing unusual in supposing that there were several other crosses of the same style (though perhaps that now extant was the finest) in the churchyard of Bakewell. . . . These crosses were probably to the memory of some distinguished Christian or Christians. We have taken much trouble to arrive at a sound conclusion on the subject of the age of these Derbyshire crosses; but we give our opinion with diffidence in the face of the divergence of opinion that exists among able men." After comparing the Derbyshire crosses with those at Ilkley and Aycliffe, Durham, which are usually attributed to the years 782 and 789, he proceeds: "It is true, on the other hand, that both scroll and knot-work are occasionally, though rarely, found in the ornaments of Norman work; but anyone who has studied the sculptures themselves, as well as engravings and drawings, can at once detect the difference of style and finish of the two periods, and would not for a moment assign any of the Derbyshire crosses to the later period. That they are Anglo-Saxon (except that at Taddington) we take to be undoubted, and we also feel fairly assured that the Bakewell Cross, and several of the fragments, are not later than the eighth or possibly the ninth century, but we incline to the eighth."

Regarding the sculpture on the east front of the cross, Professor G. F. Browne, F.S.A. (now the Bishop of Stepney, D.D.), in the *Proceedings* of the Derbyshire Archæological Society (Vol. VIII.), writes as follows: "It will be seen that the ornamentation of the great cross at Bakewell consists of a magnificent scroll, springing alternately right and left from a sort of cornucopia. The scroll at the top has a somewhat nondescript animal nibbling at the topmost bunch of fruit. Now, the Northmen believed in a sacred tree, known as the world-ash, in which four harts nibbled the buds. The tree was, besides, a pathway for the messenger between the gods and the earth, and this messenger was the squirrel. I suggest that the animal on the Bakewell Cross recalls this early belief, for, nondescript as it is, there is no question at all that its forelegs clutching the fruit excellently represent the attitude of a squirrel with a nut in its paws. In this case we should have . . . . a combination of the Christian and Teutonic religious beliefs, the

Christian tree of life, and the Pagan messenger of the gods in its topmost branches." The drawing is by Mr. F. H. Cheetham.

GOLD-MEDAL YEAR AT THE ROYAL ACADEMY.

ARCHITECTURE at the Royal Academy is represented this year by the students' work in rather an unequal fashion, and the impression left on the mind, after inspecting the competitive drawings, is that but little progress has been made during the past twelve months. The designs shown by the Upper and Lower schools are, on the whole, better and more representative in character, while the Silver Medal is strongly competed for by nine sets of measured drawings of William Kent's famous building in Whitehall for the Horse Guards, and the best set seems to have been chosen. We have no fault, either, to find with the plans for a clubhouse, to which the prize has been given, for it is an excellent scheme in many ways. The result of the Gold Medal competition for the design of "a town church with a plan based on a Greek cross" is, however, inexplicable and most disappointing. That there is some originality, and likewise no little cleverness in the contrivance, no one can, of course, deny; but, on the other hand, the design displays an entire absence of knowledge of the ordinary requirements of a church, and as to the necessities of ritual arrangement, the author seems to have overlooked them altogether. The flights of ideal fancy in the direction of architectural conception untrammelled by mundane considerations may possibly tend to enlarge the capacities of the inventive powers, and we rocognise that mere commonplace restrictions may, to some extent, be disregarded by those whose lot is cast in the upper spheres of artistic sentiment, which presumably pervades the domain of the Royal Academy of the Fine Arts. It is, however, of prime consideration that a church design worthy of the distinction of a Gold Medal and £200 should at least be adapted to the modern requirements of church ceremonial. Unfortunately, on this occasion no regard seems to have been given to any such ideas. The design has no less than twelve towers; four of these stand as abutments at the internal angles of the cross, serving as supports to the low-proportioned and almost saucer-shaped dome of masonry over the central area. The remaining eight towers flank the four arms of the cross, which are roofed by semi-domes of like form to the central cupola. Inside, vast arches, curved on plan, carry the drum of the vault, which is lightened in bulk by coffered or arched ribbed sinkings, and in the place of pendentives big piers are run up to the main cornice or gallery level below the base of the dome. Deep curved splays at the end of the arms of the cross hide the flanking towers and give support to the arches over the columned fenestration, gathering in, as it were, the walling in a curious way towards the windows. These are more in harmony with a big railway station than a church of this class, and their ungainly ugliness is made more conspicuous by the incomplete forms of the windows and arches in the return walls of the crossings. The interior perspective is unfinished, and poorly executed, remarkable mainly for the idea of impossibility which it suggests, and the incongruous character of the design which it makes manifest. The gas pendants recall modern German work of the worst type. There is a certain boldness and simplicity of detail about the cornices and other details; but, on the whole, want of proportion and ungainly baldness have governed everything. The seating of the body of the church presents no novelty, and the organs flanking the sanctuary into which they project are elevated on tribunes having skeleton iron fronts, and supported by closely disposed colonnades hampering the chancel space.

No. 192 shows a design to much advantage by a well-drawn pen-and-ink perspective, and the author's drawings generally are capitally executed, with the sculpture admirably put in. His plan is distinguished by the attention given to the needs of such a building as a large church for a town site; but we are not prepared to say that the composition architecturally ranks really as a high-class production. Its detail is exceedingly well studied, and follows the Italian Renaissance of a florid, but admirable type. The choir projects into the central area of the dome, and the organ, with minstrels' gallery, is located in the south transept. The sacristy is on the south of the sacrarium, and the treasury is placed in a like position on the north. The morning chapel opens out of the south transept, and a similar chapel for guilds corresponds in the N. transept. An imposing baldachin gives dignity to the high altar, behind which is the presbytery in the apse. A baptistery occurs at the west end of the nave, and facing it on the north is another chapel of like size to be used as a mortuary on the eve of funerals. The dome of the church is somewhat commonplace with ordinary pendentives, and round the cupola a series of round windows occur, placed within recesses, a gallery walk extending through the intervening piers. The west front is bald, with an ugly semicircular window which repeats on the other façades, though these are not worked out on the elevations shown. We can sympathise with No. 192, and condole with him on his fate, as he worked hard for the medal, and, as we think, ought to have had it. We have no idea who the author is. The third design, No. 194, has a curious plan with curved arms to the cross—rather French in idea and treatment. Four abutment piers finished as dwarf towers rise at the angles of the crossing, with vestries contrived behind the two easternmost ones. The morning-chapel is in the apse beyond the choir, and would be very difficult of access. The following is a list of the works and prizes. The exhibition has been open to the public on two days during the week:—

Historical painting—"The Finding of Moses" (Ex. ii. 5)—gold medal and travelling studentship (£200), Harry Robert Mileham. Landscape painting—Turner gold medal and scholarship (£50), Cecil Ross Burnett. Landscape painting—The Bole and Roots of a Beech-tree—Creswick prize (£30), Edward Harry Read. Painting of a figure from the life (open to male students only)—silver medal, first, Victor John Robertson; second, Owen Baxter Morgan. Painting of a head from the life—silver medal, first, Cecil Ross Burnett; second, Arthur Huish Webber. Painting of a draped figure (open to female students only)—silver medal, first. not awarded; second, Rose Livesay. Cartoon of a draped figure—"The Death of Cæsar"—silver medal and prize (£25), not awarded. Design in monochrome for a figure picture—"Raising of Lazarus" (St. John, chap. xi.)—Armitage prizes, first (£30) and bronze medal, Alexander George Small; second (£10), Niel Kenneth M'Kechnie. Design for the decoration of a portion of a public building—"Autumn"—prize (£40), Harold Edward Speed. Set of six drawings of a figure from the life (open to male students only)—first prize (£50) and silver medal, Bernard C. H. Schumacher; second (£25), Shirley Charles L. Slocombe (disqualified owing to having received the same prize before); third (£15), Owen Baxter Morgan; fourth (£10), John Shenton Eland. Drawing of a head from the life—silver medal, first, Rose Eveline Clark; second, Mary Isabel Phelps. Drawing of a statue or group—silver medal, first, not awarded; second, not awarded. Perspective drawing in outline (open to painters and sculptors only)—"The Small Cloisters, Westminster Abbey"—silver medal, no competition. Composition in sculpture—Dædalus and Icarus—gold medal and travelling studentship (£200), Francis Derwent Wood. Model of a design—"Captives"—first prize (£30), Charles Beacon; second (£10), Alfred Bertie Pegram. Set of three models of a figure from the life (open to male students only)—first prize (£50) and silver medal, Francis Derwent Wood; second (£20), Charles Beacon. Design for a medal—a design for a cast medal, obverse and reverse, in commemoration of the Institution of the Order of the Garter—silver medal, Francis Derwent Wood. Model of a bust from the life (open to female students only)—silver medal, first, not awarded; second, Mary Towgood. Model of a statue or group—silver medal, first and second, no competition. Design in architecture—a town church, the plan to be in the form of a Greek cross—gold medal and travelling studentship (£200), Pieter Rodeck. Set of architectural drawings—"The Horse Guards"—silver medal. first, Archibald Haswell Christie; second, William Hawke. Set of architectural designs (Upper School)—prize (£25), George Weald. Set of drawings of an architectural design (Lower School)—prize (£10), Pieter Rodeck. Plan of a building—"A Club House"—prize (£10), William H. Edw. Brown. Original composition in ornament—silver medal, no competition. Perspective drawing in outline (open to architects only)—"An Interior View of St. Stephen's, Walbrook"—silver medal, no competition. The Landseer scholarships in painting and sculpture, of £40 a year each, tenable for two years, have been awarded—in painting, to Charles Henry Sims and Francis Owen Salisbury; in sculpture, to Clement William Jewett.

THE EDINBURGH SCHOOL OF APPLIED ART.

THE drawings executed by the students of the School of Applied Art at Edinburgh during the past season are this week on view in the galleries of the Royal Scottish Academy. On Friday the galleries were visited by the Lord Provost, magistrates, and council, who were received by Dr. Rowand Anderson, director of the classes at the school, who delivered an address explanatory of the objects of the school, and the degrees of success achieved. The school was started three years ago with the view of giving a wider education in art than was then obtainable to young men and apprentices engaged in trades and professions with which art is in a greater or less degree associated. An annual sum subscribed by employers of such labour was guaranteed for five years. The Scottish Board of Manufactures have assisted in the management, and have provided the necessary accommodation for carrying on the teaching, while the town council have voted £1,000 a year for its support out of the equivalent grant from the Government. The school has met such a felt want in the city, is carried on upon such practical principles, and has been so taken advantage of by the class of students for whom it was intended, that it is hoped something will soon be done to establish it on a permanent basis. One thing much wanted at present in connection with it is a workshop, where the practical details of art handicrafts could be better taught and illustrated; but unless assisted by some wealthy citizen, the directors do not see their way to providing such an adjunct. The drawings on view are largely of an architectural character. The figure has also been studied to some purpose, and last season great pains were taken to develop the study of colour for decorative purposes. A few examples of plaster ornament are shown as the fruits of the modelling class. The directors of the school are well satisfied with the progress made, and with the development along individual lines of the students' work. In connection with the classes there are Saturday afternoon excursions to notable mansions and buildings, where the students sketch, internally or externally, whatever appeals to them as the most interesting features of the places visited. The results of these excursions are likewise seen on the walls. Last year two scholarships of £50 each were founded so as to enable two meritorious students to devote their whole time, over and above attendance at the school, to the study of Scottish national art. These scholarships have been allocated, and the possessors of them have made a beginning at Holyrood in the study and reproduction of features in old Scottish furniture to be found in the ancient Royal Palace.

VENTILATION AND WARMING.

AT a meeting of the Society of Engineers held on Dec. 2nd, Mr. Wm. George Peirce, president, in the chair, a paper was read by Mr. William T. Sugg on "Ventilation and Warming." The author described in detail the method adopted at the present time for ventilating and warming the Houses of Parliament. The Debating Chamber, which is the most important point, has about 165,000c.ft. of air space when empty, and the temperature has to be suitably maintained both day and night when the House is in session, and an ample supply of pure air has to be insured. To this end fresh air, previously cleansed, warmed, and moistened in an equalising chamber beneath the floor, is supplied through a number of perforations distributed all over the area of the chamber. The floor is covered with a string-netted carpet, which does not obstruct the incoming air, and does not retain dust. By this means fresh air is supplied in considerable volume, at an almost imperceptible velocity, and, therefore, without draught. The extraction of the vitiated air is effected by aspiration through a large number of concealed openings all over the ceiling of the House, so that it may be as regular and uniform as possible from every part of the chamber. The ingress of the fresh air is slightly assisted so that there is never sufficient suction above the ceiling to encourage the entrance of air from the doors opening into the lobbies of the House, the air-supply always entering through the proper channels. The aspirating power which draws off the vitiated air is produced first by a number of argand gas-burners, which serve to light the House, and next by a shaft in the clock-tower. The vitiated air which passes into the chamber above the ceiling of the House is drawn thence by aspiration into a flue which descends into the basement, and is led to the clock-tower shaft. On the base of this shaft is a fire which puts the column of air in motion, and carries it up to the outlet. This shaft extracts the products of combustion and vitiated air from all the rooms, offices, and chambers of the House of Commons. Various modifications of this system, to suit different buildings and altered conditions, were described by the author, and were illustrated by examples carried out by him in practice.

* * *

It is said that the architects of Portland, Ore., have more work in hand and in prospect than ever before in the annals of the city.

NOTES ON APPROXIMATE ESTIMATES.*

CIVIL BUILDINGS, WORKS, &c.—(*Continued.*)

	Average Cost.		
	Per foot cube.	Per square of 100ft. super.	Per unit.
125. MANSIONS OR HOUSES. (THIRD CLASS.) "Villas." (Average height of rooms 10ft. 6in.)	7d.	£38	—
126. MANSIONS OR HOUSES. (FOURTH CLASS.) "Speculative" (Average height of rooms 10ft.)	5d.	£22	—
127. MANSIONS OR HOUSES. (FIFTH CLASS.) "Labourers' Cottages" (Average height of rooms 9ft.)	4½d.	£20	—
128. MORTUARY. Public	7d.	—	—
129. MOUNTAIN RAILWAYS. (See "Railways")	—	—	—
130. MUSEUMS. Public	1s.	—	—
131. OFFICES, for general business purposes, as in London	10d.	—	—
132. PARADES, as for public institutions, workhouses, &c., formed with 4in. of 1½in. metal, 2in. screened gravel, and rolled	—	11s.	1s. per yard super.
133. PARAFFIN TREATMENT OF WOOD FLOORS, as for hospitals, &c.—viz., paraffin in the solid state to be melted and poured over the wood floor, and then forced into pores of the wood with hot irons. The surface to be then well polished by rubbing with a brush	—	8s. 4d.	9d. per yard super.
34. PARTITIONS. WOOD. Complete, including all timbers and laths, plaster, and paper, both sides, &c.	—	£3 15 0	—
135. PAVEMENTS FOR FOOTWAYS laid complete with 3in York self-faced, complete, including flagging	—	£3 18	7s. per yard super.
136. PAVEMENTS. Ditto ditto, with granite concrete slab 2in. thick	—	£3 6	6s. per yard super.
137. PAVING ASPHALTE. Complete as laid in streets in London. Asphalte 2in. thick, laid on 6in. of cement concrete, including all digging, &c.	—	£9 14	17s. 6d. per yard super.
138. PAVING. Ditto ditto. Asphalte 1½in. thick, on 4in. of cement concrete, including all digging, &c.	—	£6 14	12s. per yard super.
139. PAVING CONCRETE. (See "Floors, Concrete")	—	—	—
140. PAVING CONCRETE FOR STABLES. (See "Stable Paving.")	—	—	—
141. PAVING GRANITE SETTS. 8in. by 3in. by 6in. deep, laid complete on 6in. cement concrete, including digging, &c.	—	£6 18	12s. 6d. per yard super.
142. PAVING GRANITE. 4in. cube setts on 6in. cement concrete, including digging, &c.	—	£6 11	10s. per yard super.
143. PAVING, WOOD BLOCK. Red deal blocks 9in. by 3in. by 6in., laid on ½in. of asphalte, which rests on 6in. of lias lime concrete (1 to 5). Blocks spaced ⅜in. apart, and the joints filled in with asphalte	—	£7 15	14s. per yard super.
144. PAVING, Ditto. Creasoted red deal blocks 9in. by 3in. by 6in., laid on 6in. P.C. concrete. The blocks laid with ¼in. between courses and ⅜in. between blocks, and a clear space of 1in. next to the kerbs to allow for expansion. All joints grouted with a mixture of creasote and pitch. Including all digging, &c.	—	£8 6	15s. per yard super.

145. ANALYTICAL TABLE OF AVERAGE COST OF WOOD-BLOCK PAVING PER YARD SUPER., AS DESCRIBED IN PRECEDING ITEM.

P.C. concrete foundations, 6in. thick, including digging and removing surplus.	9in. by 3in. by 6in. creasoted red deal blocks.	Pitch, creasote, and fuel for grouting joints.	Gravel for bedding, jointing, and covering surface.	Labour paving, grouting and covering, watching, &c.	Total cost per yard super.
s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
5 0	7 6	0 9	0 6	1 3	15 0

	Per foot cube.	Per square of 100ft. super.	Per unit.
146. PAVING, WOOD BLOCK, formed with 9in. by 3in. by 6in. Jarrah blocks, with 6in. bed of concrete, and grouted with bitumen or cement and sand	—	£10 5	18s. 6d. per yard super.
147. PIERS, promenade. Length 900ft., width 24ft., including timber head and pavilion	—	—	£15,000 each

	Average Cost.		
	Per foot cube.	Per square of 100ft. super.	Per unit.
148. PILING, sheet, as for foot of sea-walls, &c., comprising creosoted fir piles, 12in. by 12in., by 9ft. long, spaced 10ft. apart, and filled in with 12in. by 6in. creosoted sheet piles 6ft. long, secured with 12in. by 6in. front and back waling pieces bolted to piles. Including wrought-iron shoes to piles and driving into shingle and sand in tide work	—	—	30s. per foot run
149. POLICE COURTS	10d.	—	
150. PORCHES, as for theatres, hotels, &c., constructed of glass and iron, complete, 16ft. long	-	—	£80 each
151. POST-OFFICES	8d.	—	—
152. PRISONS	9d.	—	£150 per cell
153. RACE STANDS. Permanent, complete, including usual offices, &c.	—	—	£1 per head of accommodation.
154. RACQUET COURTS	3½d.	—	£1,500 each
155. RAILING, as for public inclosures, parks, cemeteries, &c., comprising dwarf wall, 2ft. high, with foundations, stone coping, &c., wrought-iron ornamental railing, 5ft. 6in. high, with main standards 9ft. apart. Fixed complete	—	—	25s. per foot run
156. RAILINGS, ditto ditto, but with plain wrought-iron railing, and ditto ditto	—	—	£1 per foot run
157. RAILWAYS, permanent, double track, complete as constructed in England, including equipment, 4ft. 8½in. gauge	—	—	£38,000 per mile
158. RAILWAYS. Ditto, ditto, Scotland, 4ft. 8½in. gauge	—	—	£28,000 per mile
159. RAILWAYS. Ditto, ditto, Ireland, 5ft. 3in. gauge	—	—	£16,000 per mile
160. RAILWAYS. Ditto, ditto, India, 3ft. 3⅜in. gauge	—	—	£12,000 per mile
161. RAILWAYS. Ditto, ditto, India, 5ft. 6in. gauge	—	—	£20,000 per mile
162. RAILWAYS. Light, permanent, single track, complete as constructed in England and Ireland, in flat country, including equipment, 2ft. gauge	—	—	£3,000 per mile
163. RAILWAYS. Ditto, ditto, 3ft. gauge	—	—	£4,000 per mile
164. RAILWAYS. Ditto, ditto, 4ft. 8½in. gauge	—	—	£6,000 per mile
165. RAILWAYS. Ditto, ditto, 5ft. 3in. gauge	—	—	£7,000 per mile
166. RAILWAYS. Ditto, ditto, permanent way only, 2ft. gauge	—	—	£1,400 per mile
167. RAILWAYS. Ditto, ditto, ditto, 3ft. gauge	—	—	£1,700 per mile
168. RAILWAYS. Ditto, ditto, ditto, 4ft. 8½in. gauge	—	—	£2,300 per mile
169. RAILWAYS. Ditto, ditto, ditto, 5ft. 3in. gauge	—	—	£2,600 per mile

170. ANALYTICAL TABLE OF AVERAGE COST PER MILE OF PERMANENT WAY FOR SINGLE-LINE LIGHT RAILWAYS.

Description.	Rails, fish-plates, bolts, &c.	Creasoted fir sleepers.	Laying permanent way.	Ballasting.	Fencing, including fixing (both sides).	Forming cuttings, embankments, culverts, &c.	Total. Per Mile.
	£	£	£	£	£	£	£
2ft. 0in. gauge	350	110	120	120	300	400	1,400
3ft. 0in. gauge	480	120	130	130	300	540	1,700
4ft. 8½in. gauge	620	150	150	180	300	900	2,300
5ft. 3in. gauge	660	170	160	210	300	1,100	2,600

	Per foot cube.	Per square of 100ft. super.	Per unit.
171. RAILWAYS. Light, semi-portable single track for temporary engineering purposes, &c., with rolled steel rails and sleepers, bolts, fastenings, &c. Complete for fixing. 1ft. 6in. gauge.	—	—	£300 per mile, or £500 per mile laid complete, but not including equipment.
172. RAILWAYS. Ditto, ditto, 2ft. gauge			£300 per mile, or £500 per mile, laid complete, but not including equipment.
173. RAILWAYS. Ditto, ditto, 2ft. 6in. gauge	—	—	£400 per mile, or £500 per mile, laid complete, but not including equipment.
174. RAILWAYS, MOUNTAIN. Single line, with rack principle, mètre gauge	—	—	£4,500 per mile

	Average Cost.		
	Per foot cube.	Per square of 100ft. super.	Per unit.
175. RESERVOIRS. Storage, for waterworks	—	—	Average cost varies from £280 to £700 per million cubic feet, according to the nature of excavations and embankments required.
176. RIDING SCHOOLS, complete	5d.	£55	—
177. ROADS. Formed with 6in. of 3in. broken stone, 2in. of 1½in. metal, and 1in. of gravel, and well rolled	—	£1 2	2s. per yard super.
178. ROADS. Formed with 10in. of stone underlay, 4in. of 3in. broken stone, 2in. of 1½in. metal, 1in. of gravel, and well rolled, including footpaths, curbs, channel, sewer, &c. Width of road, 40ft.	—	—	£2 5s. per foot run
179. ROADS, MAIN. As constructed in mountainous districts in India, average width, 18ft., including embankments, bridges, drains, &c.	—	—	£2,500 per mile
180. ROOFS, IRON. Not exceeding 25ft. span, including wrought-iron trusses, &c., corrugated sheet-iron covering, gutters, &c. (Measured on slope or curve)	—	£6 0 0	—
181. ROOFS. Ditto ditto exceeding 25ft. span, but not exceeding 50ft. span. (Measured on slope or curve)	—	£6 10 0	—
182. ROOFS. Ditto. Not exceeding 25ft. span, including wrought-iron trusses, wood purlins, boarding, slating, leadwork, gutters, &c. (Measured on slope)	—	£7 0 0	—
183. ROOFS. Ditto ditto ditto exceeding 25ft. span, but not exceeding 50ft. span. (Measured on slope)	—	£9 0 0	—
184. ROOFS Ditto ditto ditto exceeding 50ft. span, but not exceeding 100ft. span. (Measured on slope)	—	£15 0 0	—
185. ROOFS. Ditto for spans over 150ft., for railway stations. (Measured on slope)	—	£30 0 0	—
186. ROOFS, THATCHED. For farm buildings, including best wheat straw for thatching 12in. thick, spars, ledgers, spun yarn, &c.)	—	£1 12 0	—
187. ROOFS, WOOD. Collar tie, including roof timbers, boarding, asphalted felt, eaves gutters, &c. (Measured on slope)	—	£3 5 0	—
188. ROOFS. Ditto ditto. Including roof timbers, board-slating, lead-work, eaves gutters, &c. (Measured on slope)	—	£5 0 0	—
189. ROOFS, WOOD. Framed trusses, including slates, 1in. boarding, plates, rafters, purlins, leadwork, eaves gutters, &c. (Measured on slopes)	—	£6 10 0	—
190. ROOFS. Ditto ditto ditto, but including ceiling-joists, lath-and-plaster ceiling, whiten two coats, &c. (Measured on slopes)	—	£8 12 0	—
191. SANATORIUMS, public. (See "Hospitals.")	—	—	—
192. SCHOOLS. Ordinary town or country	6½d.	—	£6 per head
193. SCHOOLS. London School Board	—	—	£10 per head
194. SCHOOL FITMENTS and furniture complete	—	—	10s. per head
195. SCHOOLS, RIDING. (See "Riding Schools.")	—	—	—
196. SEATS. Mahogany, complete, as for billiard-rooms	—	—	37s. per foot run
197. SEWAGE DISPOSAL. Average cost of sewage farm complete, including purchase of land	—	—	30s. per head of populatn, or 9d. in the £ of rateable value
198. SEWAGE FARMS. Average cost of laying-out land, including tanks, drainage, embankments, conduits, distributing chambers, roads, fences, &c., but exclusive of cost of land	—	—	£100 per acre
199. SEWERS, MAIN. Brick and concrete, egg shape in section, internal dimensions 4ft. 6in. by 3ft. Complete, including digging	—	—	15s. per foot run
200. SHEDS, IRON. Open. Roof of iron trusses and corrugated sheet-iron supported on iron columns 12ft. high; concrete floor	—	£15 0 0	—

(*To be continued.*)

---

* All rights reserved.

THE SURVEYORS' INSTITUTION.

THE paper read at the ordinary general meeting of this Institution on Monday evening last dealt, as is usual during the great "Cattle Show week," when many of the country land agent members are in town, with a purely agricultural subject. It was entitled "The Working of the Agricultural Holdings Act, 1883," and in it Mr. T. Punchard, the author, pointed out several defects in the Act, as shown in its working, and suggested some remedies, while also criticising some which had been already proposed. The paper, which was terse and finished in style, was particularly remarkable for the lucidity of its detail and the accuracy with which the author gave references to decided cases. There had been for some time, the author said, a distinct feeling shown among those who were affected by the working of the Act, whether tenant farmers or land agents (as representing landlords), that some amendment of its details was necessary. The Act, to begin with, had merely laid down that the basis of compensation claimed by an outgoing tenant of farm-land should be the value of his unexhausted improvements to the incoming tenant, but had left the ascertainment of such value entirely to the experience of valuers administering such Acts. On the passing of the Act, meetings of tenants and land agents were held with a view to fixing some system on which such valuations could be computed, and as a general result, where a scheme was arrived at, it was based on schemes of tenant right, long in vogue, with material alterations and additions in the elements or items to be compensated for. The Act, in fact, was taken as giving to the tenant farmer simply a more extended and liberal scheme of compensation than that already provided for, and on many large estates the revised scales were incorporated in the tenancy agreements. In a number of cases this had resulted in the settlement of claims without recourse to the machinery of the Act, and on the whole these scales had worked well. An objection of these scales was, however, their want of elasticity, or, as the author put it, their equal application in unequal cases. They did not distinguish between the good, the moderately good, and the bad farmer, and the previous state of the land was not considered. Again, the allowances for feeding stuffs were based too much upon proportions of cost and not upon residual values. But taking proportion of cost, it was possible to arrive tolerably correctly at the cost of the improvement to be compensated for, and it was scarcely fair to charge an incoming tenant any larger sum than that for which he could produce or procure an improvement. At the same time no very reliable standard of residual values, under all the varying circumstances, had yet been set up. In the working of the Act, the procedure clauses had led to most of the litigation which had taken place. Tenants had been, and were still, careless in preparing notices of claim, and inattentive to forms of procedure. Vaguely-worded sections had afforded opportunities for the lawyers. Conflicting decisions in neighbouring courts, and reversals of these decisions by the higher courts, had also led to distrust and confusion. Mr. Punchard then proceeded to give, in a brief summary, the gist of some of the more important decisions under the Act, and to point out their teaching. Landlords, as a rule, had undertaken most of the permanent improvements themselves, and it would be a bad day for agriculture when theoretical legislation discountenanced this. Many sections of the Act had given much trouble to referees and umpires acting under it. Certain matters were mentioned specifically as conferring the right to compensation; but was this compensation equal whether the tenant had previously under agreement a right to do these things, or whether he had no such right? Many curious claims for compensation and counter-claims for deterioration were mentioned, apparently to show that the differing decisions of umpires depended not alone on the varying circumstances of cases, but also to some extent on the umpire himself. The expense of carrying out the provisions of the Act had been to a large extent the cause of its failure in many parts of the country, although it must be admitted that, even where it was not generally carried out, it had not been without influence or bearing upon tenant's compensation. The different methods of umpires in dealing with breaches of covenant had led to much doubt, and the loose way in which claims were frequently drawn up led to many complications. The suggested amendments to the Act were frequently proposed by journals having a strong political bias, and against such the author protested. It was easy to say that "the tenant farmer ought to be made secure of a return for his outlay," and everyone must agree as to the desirability of such a consummation; but how could someone who derived no benefit from such outlay be expected to become security for all the farmer's losses, whether from bad seasons, disease, injudicious expenditure, or unskilful management? If anyone asserted that any amendment of the Act would remedy all this, he must be wilfully or unfortunately blind. Bad times had been (and truly) attributed to foreign competition. Would any amendment of the Act remedy this? If it were plainly put that "the tenant should be entitled to full compensation for such portion of his outlay as the landlord or the incoming tenant reaps the benefit of," there was not a member of the Institution who would dispute the justice of the statement.

A hearty vote of thanks to Mr. Punchard was put by Mr. J. W. Fair and seconded by Mr. G. German, and after short speeches by Mr. C. Sewell Read, Mr. W. B. Canning, Mr. J. Waterman, and Mr. Jasper More, M.P., the discussion was adjourned.

* * *

COUNTY LUNATIC ASYLUMS.—XXXV.

By George H. Bibby, F.R.I.B.A.

DISTRICT ASYLUMS AT HOME AND ABROAD.

THE problem for architects as to the general arrangement of the asylum and the placement of the various buildings upon the asylum estate may possibly be solved eventually by a villa or cottage system, somewhat as developed in the United States; but there are some difficulties in the way of such modes being successfully adopted in this country. There can be no doubt but that the Americans have good reason for claiming that their systems may be more economical and permit of better classification than ours, and that a more home-like appearance may be given to these residences and their surroundings than can be found in English asylums as at present generally planned and designed.

The records of the Hanwell Asylum, of which a block-plan is given in Fig. 53, date from 1831, when it appears to have been capable of accommodating about 500 patients; but since that period the institution appears to have been continually on the increase, for in the year 1841 there were 918 patients; in 1851, 916 patients; in 1861, 1,446 patients; in 1871, 1,797 patients; in 1881 there were 1,840 patients; and in 1891 about 1,895 patients. At the present time the sum of £41,000 has been authorised for expenditure upon a scheme of alterations and improvements. This work will, when commenced, probably extend over three years, and will, it is proposed, be carried out by the Asylum's staff of workmen.

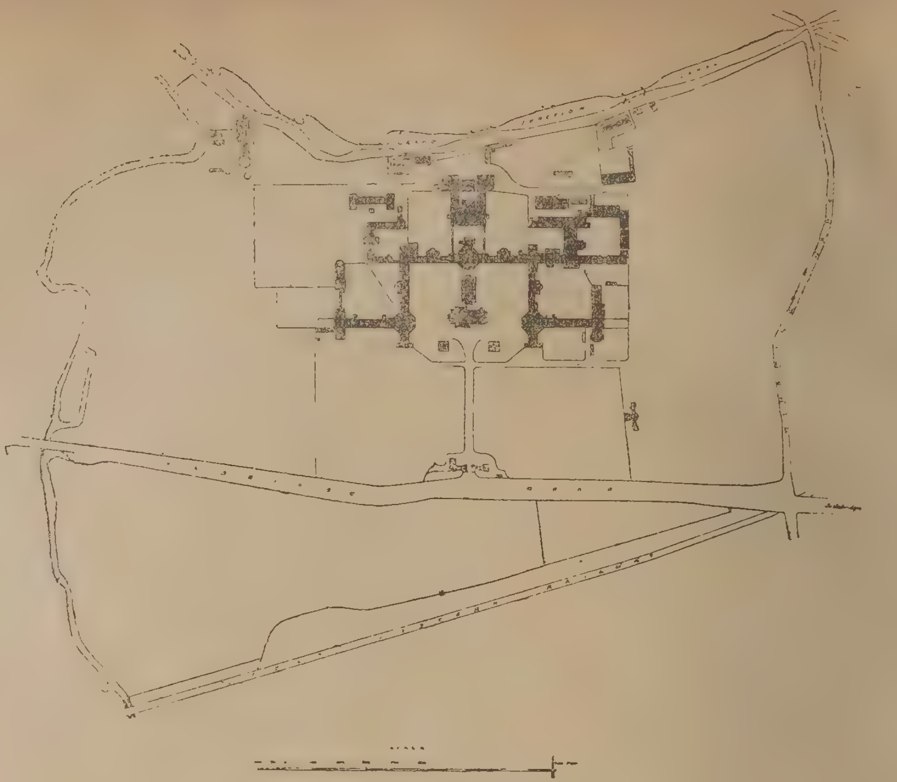


Fig. 53.

These extensions of the asylum buildings in former years appear to have been contrary to the wishes of the Commissioners in Lunacy, and so far back as the year 1858 or 1859 the then commissioners recommended that the fresh expenditure for building should go to the erection, "on some simple and inexpensive plan, of a third asylum."

It is not to be expected that such an asylum as that at Hanwell should compare favourably with modern institutions, either here or abroad, still less that such a set of buildings (erected at different periods) should resemble, in plan or otherwise, an asylum designed for the reception of a similar number of inmates; but it will be observed that the result of the various alterations leaves the general arrangement not altogether unsymmetrical upon the whole.

Another type of asylum, partly a symmetrically planned set of buildings, but with many detached portions, is shown in Fig. 54, which is a block-plan of the Rossiville Asylum for the Insane, in New South Wales, for which Messrs. Sulman and Power, architects, of Sydney, obtained the first premium in competition.

In this plan, the junior medical officers' residences, servants' and matron's quarters were placed to the north of the main buildings at A, thus occupying a central position with regard to the whole group of wards, whether attached to, or detached from, the main buildings. The remaining central portions are: B, the library; C, dispensary; D, billiard-room; E E, recreation-room, with stage and platform; and F, the reception and administration block, containing the medical superintendent's office, entrance-hall, &c. The wards for sick and infirm men are shown at G, and contain the usual day-rooms and dormitories, &c., and water-closet annexes, with isolating passages. The kitchen and stores blocks of buildings are shown at H, and are entirely on the men's side, and approached from the southern side of the institution by a roadway at *a a*, which crosses the verandah, shown by dotted lines.

The block marked J is for male attendants, while the storekeeper's residence is at K, who is thus located near to the stores entrance. The wards for recent and acute male patients are placed at the north-east corner at L, the south-eastern corner block at M being for the medical superintendent's private residence.

On the side for female patients, the wards for the sick and infirm are at N, the plan corresponding

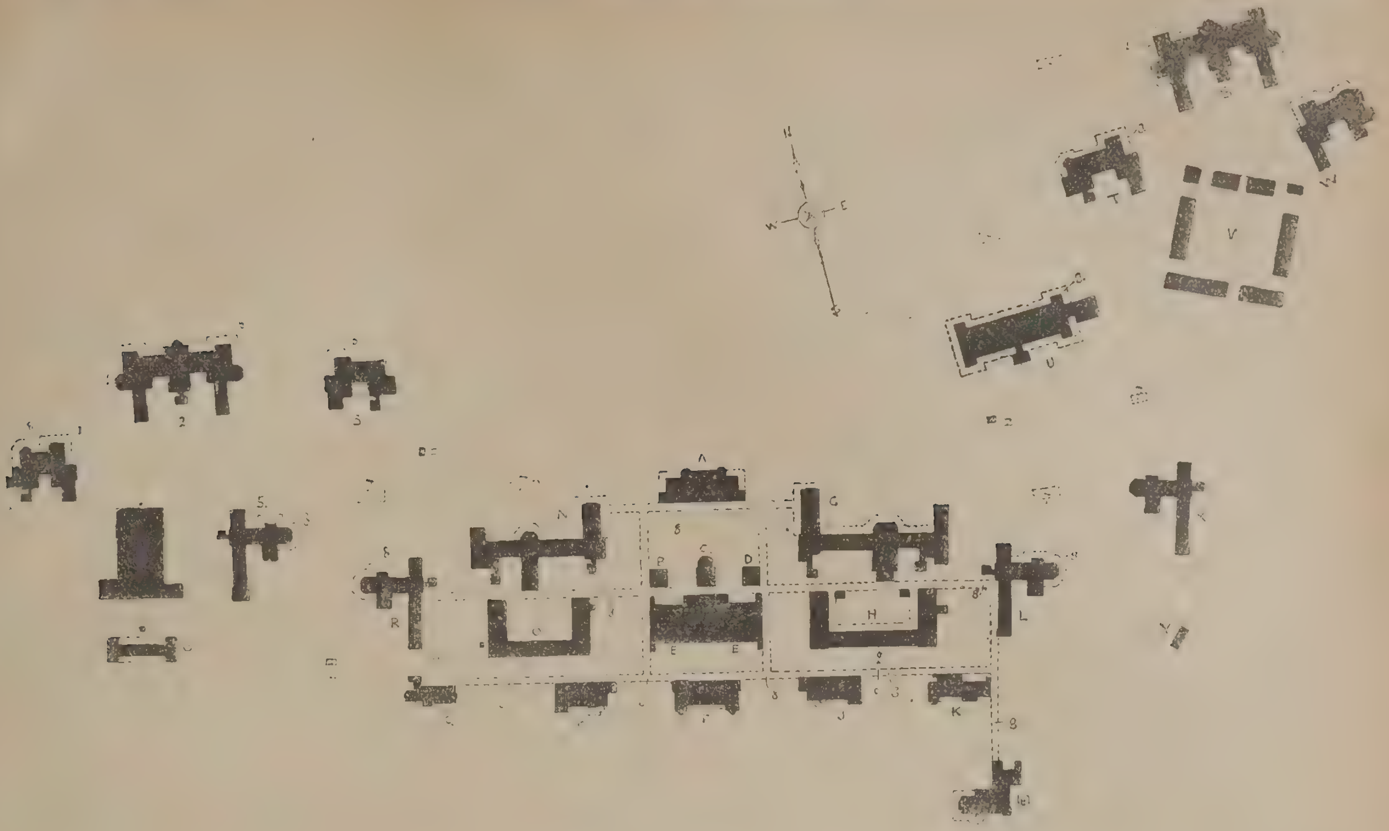


Fig. 54.

generally with that for sick and infirm men, but (contrary to the usual arrangement in this country) for a considerably less number of inmates. The Turkish baths, engine and boiler rooms, and fuel stores are all contained in one block at O, which is approached from the southern side at *b b* by a road crossing the verandah.

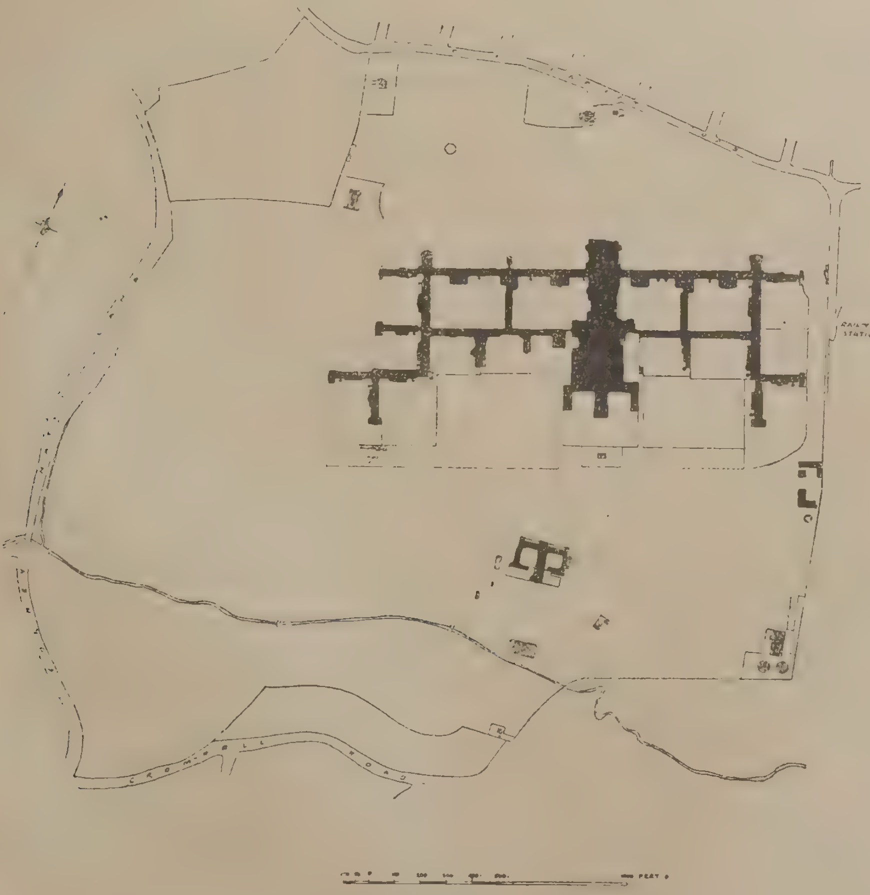


Fig. 55.

The quarters for the female attendants are placed at P, where they are well placed with a view to their privacy, and are quite separated from the patients' and male officials' quarters; the assistant superintendent's house is placed to the south-west at Q, and is somewhat smaller than that for the asylum chief. The wards for the "recent and acute" female patients are shown at R, being the north-eastern corner of the central main buildings.

All the foregoing buildings are connected with each other by the verandahs marked 8, 8, 8, as indicated on the plan by dotted lines, and verandahs are provided for on one or more sides of every inhabited portion of this asylum—an arrangement desirable under the conditions of Australian climate, but less so for English or North American asylums.

The detached blocks of buildings are as follows:—S, quiet and industrious male patients; T, convalescent males; U, epileptic males; V, workshops for males; W, spare block for males; X, violent and noisy male patients; Y, mortuary for males; and the small buildings at Z, Z show the position of the closets, &c., for patients about the grounds.

On the western side of the institution the spare detached ward marked 1 is for females; 2, for quiet and industrious patients; 3, for convalescent females; 4, the laundry, with engine-house, boiler-house, and necessary adjuncts for the officers' and patients' clothes-washing; 5, violent and noisy women; 6, the laundresses' quarters; 7, 7, 7 indicate by dotted lines the position of shelters from the sun or rain for patients allowed about the grounds of the asylum.

The verandahs attached to the various patients' blocks are arranged as lean-to shelters in such a manner as to leave a height of one-third of the ward windows above the verandah roof (see Fig. 27, Building News, March 22, C.L.A. XV.), which space would be available for ventilating purposes. This is as originally planned more than twenty years ago at the Whittingham, Prestwich, and other asylums designed by the late Mr. Henry Littler, who was probably the best asylum architect of his day, and who, upon one occasion, having a very large asylum in progress, provided a staff of architects' assistants, and, with them, temporarily resided on or near to the asylum estate, a desirable arrangement, when practicable, in the case of all institutions of the magnitude of that in question, as has been proved by the high character this asylum yet possesses with regard to its convenient arrangement and sound principles of construction. It would appear most advantageous that all asylums to cost more than, say, £200,000 should be erected under the direction of a resident architect, or of his specially qualified and resident professional deputy.

When, as is occasionally the case, an asylum building is to cost more than £500,000, there should be no financial difficulty in securing the services of a resident or deputy resident architect, seeing that the professional remuneration would not be less than £15,000 at 3 per cent., or £25,000 at 5 per cent., upon the actual outlay.

Amongst the older important asylums must be included the Colney Hatch Asylum, of which a block-plan is given in Fig. 55 (this was established some 20 years later than the Hanwell Asylum, shown in Fig. 53), and was originally constructed to receive about 1,200 patients. In the year 1861 this institution had so far increased that 1,868 patients were accommodated; and at the commencement of the year 1895, the total number of patients had risen to 2,211, or 1,000 more than the original asylum was planned to contain; and, as may be seen from the plan, a symmetrical arrangement of the buildings has been maintained throughout all the alterations and additions made during a period of 45 years.

(*To be continued.*)

COST AND RESULTS OF HOUSING GLASGOW POOR.

AT the last meeting of the Philosophical Society—Dr. Ebenezer Duncan, president, in the chair—Bailie Chisholm read a paper on "The History and Results of the Glasgow City Improvement Trust." The inception of the Glasgow City Improvement Trust was, he explained, partly coincident with and partly consequent on the growth of public sentiment in the direction of sanitary and hygienic reform which had distinguished the second half of the present century. The rapid and marvellous rush of people from the country districts to our great cities during the period remarked upon found their city authorities all but unprepared. In the centre of the city the people came to be crowded together in such a way that the district was a seat of disease and crime, a hotbed of pollution and vice. While officialism left this state of matters unheeded, fortunately private philanthropy stepped in to lessen, if not to remove, a hideous blot from their midst. It was not until 1865 that the Glasgow Corporation moved in the matter, and in the following year the City Improvement Trust Bill was passed into law. The Trust had not only improved the streets by widening them and opening them into squares, but had erected, in addition to dwellings for the poor in different parts of the city, seven lodging-houses, with accommodation for upwards of 2,000 lodgers, and these lodging-houses were a great and unmixed blessing to those who used them, while since their erection the old pestilential lodging-houses had disappeared from their midst. There was also in course of erection a family home or crèche. The building of tenements by the Trust was, in a manner, a last resort. The sites cleared by the Trust were not taken up by builders, and the Trust was thus forced into building itself, and, exclusive of tenements in course of erection, it now owned considerably over 1,000 dwellings, accommodating nearly 6,000 people, at rents varying from £5 to £20 or £25. It was said that they were merely shifting the very poor and the vicious from one part to another. That was not true. In sweeping the breeding sties of vice away they had given health of body and cleanliness of life which previously did not exist, and, if other proprietors would follow it, the social and domestic amenities of their poorest citizens would in a very few years be further improved. The Trust had expended altogether on lands and buildings £1,955,506, and on the erection of buildings £231,000, giving a total of £2,186,506, and, deducting land sold or feued, amounting to £1,072,000, this left a balance of £1,114,506. The heritable property of the Trust was valued at £691,161, showing a deficiency of £423,144. The total cost to the ratepayers during thirty years—that was, the amount obtained by assessment—had been £593,079 16s. 6d., against which they had the Alexandra Park, 100,000 yards of ground thrown into streets and squares, and more than £100,000 expended in covering the Molendinar and Camlachie burns. The charge made against the ratepayers might now be said to have ceased, as the operations were now self-supporting.

THE LANCASHIRE FEDERATION OF BUILDING TRADE EMPLOYERS.

THE half-yearly meeting of this Federation was held at the Devonshire Hotel, Blackburn, on Tuesday, the 3rd inst. The President, Mr. John Fecitt (Blackburn), was in the chair, and there was a good attendance of representatives from Accrington, Blackburn, Bolton, Burnley, Chorley, Colne, Nelson, Oldham, Preston, and Rochdale. The report of the executive committee, which was unanimously adopted, referred to the progress made during the half-year, which was regarded as satisfactory. Two local asssociations, Oldham and Burnley, had joined during that period, and meetings had been held in the Bury and Heywood district, and in Ashton-under-Lyne and Stalybridge. Their secretary (Mr. J. Tomlison, Preston) was in communication with the principal towns in the county not at present affiliated, and no efforts would be spared to form a strong association. The relations between employers and operatives in the federated towns during the last six months were also reviewed, and the committee were able to congratulate members on the benefits employers had already derived from the federation. A recommendation to amend the rules was referred back to the committee for further consideration on the motion of Mr. W. Cunliffe, Bolton. On the motion of Mr. R. Highton, Blackburn, it was resolved to adopt the conditions of contract issued by the National Association of Builders, for use in those towns not having an approved form at present, and, in view of recent judicial decisions with respect to the liability of employers as regards bound apprentices, the secretary was instructed to submit a form of indenture for counsel's opinion, and bring the same before a future meeting for adoption. A uniform system of quantity surveying and treatment of prime cost sums in quantities was thought to be desirable, and the committee were directed to take the matter into consideration, and report to the next meeting what steps it was desirable to take. Notices for changes in wages or alterations in working-rules pending at Accrington, Blackburn, Bolton, Nelson, and Preston were considered; reports were received from representatives respecting the action proposed to be taken as to craneage charges by railway companies, and other matters of trade interest were discussed. A vote of thanks to the chairman, proposed by Mr. S. Smethurst, Oldham, and seconded by Mr. Whittaker, Accrington, was suitably acknowledged.

ALMANACS AND DIARIES.

THE *District and Parish Councillors' Diary* (London: Hazell, Watson, and Viney, Ltd., 3s. 6d.) is a most useful manual. It contains a mass of memoranda for guardians, councillors, overseers, and the like, which is inaccessible elsewhere. The *City Diary* (London: W. and L. Collingridge) is indispensable in its special line. Still more so, as ever, to our own readers are the ever-welcome Date-indicating Pads and Book Diaries of Messrs. Hudson and Kearns. One's only complaint against them is that they so facilitate the too rapid flight of time, and yet what we busy people did without them twenty years since it is difficult to imagine. Every architect and builder now finds them as indispensable as the tee-square and drawing-board, and it is scarcely necessary to do more than remind those who have not already sent their order to 83, Southwark-street, that but a few more days remain—nay, that already engagements and dates for 1896 are crowding on us that imperatively demand registering.

BOOKS RECEIVED.

Rustic Adornments, for Homes of Taste, by SHIRLEY HIBBERD (new edition; London: W. H. and L. Collingridge).—This new edition, revised by T. W. Sanders, F.R.H.S., is pictorially got up with folial borders, coloured in green and gold, and illustrated by floral decorations, fern-cases, conservatories, balcony and window gardens, aquaria, rockeries, fountains, garden accessories, and page illustrations of plants. The suggestions for floral embellishment of the home, the garden, the window, and balcony are instructive, and will be worth the attention of all amateur gardeners. This edition contains several new chapters in which will be found hints for the floral decorations of interiors, tables, plant propagation. The style of Mr. Shirley Hibberd—always pleasing—has been retained as far as possible, and the new illustrations are numerous. Altogether, the volume, which is handsomely bound and well printed, will be a welcome addition to the presentable Christmas gift books.——*Saker's Perfected System of Builders' Bookkeeping*, by SYDNEY SAKER, F.S.A.A. (London: Simpkin, Marshall, Hamilton, Kent, and Co.)—Builders' bookkeeping is often very unsatisfactory, and, as the author observes, "no trader's books are kept in so dilatory and unsatisfactory a manner as those of the majority of builders." There is no proper system adopted by which they can tell the profits they make. Mr. Saker's system is by double entry, and is the result of practical experience as an accountant. In this second edition some alterations have been made, not the least being the omission of the single-entry portion, which is regarded as unsatisfactory. The examples given of "time," "day-work," "contracts," "cash-book," "debtor's account-book," "bills book," "invoice book," &c., will be found very explanatory and useful of the system, and the author has prepared pattern sets of ruled sheets, which may be obtained of Mr. J. W. Warner, the publisher, Melton Mowbray. We strongly advise all builders and builders' accountants to study this little work, which gives simple directions and examples of the principal books and subsidiary books required. Many builders lose by not keeping a proper contract book in which an account is opened for every contract, the amount of wages from time-book, materials from invoice-book, and so on, and by not opening a separate account in a day-work book for each customer, and for extras on contracts. The examples show how these entries are to be made.

CHIPS.

A meeting was held on Friday at Sion College, Victoria Embankment, to receive from a large number of subscribers the gift of a portrait of the librarian, the Rev. W. H. Milman. The portrait has been painted by Mr. W. B. Richmond, R.A.

Last week was not a very successful one at the Auction Mart. The aggregate of £76,254 was largely made up of sales of gas stocks, life policies, reversions, &c.

The name of Frederick Stephen Short, of Parkstone, Dorset, architect and surveyor, appears in Tuesday's *Gazette* in the list of adjudications in bankruptcy.

The guardians of Hunslet Union, near Leeds, have adopted plans by Mr. Edward J. Dodgson, of East-parade, Leeds, for the erection of a group of children's homes at Rothwell Haigh.

Mr. Douglas, of New York, has presented to the Woodwardian Museum of Cambridge a portrait of the late Professor Thomas Sterry Hunt, upon whom the honorary degree of LL D. was conferred in 1831 in recognition of his work in chemical geology.

In the case of Charles Philip Mills, of St. Mary's Works, Barn-street, Church-street, Stoke Newington, N., builder, the discharge has been suspended for two years, ending Nov. 1, 1897.

The tiles for the chancel pavement of St. Thomas' Cathedral, Colombo, are being supplied by Messrs. William Godwin and Son, Lugwardine Works, Withington, Hereford.

The directors of the Great Western Railway have decided to build a new station at Windsor, and to rearrange the goods terminus, in order to provide increased accommodation for the traffic.

In connection with the rebuilding and extension of the schools connected with the Roman Catholic Pro-Cathedral, Copperas-hill, Liverpool, to the plans of Messrs. T. C. Clarke, Briggs, and Wolstenholme, architects, Liverpool, the contract for heating, lighting, and ventilating, has just been let to Messrs. James Stott and Co., 83, Dale-street, Liverpool, and Vernon Works, Oldham.

At the Town-hall, Leeds, on Monday, damages were assessed by the under-sheriff and a jury in a number of claims made against the Morecambe Pier Company, Limited, as a consequence of the landing-stage of the pier collapsing on September 9. Negligence was practically admitted on behalf of the directors, on whose behalf it was stated that the company was insolvent. The amounts awarded varied from £150 downwards.

A meeting of the Registration Committee of the District Council for Liverpool, West Lancashire, Cheshire, and North Wales (in connection with the Worshipful Company of Plumbers, London), was held at the secretary's office, Lord-street, Liverpool, on Monday. The secretary reported that an examination would be held next May of candidates now in attendance at the various plumbers' classes. The resignation by Mr. H. Percy Boulnois of the honorary treasurership, owing to increase of official duties, was accepted with great regret, and a resolution was passed acknowledging his valuable services. Mr. Coard S. Pain, of 14, North John-street, was appointed hononary treasurer in place of Mr. Boulnois.

Delegates from Metropolitan local authorities assembled at the Kensington Town Hall on Tuesday, and discussed the question of the Metropolitan water supply. A motion in favour of creating a water trust, with power to purchase the water companies' interests and control the supply, was adopted.

CONTENTS.

Village By-Laws ... 839
Shoreditch Baths and (Passmore Edwards) Library Competition ... 840
Inaccurate Quantities ... 841
Board School Architecture... 842
The London County Council.—Mr. Blashill's Retirement ... 843
Classic Details and their Application ... 843
The Architectural Association ... 844
Cross at Bakewell ... 845
Gold Medal Year at the Royal Academy ... 846
The Edinburgh School of Applied Art ... 846
Ventilation and Warming ... 846
Notes on Approximate Estimates ... 847
The Surveyors' Institution... 848
County Lunatic Asylums.—XXXV. ... 848
Cost and Results of Housing Glasgow Poor ... 850
The Lancashire Federation of Building Trade Employers ... 850
Almanacs and Diaries ... 850
Books Received ... 850
The Building News Directory... IX.
Our Illustrations ... 851
Building Intelligence ... 870
Obituary ... 871
Architectural and Archæological Societies ... 871
Engineering Notes... 872
Competitions ... 872
Correspondence ... 872
Intercommunication ... 873
Legal ... 873
Legal Intelligence ... 874
Water Supply and Sanitary Matters ... 874
Our Office Table ... 874
Meetings for the Ensuing Week ... 876
Tenders ... 876

ILLUSTRATIONS.

FIRST PREMIATED DESIGN FOR THE NEW SHOREDITCH FREE LIBRARY AND BATHS.—LABOURERS' DWELLINGS, OLDHAM ROAD, MANCHESTER.—SKETCHES FROM ROCHESTER CATHEDRAL.—ST. MICHAEL'S CHURCH, BEGUILDY.—VILLAS AT EAST GRINSTEAD.—OLD CHURCHYARD CROSS AT BAKEWELL.—HONG KONG GOLF CLUB.—HALL AT NO. XLV. KENSINGTON-SQUARE.

Our Illustrations.

SHOREDITCH PUBLIC BATHS AND WASHHOUSES AND (PASSMORE EDWARDS) PUBLIC LIBRARY FIRST PREMIATED DESIGN.

We give the view, plans, and elevation of this design by Mr. H. T. Hare, placed first by the referee Mr. Rowland Plumbe. It is useless to ignore the fact that there is a very general, and we think natural, expression of disappointment with the choice which has been made. The conditions laid down definite provisions, leaving no room for doubt as to their intention, such as the stipulation that the first-class bath should comply with the requirements of the London County Council for use as a public hall. Mr. Hare's plan provides only one staircase from the gallery, and that is so contrived as to bring the gallery audience immediately down into the main corridor already crowded with the ground-floor people. The two other narrow staircases behind the spring-board of the bath pitch together, and are quite unsuited for emergency stairs. The position of the bath itself as a public hall is, in fact, a mistaken one. It ought to have abutted on to Bowling Green-walk. The library plan is also open to serious objection; as, for, instance the book-store, instead of being of ready access in the basement is isolated on the first floor, where it is quite out of place. Such initial failings as these can surely hardly have escaped the referee's notice? We shall illustrate other designs shortly.

CITY OF MANCHESTER LABOURERS' DWELLINGS, OLDHAM ROAD.

The site on which these buildings stand contains a superficial area of 7,832 square yards, of which about 3,430 yards are covered by the buildings, all of which have frontages to the main streets. The large open central quadrangle, containing a superficial area of 4,402 yards, obtained by this arrangement of plan, is reserved for that most necessary adjunct to buildings of this class—viz., a spacious recreation-ground, which is inclosed and separated from the cartway and footway by means of a light iron fence. The whole of the ground-floor of the building fronting Oldham-road is reserved for shops. These are so planned as to be available either for the occupation of tenants residing in the dwellings, or for those who, by residing elsewhere, would merely utilise them as "lock-up" shops. The large double-fronted shops at the corner of each of the other façades not only serve to break the unavoidably monotonous effect of the long frontages, but, from their proximity to the public entrances and staircases, they cannot fail to add to the comfort and convenience of the occupants of the dwellings. In all cases good cellarage accommodation has been provided for use in connection with the shops. The public staircases, which are of good width and in straight flights without winders, are immediately accessible from the street entrances, and they afford direct communication both with the external corridors and with the laundry department on the attic floor. They are all amply lighted and ventilated, both by windows placed at the level of each floor and by means of large top skylights. The superintendent's office and rooms immediately adjoin the cartway entrance fronting Spittal-street, in order that this official may have full control and command of the vehicular traffic connected with the dwellings. The average-sized room provided for a one-roomed tenement contains 130sq.ft. and 1,170c.ft. For the two-roomed tenements, one room containing about 174sq.ft. and 1,566c.ft., and one room containing about 108sq.ft. and 972c.ft. are provided. The height of all rooms is 9ft. Each tenement is provided with a well-ventilated food store and a spacious coal store. The sanitary arrangements have received careful consideration. The w.c.'s and sinks are externally placed against outside walls, one pedestal closet, serving also as a slop-sink, and one washing-up sink being provided in the entrance lobbies for the joint use of the occupants of each of the two tenements to which these common lobbies give access. Dust-shoots, with branch junctions having separate check-valves and iron doors, are provided in convenient positions in the main back wall. The flushing tanks, &c., and other details of the sanitary arrangements adopted, are fully in accordance with the latest requirements of the Local Government Board. The laundries, well lighted and ventilated, are placed in the attic floors. They are conveniently accessible from the public staircases, and connected with them are spacious drying-rooms. The walls generally are constructed and faced with local "commons" bricks, with red terracotta and moulded brick strings, sills, and salt-glazed brick dadoes, &c. The façade to the Oldham-road is treated in a rather more ornate manner, being faced with local red stock bricks, whilst terracotta and other ornamentation has been more freely introduced. All floors and staircases are of fireproof construcstruction, finished either with solid deal blocks, tongued boarding, or cemented face. The roofs throughout are slated with the best Bangor slates. The walls of all rooms are finished in plaster. The shops are glazed with plate-glass, and elsewhere strong sheet-glass is used. The schedule of accommodation comprises 16 cellars, 16 shops, 4 laundries with drying-rooms, 237 double tenements, 48 single tenements. The double tenements are for families of four or five persons; the single tenements are for one person. Messrs. Spalding and Cross were the architects for these dwellings, which have been built by Messrs. Wm. Southern and Sons, whose contract amounted to £45,270. Messrs. Spalding and Cross were also the architects to another block of labourers' dwellings built in Pollard-street, and the Manchester Corporation are about to erect a third block of these model dwellings under the same architects.

SKETCHES FROM ROCHESTER CATHEDRAL.—NATIONAL BRONZE MEDAL DRAWINGS.

This plate, reproduced from Mr. Reginald J. Beale's prize drawings, represents two studies of interior stonework from Rochester Cathedral, and about which little need be here said, as the well-known subjects thus depicted demand but a line to introduce them. We gave the remainder of Mr. Beale's sketches selected from the South Kensington Museum Exhibition, held during the summer, in the Building News for Nov. 1st last. The subject was the pulpit in St. Helen's Church at Cliffe, Kent.

ST. MICHAEL'S CHURCH, BEGUILDY, RADNORSHIRE.

Church life and Church work in Wales, despite the carping criticisms and attacks of those politically and sectarianly opposed to it, are not in any way approaching a languishing or moribund condition, as can be readily proved by any one passing through the Principality, and carrying with them an observant eye and an inquiring mind. Church restoration has been, and is being, extensively carried out in a quiet and persistent manner, and the restoration, or rather reconstruction, of the above edifice is only another exemplification of this fact. The old structure, which through lapse of time and accompanying decay has had to be recently taken in hand, is one that undoubtedly was erected several centuries ago on the site of a still more older building. It was about the eighth century that it became usual to dedicate churches to "St. Michael the Archangel," and there were 45 churches so dedicated about this period in the diocese of St. David's. Archdeacon Bevan writes, in his History of the Diocese: "To what cause this popularity is to be attributed we are not aware;—whether it was from the association of St. Michael with hills, or whether there was something that appealed to Welsh sentiment in the significance of this dedication as symbolic of the Church's victorious progress, the dedication seems at all events to be thoroughly characteristic of the Welsh as distinct from the Norman or English elements in our Church history." St. Michael's near the Shepherd's House, or Llanfrangel-y-Beguildy, is undoubtedly one of those placed about the year 790 A.D. among the Beacon Hills, in the very north-east angle of the county of Radnor, and in the upper valley of the river Teme. The church, which is now undergoing restoration, would be built towards the end of the 12th century, as about A.D. 1250, we find that Richard de Carae assigned it, with other churches, to the residentiary canons of St. David's. The Welsh language ceased to be used in the services of this church about 1730. In 1797 it was "restored," after the fashion current in those days—being disfigured, and the fine old oak roof hidden by a flat ceiling, and large square-headed windows inserted in the south side, with a gallery, &c., at the west end. During the last incumbent's time the chancel, which had fallen greatly into decay, was re-erected by the Ecclesiastical Commissioners, under the direction of the late Mr. Ewan Christian, their then professional adviser, and the remainder of the structure, embracing the nave and tower, is now taken in hand by the present vicar, the Rev. Pughe-Morgan, who has called in to assist him Mr. W. R. Bryden, F.R.I.B.A., of Buxton, Derbyshire, the builder being Mr. Thos. Bowen, of Bridgenorth. The anticipated outlay is about £2,600. The old oak roof, and a very fine old oak rood-screen, as well as all other existing memorials and relics of the older churches, are being carefully preserved and reintroduced in the new building.

TWO HOUSES AT EAST GRINSTEAD.

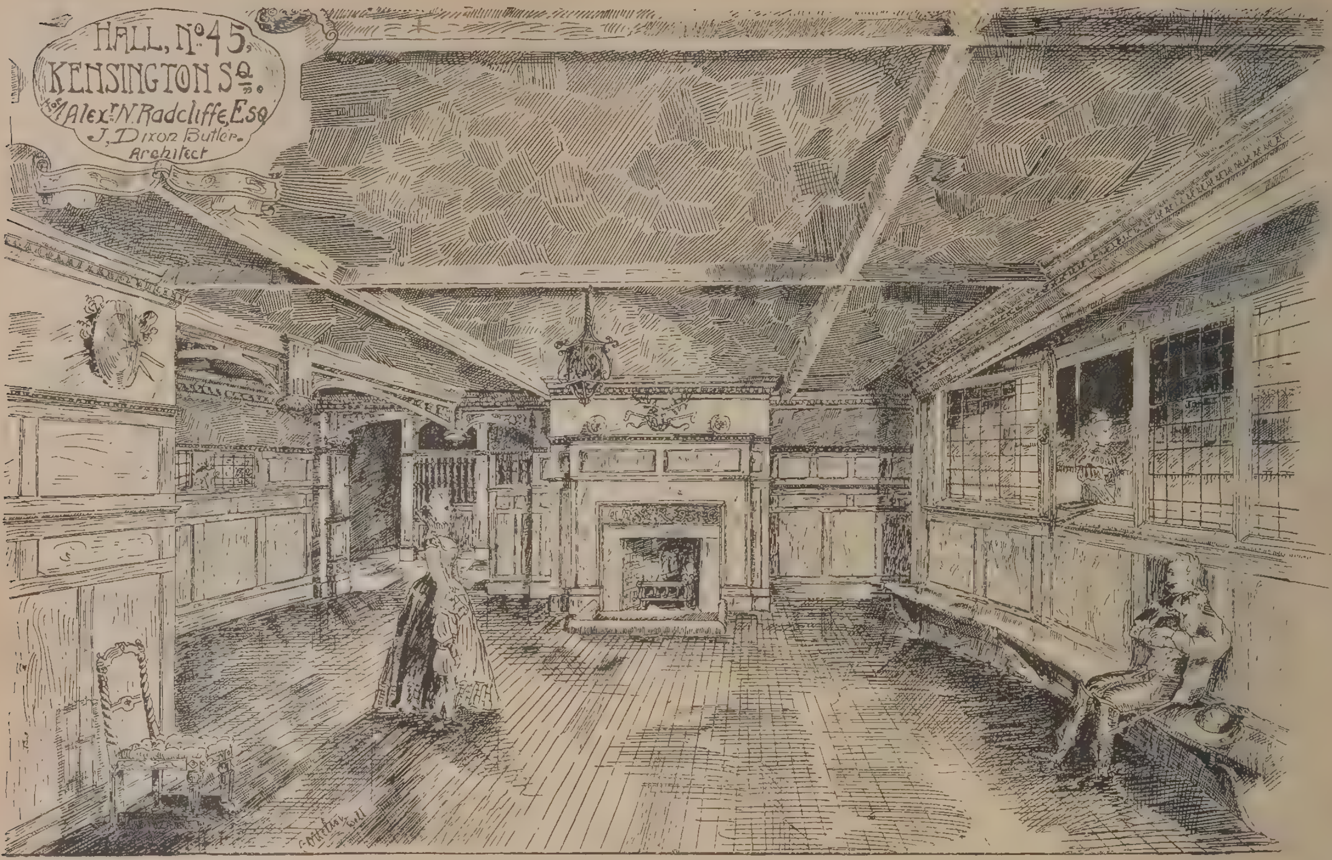
These two houses were recently erected at East Grinstead at the cost of about £1,100, from the designs of Messrs. J. D. and H. E. Mathews, architects, by Mr. E. Steer, builder. The fronts of the houses command extensive views over Ashdown Forest; but the land upon which the buildings were erected was of not sufficient width to allow double-fronted houses. The object aimed at in the planning has been to give these views to the dining and drawing rooms, which in the latter is obtained by the ingle-nook bay.

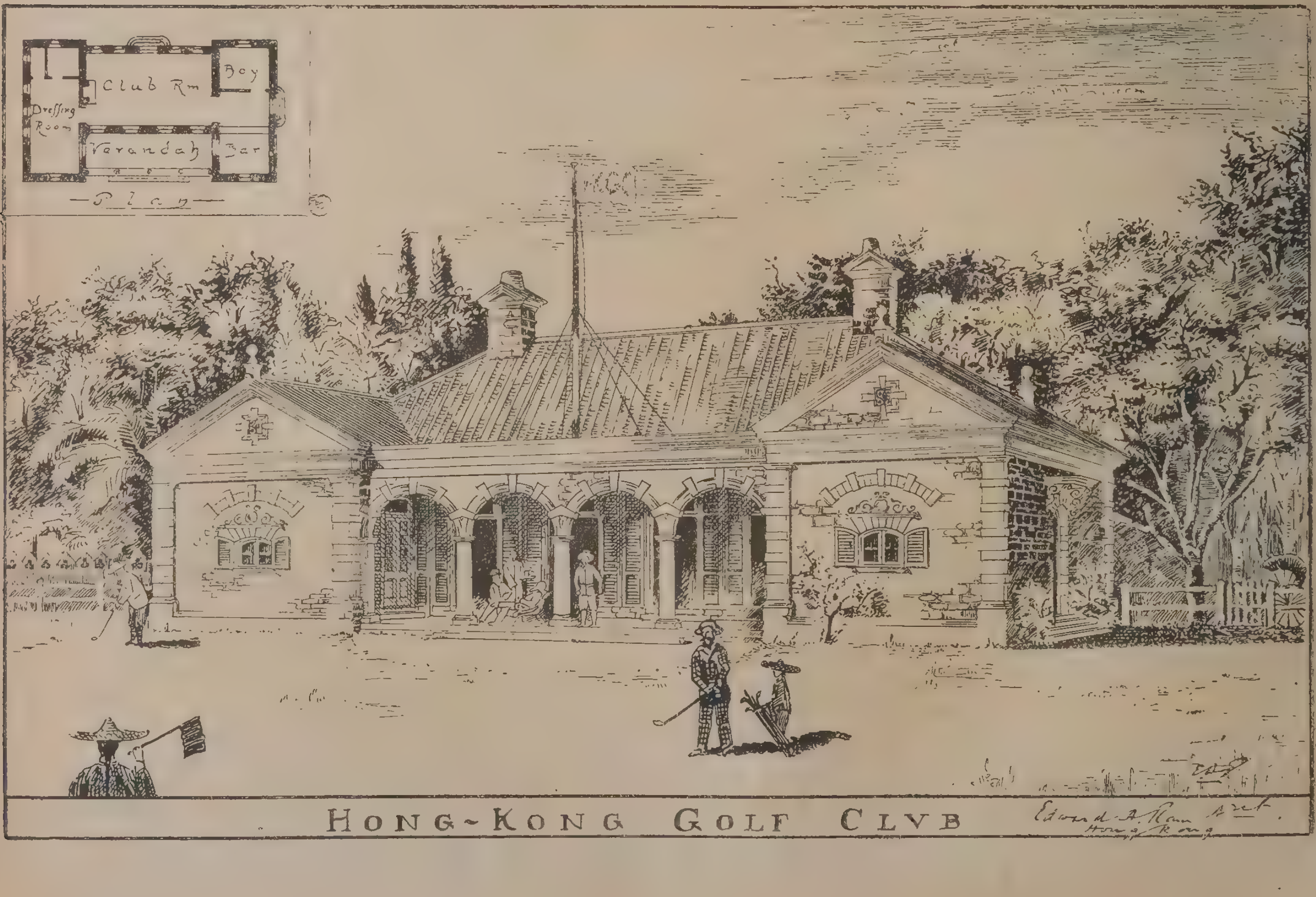
NEW CLUB HOUSE FOR THE HONG KONG GOLF CLUB.

This building is now being erected in the Wong-nei-Cheong Valley, Hong Kong, and is to take the place of a mat-shed, which has hitherto been sufficient for the wants of the Hong Kong Golf Club. The walling is of coursed rubble, with fine-punched mouldings and dressings. The roof is to be covered with a double cover of Canton pan and roll tiles. Mr. Edward A. Ram is the architect, and the work is being executed by Mr. Sun Shing, contractor, of Hong Kong.

XLV. KENSINGTON SQUARE.

The work to this house, one of the oldest in Kensington, consists of considerable alterations. For 100 years it was the house of successive Drs. Merriman, and before that it is said to have been the town house of Lord Montgomery, and in the days when Kensington Palace was in its prime saw many a revel. It does not contain a powder-room nor secret chamber, as many in the square do. Thackeray lived next door in Young-street. An effort has been made to harmonise the new with the old work. The panelling and fittings of the hall illustrated are throughout of fumigated oak, and the fireplace is treated with old Dutch tiles, with a hammered brass copper frieze, and the effect of age has been obtained. A curious drain plan found with the deeds bears the autograph of William Hardwicke. The architect is Mr. J. D. Butler, F.R.I.B.A., of Redcliffe-gardens, S.W.





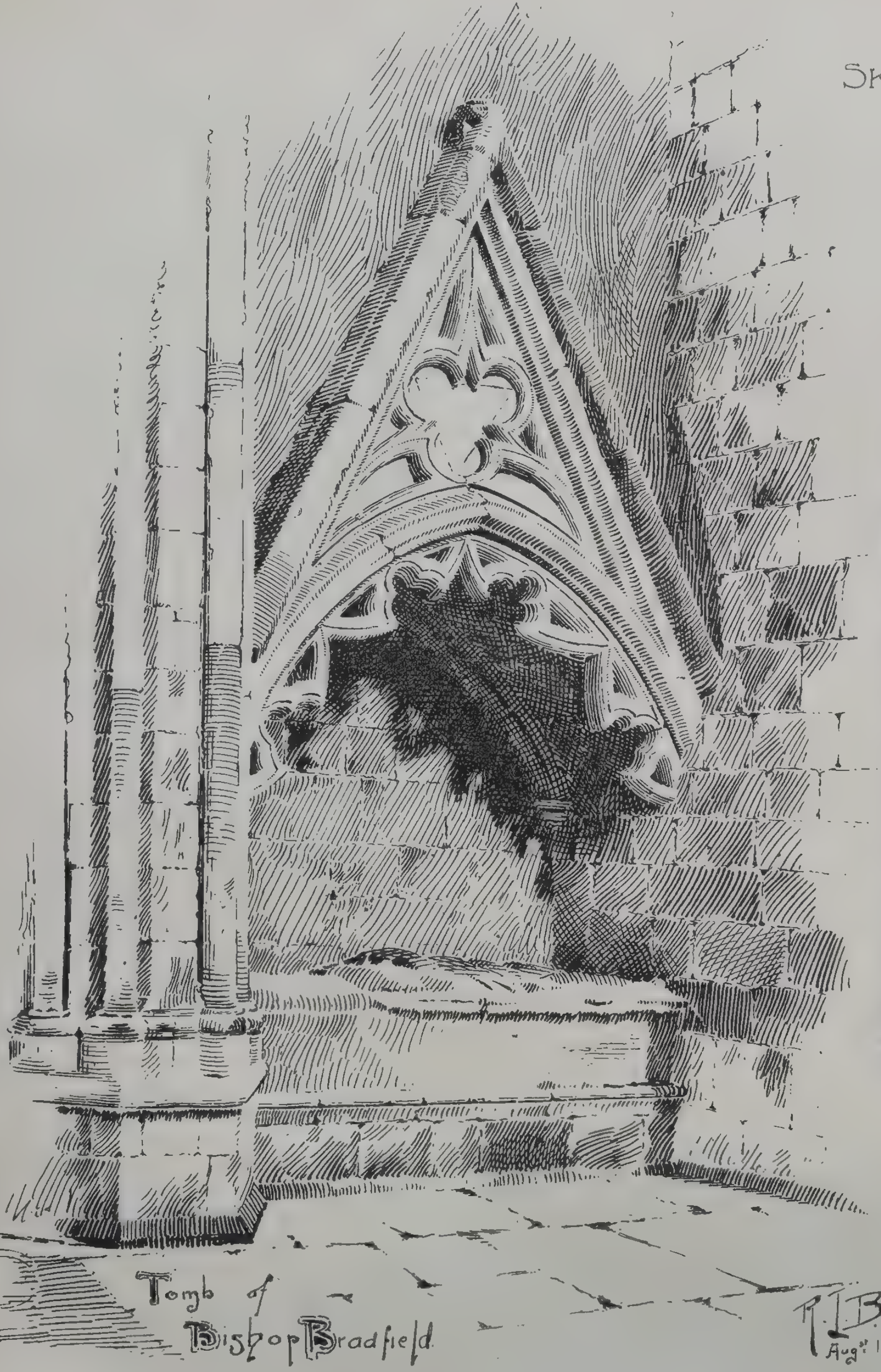
HONG-KONG GOLF CLUB

Edward A. Ram Archt.
Hong Kong

UNIVERSITY

SKETCHES · FROM · ROCHESTER · CATHEDRAL ·

NATIONAL · BRONZE · MEDAL · PRIZE · DRAWINGS · BY · REGINALD · J · BEALE ·



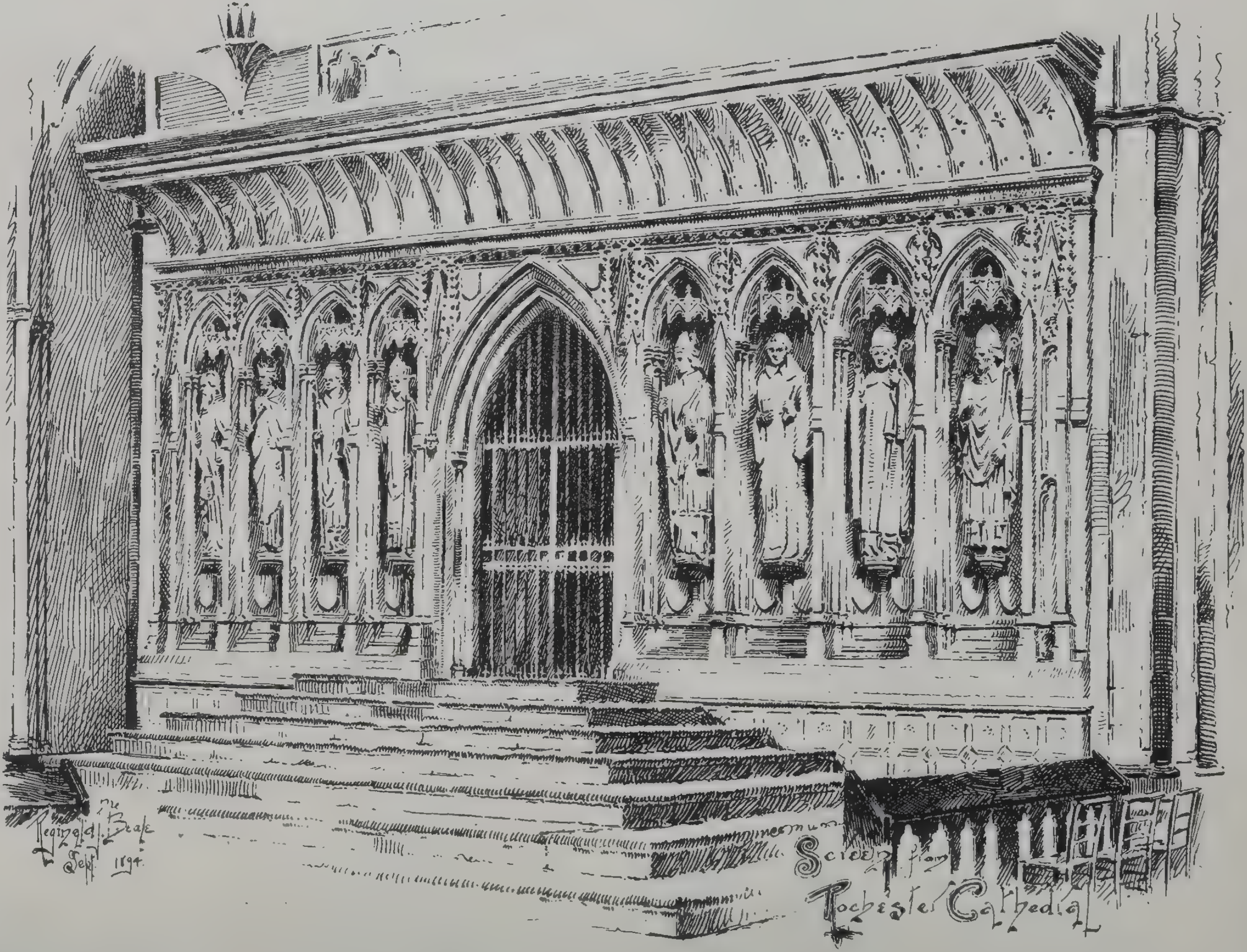
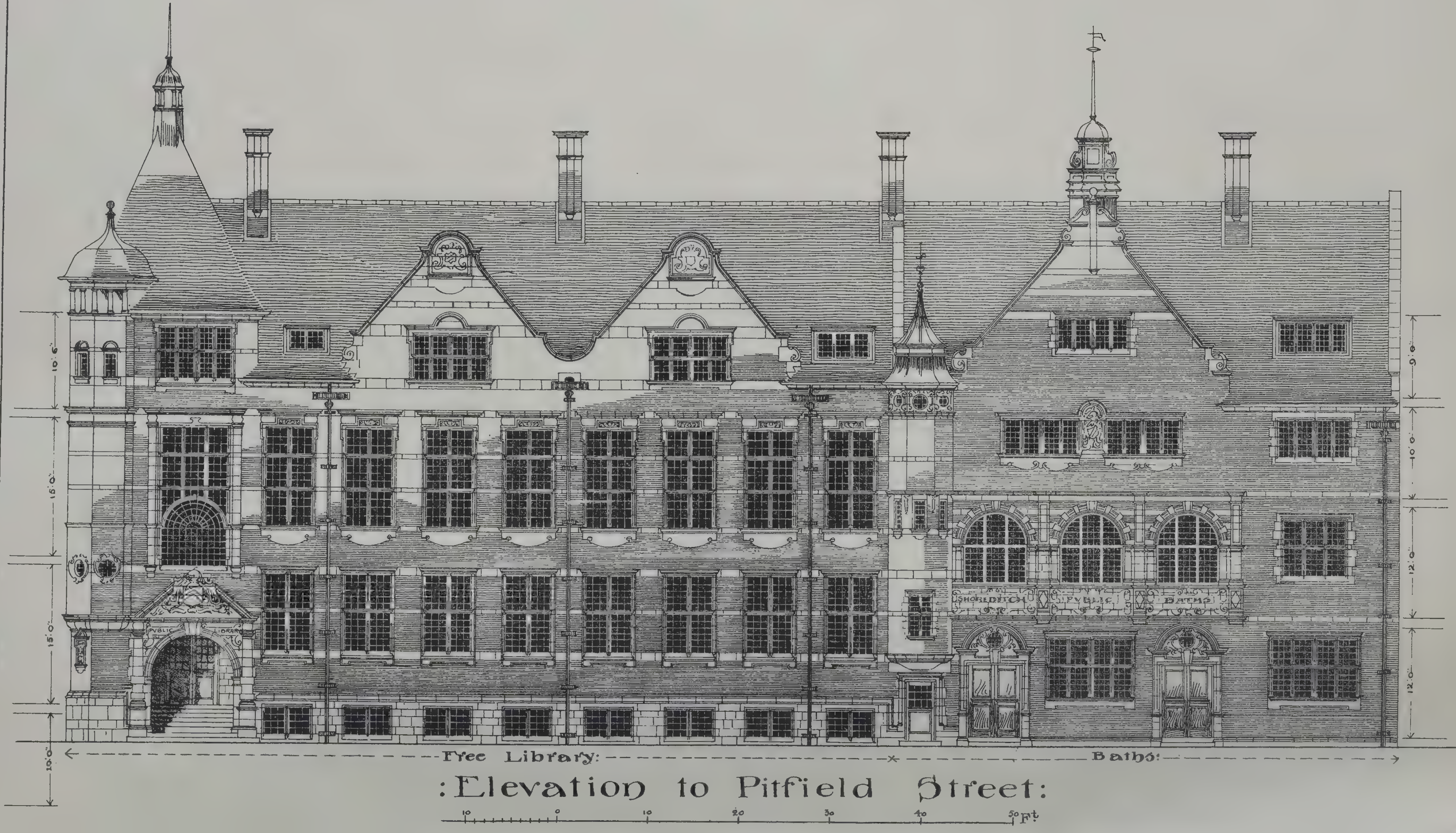


Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C.

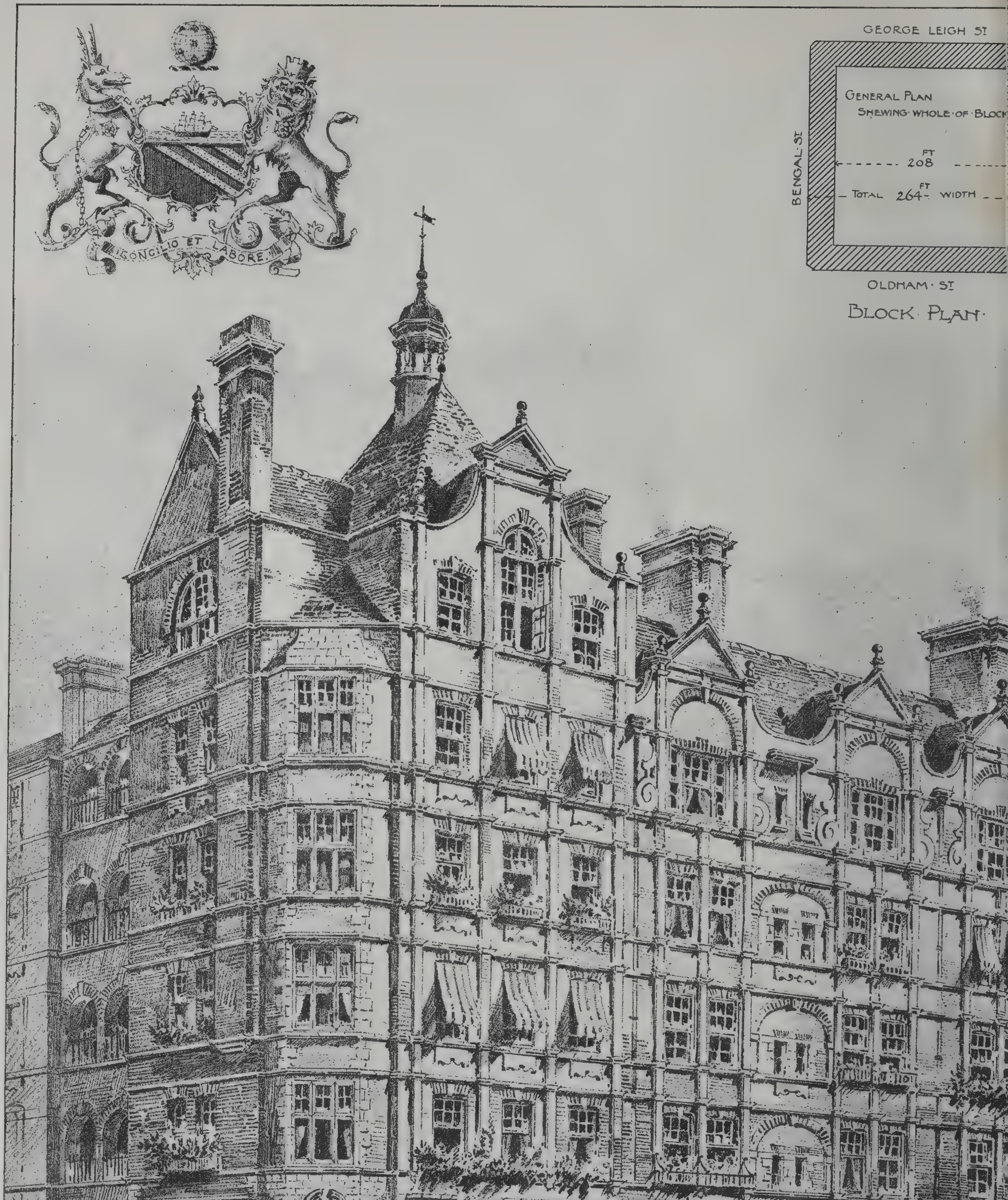
LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

PUBLIC BATHS & FREE LIBRARY (PASSMORE EDWARDS) SHOREDITCH.

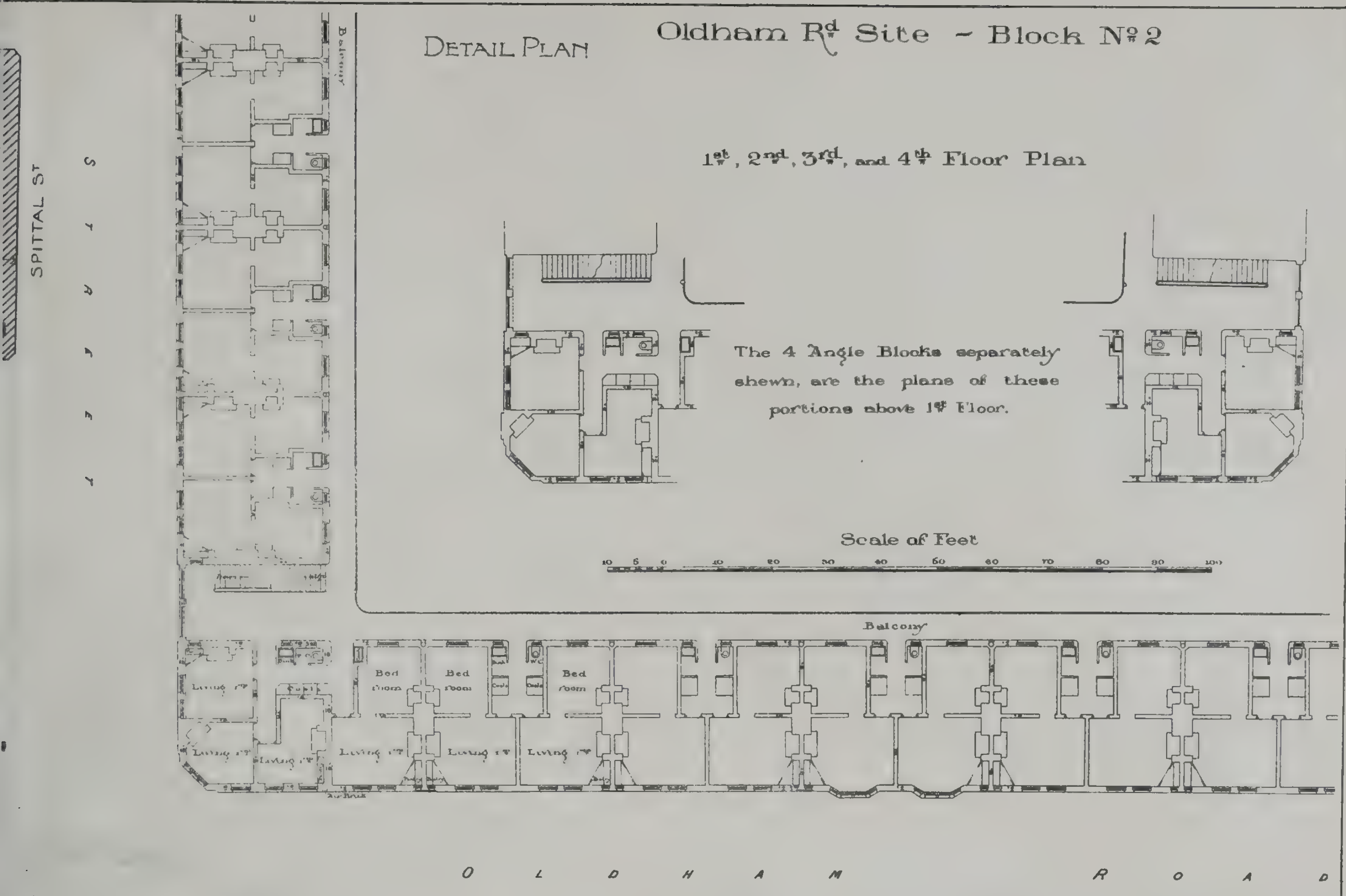
FIRST PREMIATED DESIGN, H. T. HARE, ARCHITECT.

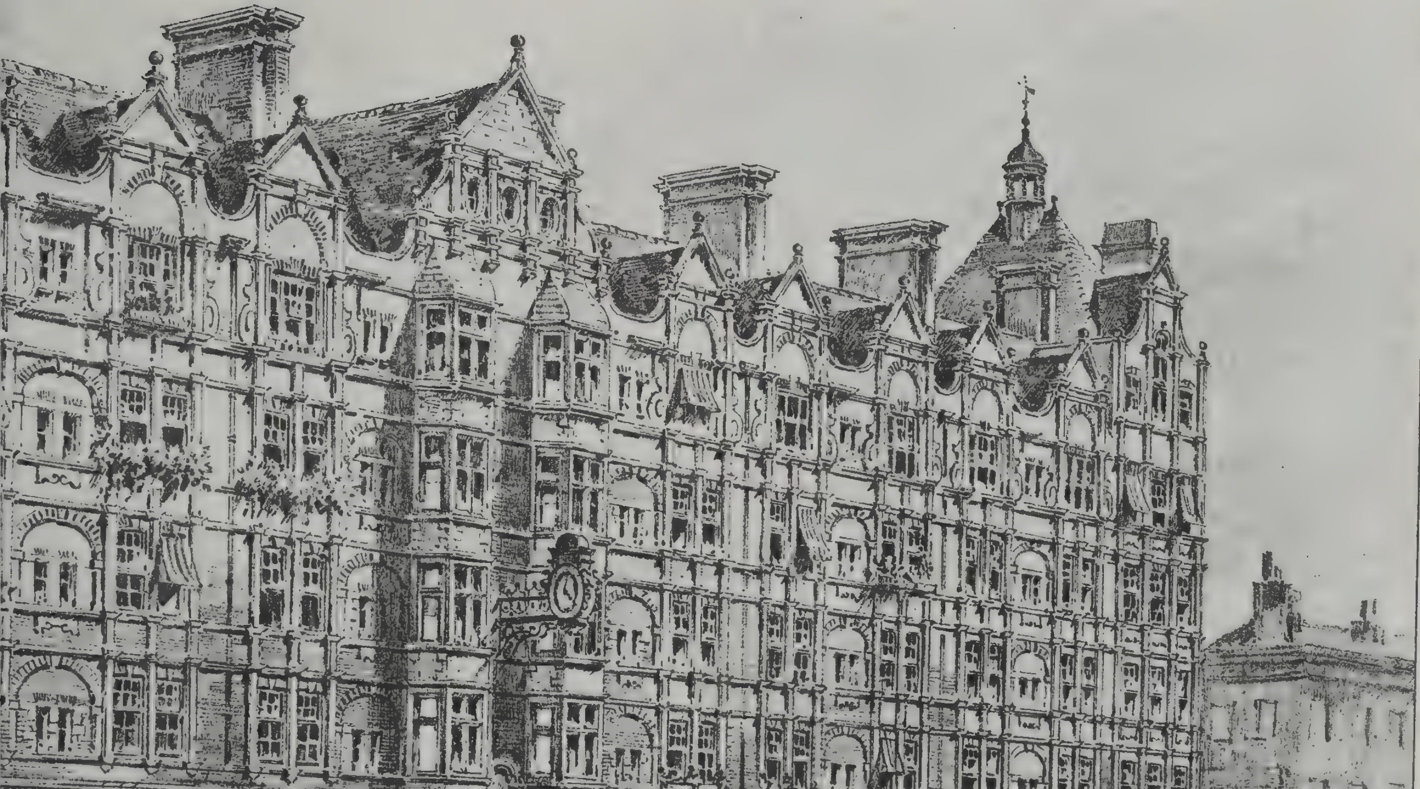


:Elevation to Pitfield Street:



LABOURERS' DWELLINGS · OLDHAM RD FOR THE CORPO



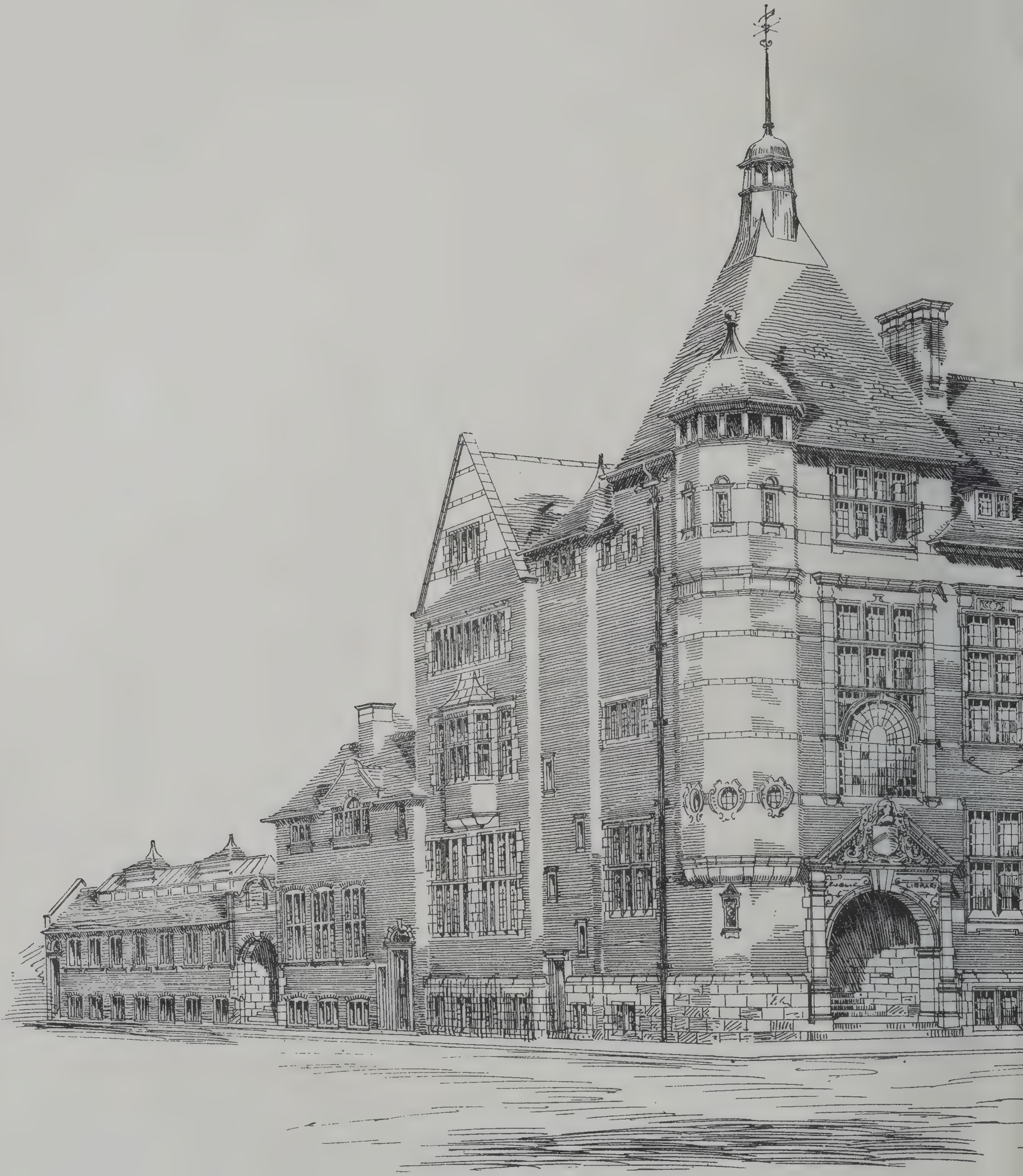


"PHOTO-TINT," by James Akerman, 6, Queen Square, London, W.C.

ATION · OF · MANCHESTER · MESSRS SPALDING & CROSS · ARCHTS

PUBLIC BATHS & FREE LIBRARY (PASSMORE EDWARDS) SHOREDITCH.

FIRST PREMIATED DESIGN, H.T. HARE, ARCHITECT.



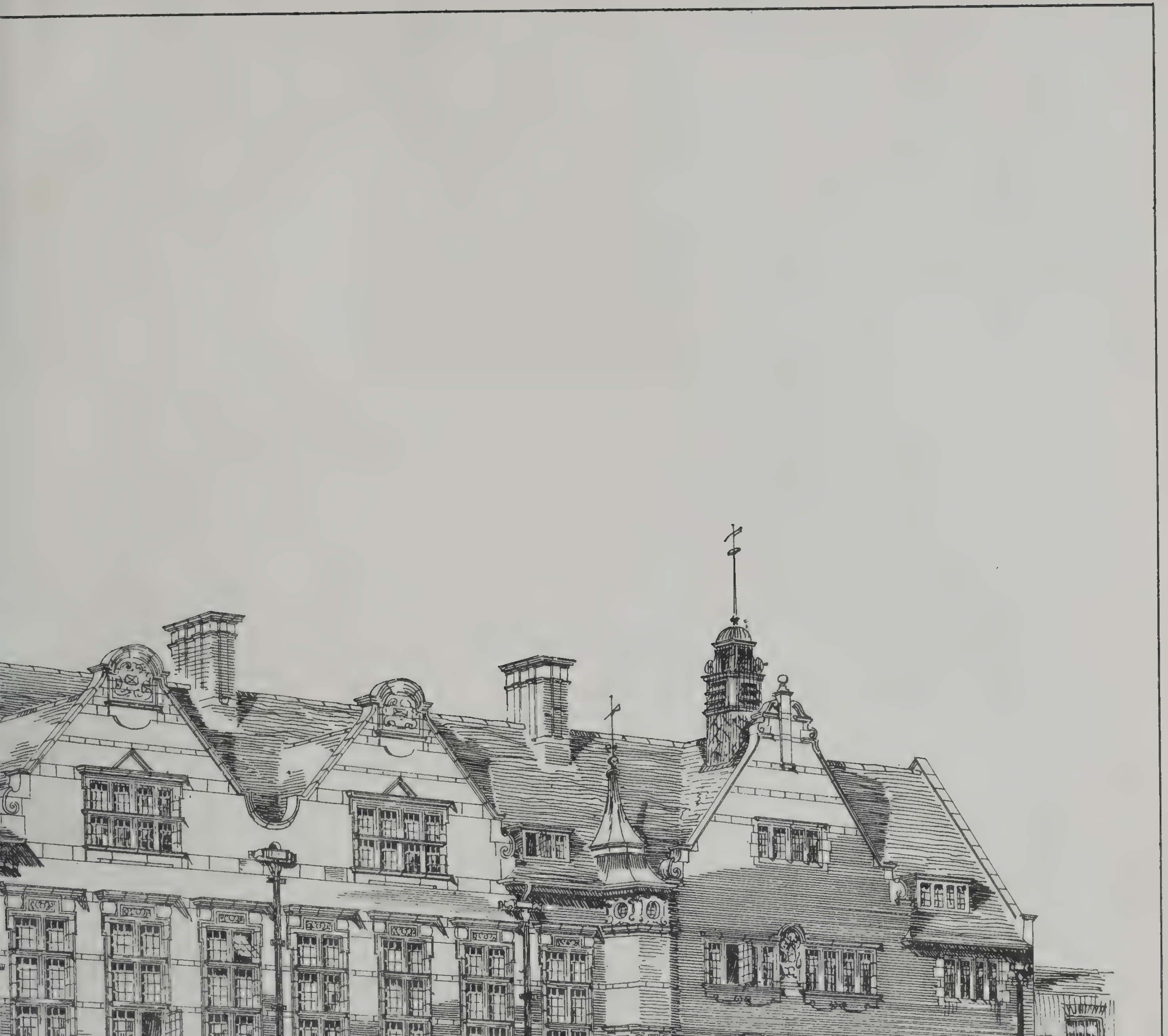
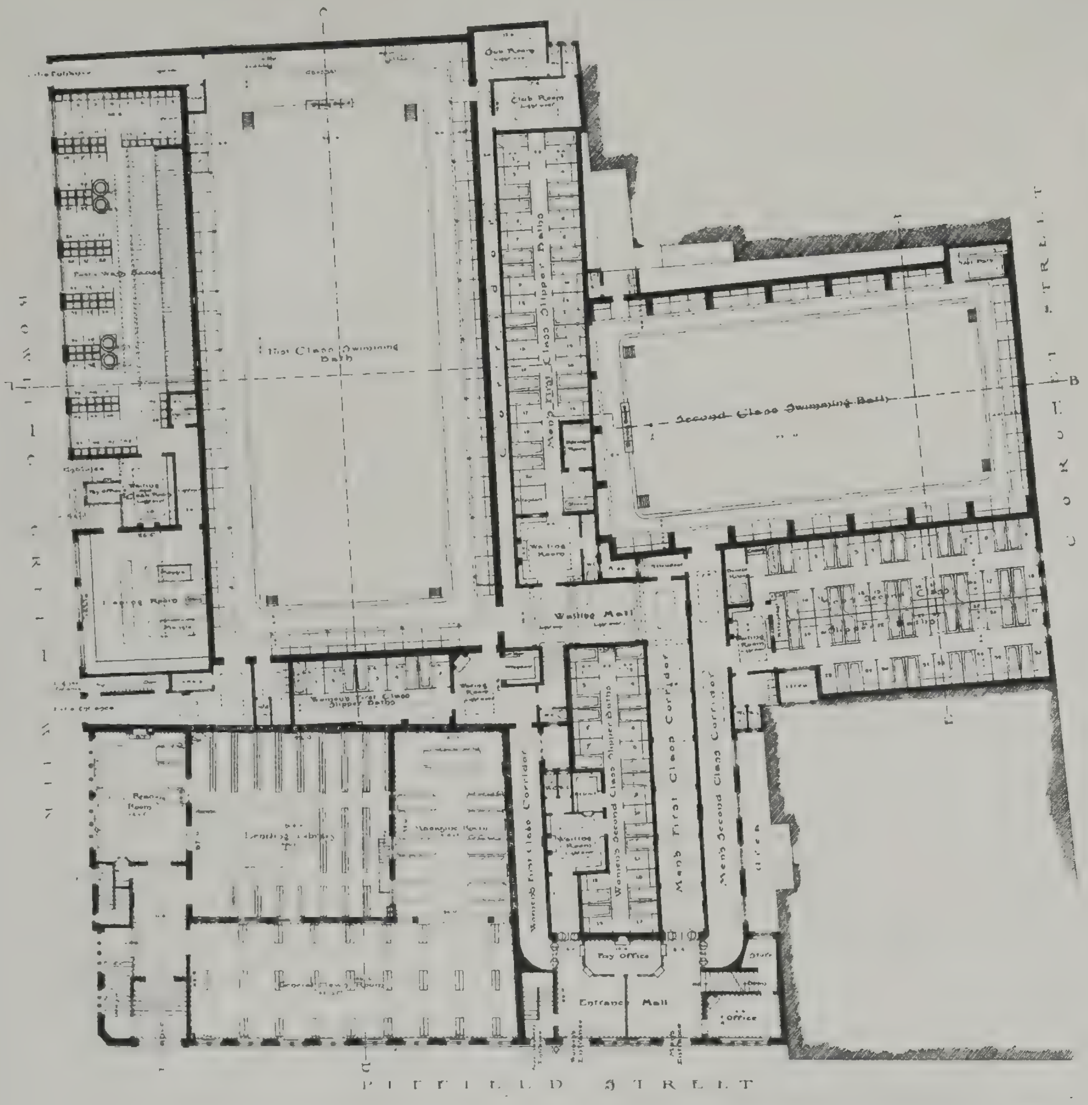


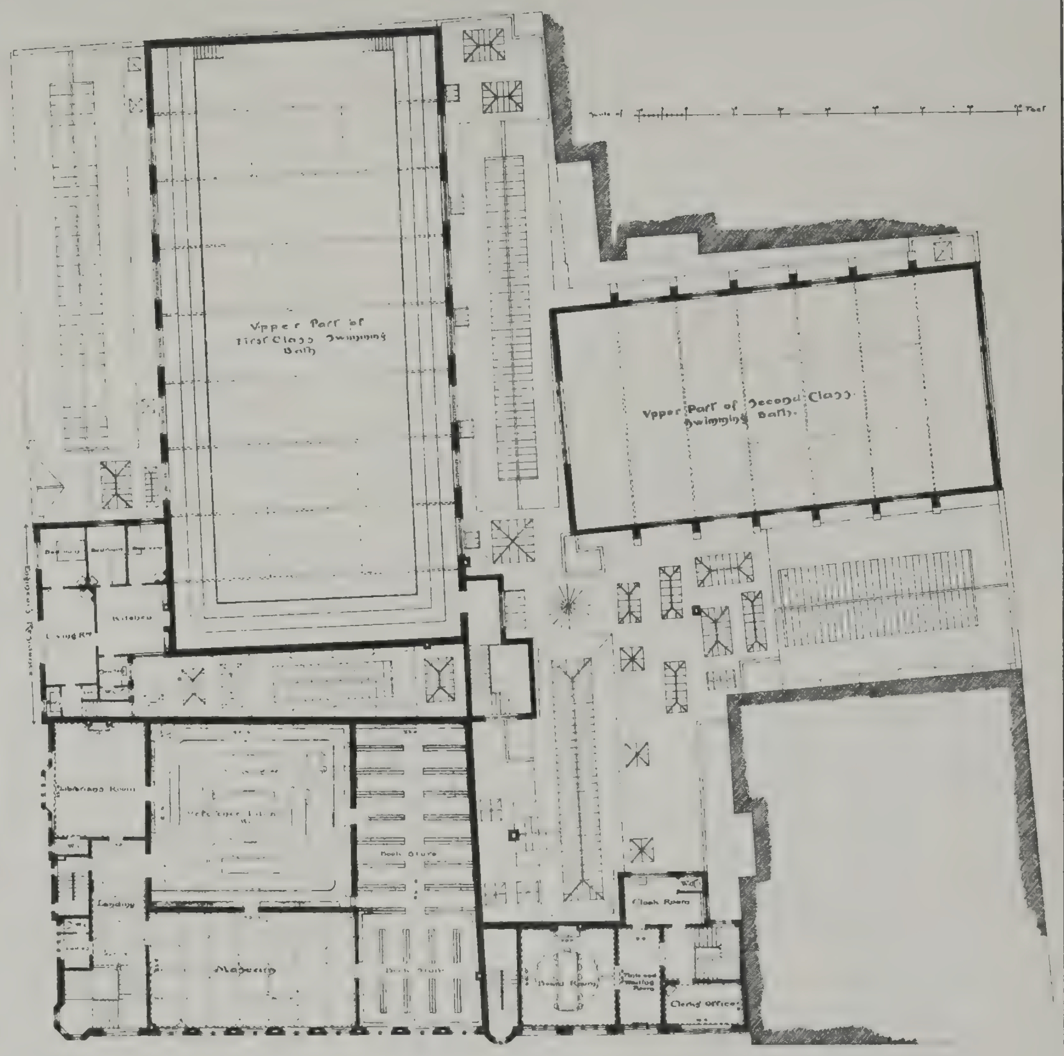
Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C

PUBLIC BATHS & FREE LIBRARY (PASSMORE EDWARDS) SHOREDITCH.

FIRST PREMIATED DESIGN, H. T. HARE, ARCHITECT.

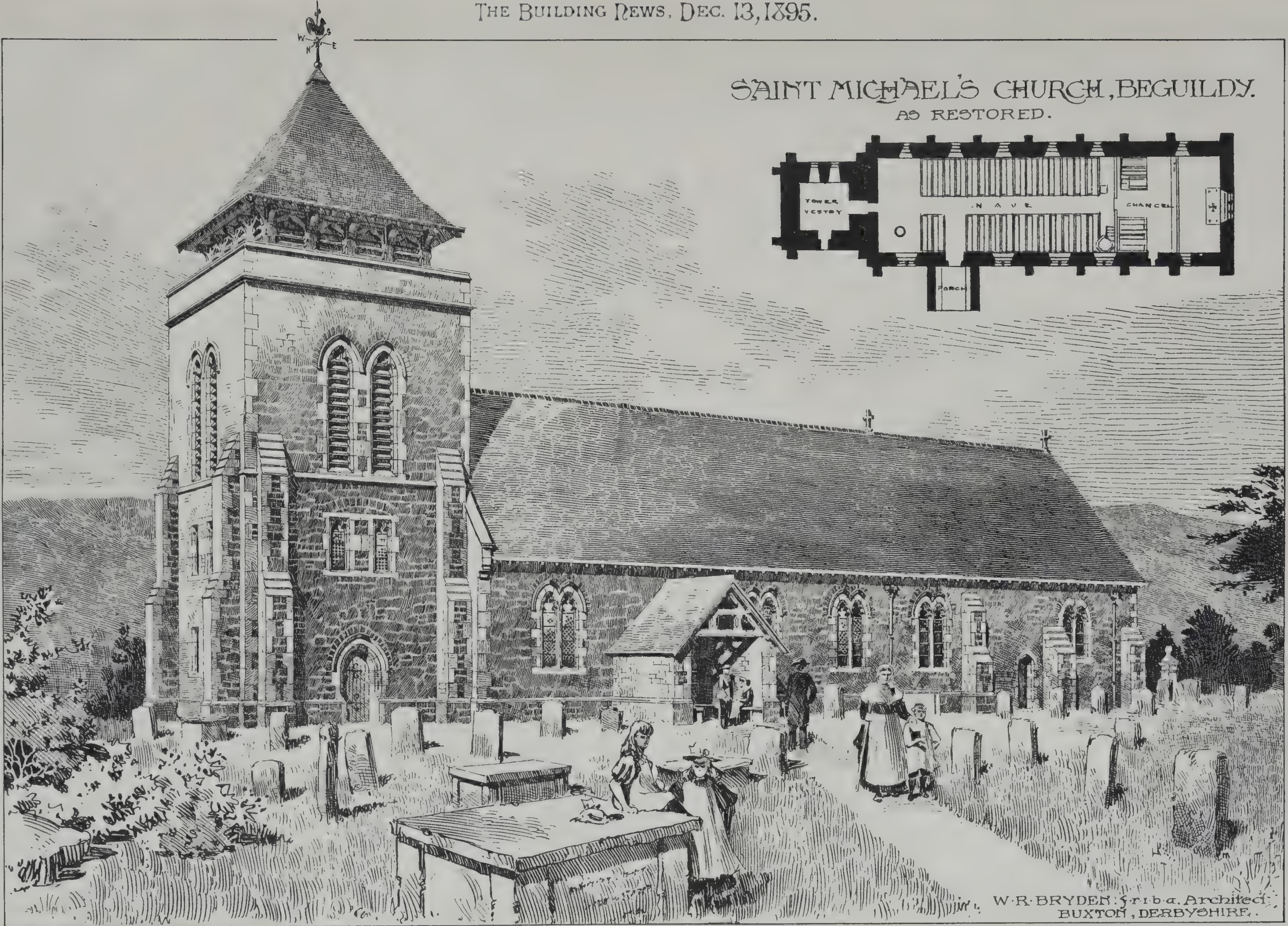

Club Room
First Class Swimming Bath
Men's First Class Slipper Baths
Second Class Swimming Bath
Men's Second Class Slipper Baths
Waiting Room
Waiting Hall
Women's First Class Slipper Baths
Engine Room
Reading Room
Lending Library
Magazine Room
General News Room
Women's First Class Corridor
Women's Second Class Slipper Baths
Men's First Class Corridor
Men's Second Class Corridor
Pay Office
Entrance Hall
Office
Store
Women's Entrance
Men's Entrance
PITFIELD STREET
CORONET STREET
B
C
D

GROUND PLAN.



FIRST FLOOR PLAN.

Photo-Lithographed & Printed [illegible]



SAINT MICHAEL'S CHURCH, BEGUILDY.

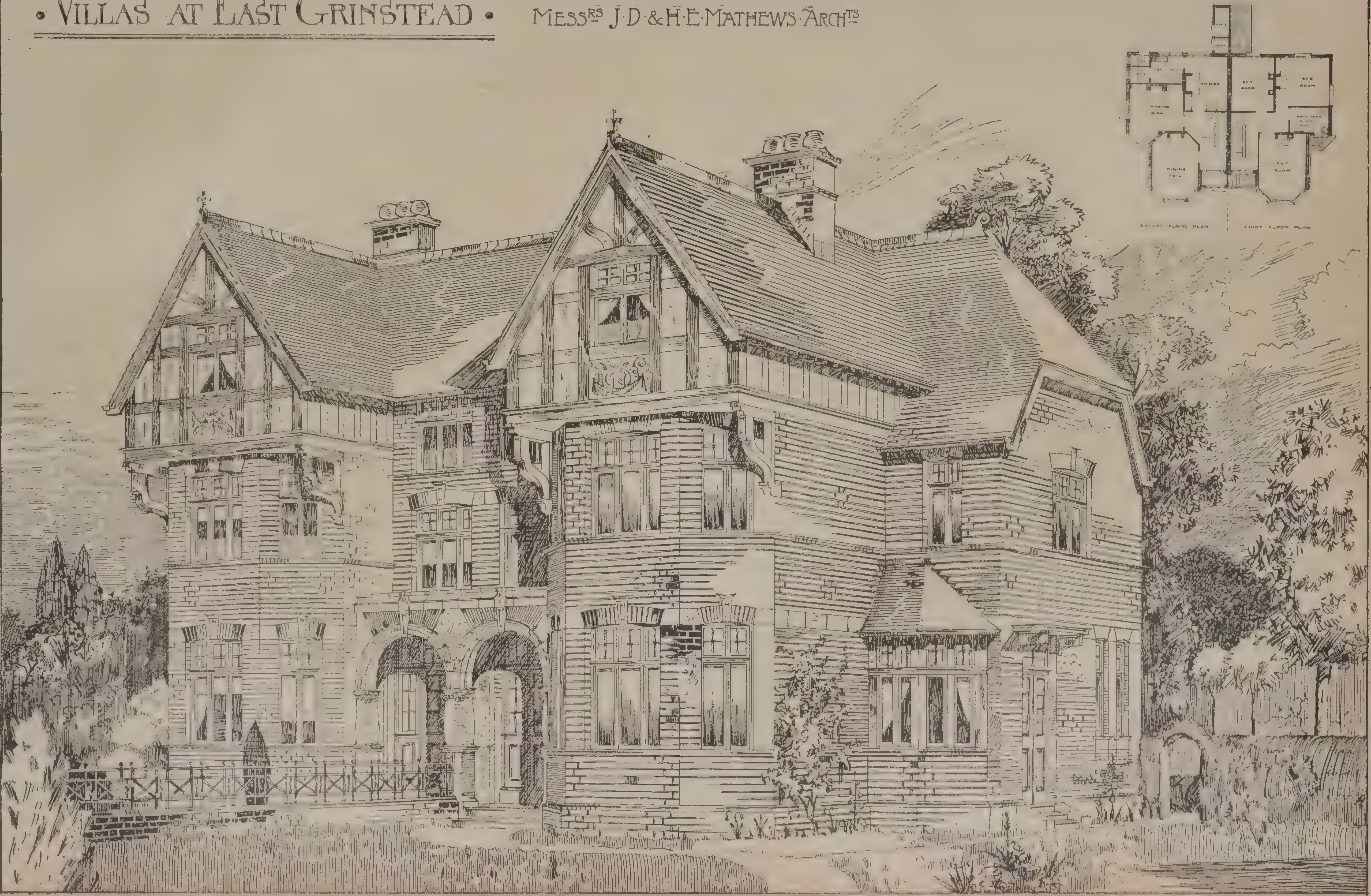
AS RESTORED.

W·R·BRYDEN: f·r·i·b·a. Architect:
BUXTON, DERBYSHIRE.

Photo Lithographed & Printed by James Akerman, 6, Queen Square, W.C.

• VILLAS AT EAST GRINSTEAD •

MESSRS J·D·&H·E·MATHEWS·ARCHTS



Building Intelligence.

Barnet.—The dedication service of the new carved-oak seats, tower-screen, and font canopy took place last week. The additions have been designed by Mr. J. C. Traylen, architect, of Stamford, and executed by Messrs. Harry Hems and Sons, of Exeter. The canopy to font is of spiral outline, and is 10ft. 5in. high; when resting on the font, the dove forming the finial will stand 14ft. 9in. above the floor. The base of the cover is 2ft. 10in. in diameter, and 9ft. 1in. in circumference. Round the base of the cover there is a carved cresting, and just above, at each of the eight angles of the octagon, are canopied and crocketed niches, carved out of the solid oak. Each niche is occupied by a statuette sculptured in the round. The lower panels and upright mullions of the tower-screen, which is 12ft. in width and 10ft. in height, are taken from a 15th-century example in the parish church of Nassington, Northamptonshire.

Birmingham.—The new Municipal Technical School in Suffolk-street, erected from the designs of Messrs. Essex, Nichol, and Goodman, of Birmingham, will be opened to-day (Friday) by the Duke of Devonshire. The total cost, including land, has been just under £89,000. The building is of red brick and buff terracotta in the English Renaissance style, with bold gables, deep, mullioned windows, and sculptured figures and groups in panels. The principal panel of the Suffolk-street façade represents an ancient school of alchemists, with the professor in the midst of his pupils. The iron and steel industries are symbolized in another panel, whilst chemistry, astronomy, and physics are illustrated in a third. A continuous projecting gallery or balcony with iron railings is carried all round the upper story of the exterior on the backs of griffins. The structure occupies an area of 3,000 yards, and contains in all 134 rooms, of which 116 are devoted to teaching. In the basement are the engine-rooms, containing three engines for generating electricity for lighting and motive power and for driving the ventilating-fans. The heating apparatus is also in the basement. The iron and steel shop is fitted with furnaces and muffles for instruction in these branches of manufacture. In a detached building in the courtyard is the wood-pattern room. The brass and metal shops have a frontage of 120ft. The mechanical laboratory contains testing machines and other mechanical appliances, and adjoining it are the lecture and preparation rooms. In the front portion of the building is the laboratory for electro-metallurgy and bronzing, 100ft. long by 43ft. in width, the practical lecture-room, preparation, battery, and dynamo rooms, and in the east wing are the carpenter's shop and a suite of rooms connected with the metallurgical department. There are rooms devoted to physics and chemistry and applied physics. The second floor is devoted to women's classrooms and the geometry rooms. The back wing contains the chemistry department. From the ceiling of each of the large rooms are suspended large arc lamps, under which, hidden from view, are inverted cones. By this means the light is thrown upon the ceiling, and the rooms are lighted by reflection from the white ceilings. On the left of the main entrance are the administrative rooms, and the rooms above are reached by a wide staircase, provided with a wrought-iron handrail. The examination and assembly-room is on the ground floor; the dado is of glazed bricks, and above, the walls are ornamented by works in terracotta. Spaces have been left overhead to be filled hereafter with paintings by Birmingham students.

Brackley, Northants.—The plans prepared by Mr. Thos. Garratt, A.R.I.B.A., of Shepherd's Bush, London, for the new wing of Magdalen College School—including lavatory, sanatorium, dormitory, master's rooms, &c.—have been approved by the authorities of Magdalen College, Oxford, who have accepted Mr. Benfield's tender for its erection. The work is to be put in hand at once. It will not only be a welcome and useful addition to the school buildings, but greatly improve the High-street of the ancient and interesting town.

Colebrooke.—The parish church of Colebrooke, near Yeoford Junction, was reopened last week after the completion of another section of the work of restoration. In 1879 the Ecclesiastical Commissioners restored the chancel, mainly rebuilding it. In 1887 the five bells, then in the tower were rehung, and a new tenor added. Last year a new belfry door and window in the west tower, were put in, Messrs. Tait and Harvev, of Exeter, being the architects, and Messrs. W. Dart and Son, of Crediton, the contractors. The section of the restoration now finished comprises reseating and the removal of the modern west gallery. Although much of the seating consisted of high deal pews, there were many remains of the old 15th-century oak seats, with richly-carved bench ends. These have been repaired and restored, and all the old oak not decayed has been utilised. The rest of the seating is constructed of English oak, and designed in keeping with the old work, but without carving. The 15th-century carved oak prayer-desk has been repaired, and will be again used as a priest's desk. The contractors and architects have been, again, Messrs. Dart and Son and Tait and Harvey. A chiming apparatus has been affixed in the belfry by Mr. H. Stokes, of Woodbury. The cost incurred has been about £450.

Edinburgh. — The existing boiler - house chimney at the Royal Infirmary, being too small for its work, the managers decided to replace it by a larger and loftier one, which is now nearly completed. The new chimney is of red brick, with red stone mouldings and cornices. It is 173ft. high, and measures 16ft. in diameter at the base and 7ft. in diameter at the top. It is circular in plan, and is perfectly plain for 108ft., but at that distance from the ground is an arcaded band in brickwork 6ft. high. This arcade is crowned with a projecting moulded band of stone. The shaft is again plain for another 30ft. At this point the plan is changed from a circle to an octagon by means of stone corbelling. Immediately above this is an overhanging stone band 5ft. high. The band consists of deep brackets connected together by arched and finished on the top with a battlemented parapet, with stone balls at the angles of the octagon. Above this there is another shallow band of plain brickwork, and then a stone band, ornamented on alternate faces with semicircular pediments. Above this are arched recesses, 10ft. high, with brick pilasters. The arches are of stone, and are crowned with triangular pediments. Over these pediments comes the deep stone cornice with which the chimney ends. An addition has also been made to the boiler-house. The architects are Messrs. Sydney Mitchell and Wilson, 13, Young-street, Edinburgh, and the contractors are Messrs. Bruce and Sons, Greenside. Messrs. Sydney Mitchell and Wilson have also prepared plans, which have been approved by the Royal Infirmary committee, for an extension of the buildings by the addition of three large pavilions and one smaller one and a laundry, at an estimated cost of £100,000. About half the scheme will be carried out forthwith.

Molash, Kent.—The parish church has been restored and reopened for service. The edifice dates from the 14th century, and consists of a nave and chancel, with no aisles, and a western tower, with a priest's chamber, 11ft. 6in. by 7ft. 3in., on the north side of the tower. This room is lit by a single cusped window in the head, while the original fireplace remains. The original oak entrance door remains on the south side, and a 13th-century font. The church is built of flint rubble, with stone quoins, and a certain amount of brickwork in the later repairs to the building. The church, which, with the exception of part of the chancel, was in a state of extreme neglect and dilapidation, has been restored under the superintendence of Mr. Reginald T. Blomfield, M.A., F.R.I.B.A. The work has been carried out by Messrs. Wise, of Deal. The roofs, which were in danger of falling in, have been repaired and strengthened; the buttresses, some of which were ruinous, have been rebuilt, and the entire church refloored. The old floor of the church lay below the level of the churchyard, so that the interior was always damp. The outside earth has been excavated, and a dry drain formed all round the building. New seats have been provided for the chancel, and a new pulpit, formed from the remains of the old one, which dated from the 17th century. An oak fence has been placed round the churchyard, the work being executed by Mr. J. Goode. The amount of the expenditure was £700.

Rangemore.—The new chancel of Rangemore Church was consecrated on Saturday by the Bishop of Lichfield. The edifice was built twenty-eight years ago from the designs of Mr. William Butterfield, and consisted of nave and chancel. In 1884 Lord Burton added an aisle on the south side in memory of his father, the founder of the church, stained-glass windows also being inserted by the tenantry and villagers. The old chancel has now been replaced by a longer and loftier one, in 14th-century style, the work being strictly English in character. The walls externally are of Coxbench stone, with Hollington stone dressings, and the interior is of fine white Hollington stone. The chief feature in the design of the chancel is that the altar is placed in a deep recess, which has a stone-vaulted roof, supported by ribs carved and moulded, and there are two stone-carved figures of St. Augustine and St. Aidan placed at a considerable elevation north and south of the altar. The windows are filled with stained glass bearing figures of saints. The floor is of black and white marble, varied in design, with solid black marble steps, some of the patterns being copied from the church of St. Anastasia at Verona. The reredos is of alabaster, and reaches to the sill of the east window. It consists of three panels. In the centre is represented the Crucifixion, with St. Mary and St. John on either side, while in each of the two smaller panels stands the figure of a bishop under a carved canopy. The whole is surrounded by a carved border of grapes and foliage. The choir stalls are carved in oak. The vestry has also been enlarged and refitted in oak. Hopton Wood stone has replaced the Minton tiles in the nave; while a new oak pulpit, with panelling at the back and extensive carving, and steps and base of Purbeck marble, has been introduced. The outlay involved by the alterations is about £4,000, and has been entirely defrayed by Lord Burton. The work, which produces the most artistic effect, was designed by and carried out under the superintendence of Mr. Bodley, A.R.A., and the chief contractors were Messrs. Rudd and Son, of Grantham, Mr. Bridgman, of Lichfield, being responsible for the carved oak work for the ceiling and the stone figures, and Mr. Hodges (Burton) for the nave floor.

St. Helen's.—The new abattoir erected in Foundry-street by the corporation for the use of the butchers of the town was formally inspected by the members of the corporation last week. The buildings are intended to replace the present premises in Cansfield and Frederick streets, which are inconvenient and unsuitable. The new abattoir has been erected at a cost of £4,000, by Mr. Joseph Ellison, builder and contractor, Boundary-road, from plans and specifications prepared by Mr. G. J. C. Broom, M.I.C.E., the borough surveyor, and has been fitted up with all modern appliances. The main buildings are three in number, including lairages providing accommodation for 90 head of cattle and 120 sheep. The cattle slaughter-house is 89ft. by 20ft., and allows for the slaughtering of ten beasts at a time. The storage-house has an area of 2,250sq.ft., being 84ft. by 30ft., with an average height of 21ft., and is capable of storing 340 beasts and 180 sheep and pigs. A siding connected with the London and North-Western Railway runs into the yard, so that cattle can be unloaded direct into the lairages.

Swindon.—The Swindon School Board have just completed extensive additions to the mixed school and infant school at Even Swindon, comprising three new blocks added to the mixed school, containing four classrooms 25ft. by 25ft. each, cloakroom accommodation and entrances, corridors, and the formation of an assembly hall in the old portion of the schools 45ft. by 31ft. The local red bricks have been used, with Bath stone dressings, and the roofs are covered with blue slates. The floors are laid with wood blocks to the schoolrooms, and Woolliscroft's tiles for the entrances and cloakrooms. The additions to the infant school comprise two new classrooms, cloakrooms and entrance, &c., the class of work being similar to that at the mixed school. The estimate of Mr. Thomas Colborne, of Swindon, was accepted at £3,508. Mr. William Drew, M.S.A., of Swindon, was the architect, and Mr. Jas. Elsdon acted as clerk of works.

◆

A stained-glass window, to the memory of the Rev. William Mangles Schnibben, for 13 years vicar of Christ Church, Penrith, has been erected in the south side of that building. The window shows Christ Blessing Children and as the Good Shepherd.

A committee of investigation has discovered numerous defects and weaknesses in the partially completed city hall at St. Louis, Missouri, which has already cost the city over £500,000 sterling, and which will have to be largely reconstructed.

OBITUARY.

We may add to our notice of the late Mr. Charles Thomas Lucas, the senior partner of the well-known contracting firms of Lucas Brothers, Lucas and Aird, and John Aird and Sons, whose death was briefly announced last week, some additional particulars since to hand. Mr. Lucas, who was born in 1820, began business on his own account at Norwich as a builder and contractor. Afterwards he was joined by his brother—now Sir Thomas Lucas—and founded the firm of Lucas Brothers, having large building works at Lowestoft. The business was eventually removed to London, and grew into the three concerns already mentioned. Mr. John Aird, M.P., joined as a partner in 1874. The three undertakings were really one firm, but the names were kept distinct, as each represented a different branch of work and required a separate staff of management. Amongst the more important works carried out by the firms were the construction of the Albert Hall, the South Kensington Exhibition of 1871, the G.E.R. Terminus, Liverpool-street, the Royal Albert Docks, the Metropolitan District Railway and extensions of it, the Hull and Barnsley Railway, the Chatham and Dover Railway, Blackfriars Bridge, Tilbury Docks, and the West Highland Railway. The firms also began the construction of the railway for the Government from Suakin to Berber in the Soudan, which was not completed. Mr. Lucas has left three surviving sons.

Calvert Vaux, a well-known landscape architect, died in Brooklyn, N.Y., on November 21st. He was born in London, December 20, 1824, and was educated at the Merchant Taylors' School, afterward studying architecture under the late Lewis N. Cottingham. At the suggestion of Andrew J. Downing, he emigrated to the United States in 1848, became Mr. Downing's partner, and was engaged with him in landscape gardening and architecture, the firm having laid out the ground surrounding the Capitol and the Smithsonian Institution at Washington. Afterwards Mr. Vaux became associated with Frederick Law Olmsted, and with him prepared a plan for the laying out of Central Park in New York, their design having been accepted after competitive examination, which had been suggested by Mr. Vaux. During the work upon Central Park Mr. Vaux was the consulting landscape architect of the Department of Public Parks. His reputation as a landscape architect was then firmly established, and when Prospect Park was laid out in Brooklyn, in 1865, it was after designs made by his firm. Subsequent to this the firm designed the public parks at Chicago and Buffalo, and the State Reservation at Niagara Falls. Mr. Vaux was afterward appointed landscape architect in the Parks Department in New York city, and with Mr. Olmsted prepared the plans for Riverside and Morningside Parks, as well as for the many small parks which were authorised by the Legislature, and are now in process of preparation. He was the best-known landscape architect in the United States, and was consulted as an expert in matters of that kind by architects all over the country. In addition to his landscape work, Mr. Vaux designed many country residences in Newport and elsewhere, as well as public buildings in New York, the Belvedere, the greystone tower which stands at the lower end of the reservoir in Central Park, being a specimen of his work. He also published an architectural book entitled "Villas and Cottages."

The death is announced of the Rev. Richard St. John Tyrwhitt, formerly senior student and tutor of Christ Church, Oxford, and rector of St. Mary Magdalene, Oxford, from 1858 to 1872. He was well known as a writer on art. His works included "A Handbook of Pictorial Art," "Christian Art and Symbolism," "Greek and Gothic: Historic Essays on the Three Arts," "Art Teaching of the Primitive Church," "Our Sketching Club," "An Amateur Art Book," and other works. He was a contributor to Smith's "Dictionary of Christian Antiquities." Mr. Tyrwhitt was also known as a water-colour painter, and exhibited pictures at the Royal Academy, the Grosvenor Gallery, and other exhibitions.

* * *

The estate of the late Mr. P. H. Rathbone, of Liverpool, has been sworn at £105,595. Mr. Rathbone has bequeathed eight pictures to the Corporation of Liverpool. They are all large and important works, and were considered by Mr. Rathbone to be the most valuable in his collection.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Birmingham Master Builders' Association.—The annual meeting of this association was held at the Grand Hotel, Birmingham, on Friday evening. Mr. T. Barnsley presided, and there were also present Messrs. J. Bowen, R. Bulley, G. Squires, G. Twigg, B. Whitehouse, T. G. Whitall, G. Raby, J. Barnsley, A. Smith, T. Johnson, W. E. Lee, W. S. Edwards, E. J. Bigwood (secretary), &c. The report of the committee stated that the amicable relations of last year existing between employers and employed had remained undisturbed. The number of members of the association was sixty-seven, being a slight increase on last year. The balance sheet showed that the total receipts for the year had been £119 11s. 3d., which, with the balance from last year (£64 11s. 8d.), made a total of £184 2s. 11d., and the various disbursements £87 11s. 5d., leaving £96 11s. 6d. to the credit of the association. The chairman moved the adoption of the report, and said that if wages had been high, prices had not been high. Mr. R. Bulley seconded the motion, and it was passed. On the proposition of the chairman, seconded by Mr. Whitehouse, Mr. Bulley was elected president for the ensuing year. The other officers appointed were: Vice-president, Mr. B. Whitehouse; treasurer, Mr. G. Twigg; auditors, Messrs. J. S. Surman and T. Johnson; and secretary, Mr. E. J. Bigwood; with a large committee. In the evening the members dined together at the Grand Hotel. Mr. R. Bulley (president) occupied the chair; and amongst those present were Messrs. E. Parkes, M.P., T. Barnsley, J. Bowen, W. Henman, A. Harris, Ewen Harper, Shirley Smith, J. Barnsley, C. H. Barnsley, B. Whitehouse, W. Sapcote, W. Rudder, J. S. Surman, A. A. Smith, R. Fenwick, J. Webb, &c. After the customary loyal toasts, Mr. T. Barnsley proposed "The City and Trade of Birmingham," to which Mr. E. Parkes, M.P., replied. He said that one reason why trade in Birmingham prospered was, he believed, because of the technical and artistic training which was given there. Artistic training was especially of value in the building trade, and what was wanted for the further success of the trade was for art to bear upon everyday life. At a time like the present, when competition was so keen, it was highly desirable that all engaged in trade should be on the alert to produce the best article at the lowest possible cost, and to this end masters and men must pull together with one common object. Mr. W. Henman, F.R.I.B.A., president of the Birmingham Architectural Association, submitted "Success to the Birmingham Builders' Association," remarking that the success of the building trades also meant employment to many labourers and artisans in the district; it meant employment to manufacturers who supplied the many materials and appliances which were used in the building trades. Further, the public must have a period of prosperity before the building trades became prosperous. The public mind was gradually being educated up to the fact that the suitableness of a town to live in depended very much upon its architectural adornment. He spoke of the indebtedness of architects to builders for giving full effect to their ideas; and said that, though there was a tendency to do without master builders, he should be sorry if ever the time came when they were done away with. He suggested that the Master Builders' Association should offer a prize to student architects in the construction classes. The President briefly replied, and said that Mr. Henman's suggestion would receive consideration. Mr. J. Bowen next gave "The Architects and Surveyors," and said if they compared architects of the present day with those who had gone before, they had nothing to be ashamed of. Mr. W. Henman, Mr. Ewen Harper, and Mr. Arnold Harris responded. The last-named gentleman said that it was a great compliment to the builders of Birmingham that so very few of the important contracts went to outside masters. The other toasts were "The National Association of Master Builders of Great Britain" and "The President and Officers."

Sheffield Society of Architects and Surveyors.—The monthly meeting of the members of this society was held on Dec. 10. An interesting lecture on "Norman Architecture" was delivered by Dr. H. C. Sorby, F.R S. The lecturer gave a short account of the pre-Norman style in England, and exhibited lantern slides of some of the most striking remains. He then showed a few illustrating the architecture in Normandy at about the time of the Conquest, and about twenty years older than the earliest Norman buildings in England. The lecturer then exhibited and described slides prepared from some of the chief buildings in England, illustrating the gradual increase in ornamental details and the introduction of many of new character, until when we arrive at about 1170 a very rapid change occurred, so that in the course of the next 20 years scarcely any of the old Norman style remained, and the so-called Early English style became fully established. During the previous 100 years the amount of progress was most extraordinary.

Society of Engineers.—The forty-second annual general meeting of the Society of Engineers was held on Monday at the rooms of the society, 17, Victoria-street, Westminster, S.W. The chair was occupied by Mr. William George Peirce, President. The following gentlemen were duly elected by ballot as the council and officers for 1896—viz., President, Mr. Samuel Herbert Cox; Vice-Presidents, Messrs. Chas. C. Carpenter, G. Maxwell Lawford, and W. Worby Beaumont; Ordinary Members of Council, Messrs. Joseph Bernays, George Burt, John C. Fell, Chas. Gandon, Percy Griffith, Chas. Mason, Henry O'Connor, and Stephen Sellon; Hon Sec. and Treasurer, Mr. Perry Fairfax Nursey; Hon. Auditors, Messrs. Alfred Lass, F.C.A., and Samuel Wood, F.C.A.——The forty-second annual dinner of the Society of Engineers was given at the Holborn Restaurant on Wednesday evening. The president, Mr. William George Peirce, occupied the chair, and a large company was present. The president, in reply to the toast of the evening—viz., "Success to the Society of Engineers," said that the papers read at their ordinary meetings had been well and carefully prepared, and on most interesting subjects, comprising Parliamentary procedure as affecting light railways and tramways, Portland cement, street subways, safety appliances for elevators, relative value of percolation gauges, statistics on the strength of railway axles, and ventilation and warming. All evoked good discussions. The president then dwelt upon the value of belonging to scientific societies, and said that much valuable experience could be gained by belonging to those where opportunities were freely given to the members—both old and young—to take part in the discussions at the meetings. The summer vacation visits to engineering works had been of great interest, comprising the City and Waterloo Railway Works, the City of London Brewery, the Outer Harbour Extension Works and the Electric-Lighting Works at Dover, and the School of Gunnery, Shoeburyness. Lastly, the president advised all the younger members of the profession to take advantage of the opportunities offered by the society, both at ordinary meetings and at the vacation visits to engineering works, for although the modern technical educational establishments did a great deal, there was much to be learnt in actual workshop experience and at visits to works in progress.

CHIPS.

It was decided on Tuesday that the permanent memorial at Aberdeen to the late Professor Robertson Smith shall take the form of filling with stained glass a four-light window in King's College Chapel in that city. The subjects of the lights will be figures of four Hebrew prophets symbolical of the professor's relation to Old Testament studies.

Gresham Baptist Chapel in Barrington-road, East Brixton, a lofty brick structure of three floors, was destroyed by fire on Tuesday night, after a tea-meeting had been held in the school on the topmost story.

The church of St. Mark, at Plumstead, the foundation-stone of which was recently laid by the Duchess of Albany, is being built according to the designs of Mr. Richard J. Lovel, of Queen Victoria-street.

The scheme for laying-out a seaside estate and spa gardens at Bridlington has collapsed, the directors having been unable to go to allotment, owing to the limited number of applications for shares.

At the meeting of the Northern Architectural Association, held at the Art Gallery, Newcastle-upon-Tyne, on Wednesday night the 11th inst., Mr. Percy Fitzgerald, M A., F.R S., delivered his illustrated lecture on "Robert Adam, and his Style of Architecture."

Engineering Notes.

Sellack, Herefordshire.—On Saturday a new suspension bridle-bridge over the river Wye at Sellack, near Ross, was opened. The bridge has been erected on the site of the old ferry, and connects the parishes of Sellack and King's Caple. The engineer was Mr. Louis Harper, A.M.I.C.E., of Aberdeen; the masonry work, concreting, approaches, and decking have been carried out by Mr. John Preece, contractor, Marden, Herefordshire; Messrs. Naylor and Co., Hereford, were intrusted with the erection of the ironwork; and the whole has been done under the superintendence of the architect, Mr. Ernest G. Davies, M.S.A., of Hereford. The bridge is composed of steel wire ropes of suspension type, with vertical rods, 2ft. apart, connecting the upper and lower ropes. The sides are protected by oak skirting and lattice panelling. The bridge has a camber of 3ft. It is supported by four cast-iron columns 25ft. high, and is held up by anchor blocks and rails, secured by concrete. The clear span of the bridge is 190ft.; its total length, including approaches, being 228ft. It has a walking way of 6ft., and is 6ft. 10in. out and out. The flooring is of oak, overlaid with boarding of oak cross-pieces $1\frac{1}{4}$in. thick. There are red sandstone abutments (the material having been obtained from Sellack quarry), with Forest stone coping. The bridge is 25ft. above the summer water level, and is 6ft. higher than the highest known flood level. The cost has been £900.

* * *

A Guild of Sculpture has been incorporated in Ontario, to promote and cultivate the study and taste for that art, and for special training in designing, modelling, carving, and working in metals. It is the intention to hold exhibitions and offer prizes for statuary, and to promote the establishment of a gallery. The president is Mr. L. R. O'Brien, R.C.A., a well-known artist, the director of arts, Mr. Hamilton MacCarthy, R.C.A., the equally well-known sculptor, and Mr. James Van Sommer is the secretary. The studios and offices are at Toronto.

Mr. A. B. M'Donald, the city engineer of Glasgow, has reported on the proposed extension of the fruit market. The work would involve the appropriation of the police office and the adjoining lane, of part of south Albion-street, and of property fronting South Albion, Bell, and Wall-streets, and belonging to the Improvement Trustees. The whole surface thus to be absorbed measures 4,638 square yards. The total expenditnre Mr. M'Donald estimates at £59,000, including £15,800 for the proposed new buildings.

The controller of accounts to the Liverpool Corporation reports with regard to the income and expenditure of the Juvenal dwellings in Cazneau-street in that city, that the net income last year was £551 2s. 5d., and the interest realised was at the rate of £3 8s. 2d. per cent.

On Wednesday week a new Wesleyan chapel and Sunday-schools were opened at South Moor, near Chester-le-Street. The buildings have been erected from designs of Mr. J. W. Thompson, architect, Newcastle. Accommodation is provided for 300 children in the schoolroom, and a similar number of adults can be seated in the chapel. The cost of the structure has been £1,500.

At Cupar, Sheriff Mackay held an inquiry last week, under the Burgh Police Act, in connection with an application by the Water Commissioners of the burgh for a provisional order to authorise an increased supply of water to the Fife and Kinross District Asylum and other purposes, and the borrowing of £7,000 for this object. Provost Macqueen shortly explained the necessity for the increased supply, and the arrangements made with the Fife and Kinross Lunacy Board and with the proprietor of Wemyss Hall, and Mr. H. Bruce, Cupar, produced plans of the proposed works.

Mr. H. Percy Boulnois, the municipal engineer of Liverpool, delivered a lecture to the members of the Engineering Society, at the University College in that city, on "Municipal Engineering as a Profession." Mr. S. Dunkerly, M.Sc. (vice-president), occupied the chair. Mr. Boulnois pointed out the best course to be pursued by young men desirous of entering the profession, and explained the many branches of the work which it would be their duty to perform. He described the salaries of municipal engineers as utterly inadequate, but added that the occupation was one of deep interest, which cultivated keenness of observation and knowledge of a wide range of subjects. He described the methods upon which leading engineers of the present day had based their success in the profession and gave some valuable hints to aspirants.

COMPETITIONS.

Coventry.—At the meeting of the city council, held on September 24th, it was decided to refer the plans for the new municpial buildings by Messrs. Quick, Brewill, Baily, and Mallows, to which the first premium was awarded in the recent competition, to a joint committee, with instructions to "report as to the steps to be taken to provide police buildings, and generally." Since that time the joint committee, under pressure from the Home Office, have been engaged upon the question of bringing the scheme into practical shape. As at first arranged it was found that to carry out the police portion of the scheme would involve the erection of about three-fourths of the whole proposed new municipal buildings. With a view to obtaining the necessary police accommodation at less expense, a sub-committee was delegated to confer with Mr. Harry Quick, the architect, and as a result a rearrangement of the plans has been made by which police accommodation may be provided, at a cost of about £8,000, upon the site of the present police-station.

Hyde.—The Technical Instruction Committee of the borough of Hyde, Cheshire, has recently decided a limited competition in designs for a new technical school and free library. Five architects were invited to send in designs for competition, and those submitted by Messrs. Woodhouse and Willoughby, 100, King-street, Manchester, were successful. The committee opened a public exhibition of the plans in the town-hall on Monday, and it will remain open for one week.

CHIPS.

The city council of Bristol decided on Tuesday to pave certain main thoroughfares with wood, at an estimated cost of £31,000.

The New Shoreham board schools, Sussex, are being warmed and ventilated by means of Shorland's patent Manchester grates, the same being supplied by Messrs. E. H. Shorland and Brother, of Manchester.

Cynfaen Wesleyan Memorial Chapel at Calcot, near Holywell, has been struck by lightning, and wrecked. The chapel was of stone, solidly built, and was opened six years ago. The disaster is attributed to an iron cross on the principal gable.

On Monday, a stained-glass window in memory of the late Bishop of Bath and Wells (Lord Arthur Hervey) was unveiled in the parish church of Ansford, Somerset. The window has two lights, representing St. Andrew, the patron saint of the cathedral and the church, and Bishop Ken.

The first of a course of six Rhind lectures in archæology was delivered on Tuesday at Edinburgh in the Scottish National Portrait Gallery by Mr. Arthur J. Evans, M.A., F.S.A., keeper of the Ashmolean Museum and Hon. Fellow of Brasenose College, Oxford. The subject of the course is, "The Origins of Celtic Art."

A service has been held in Upton-on-Severn parish church, to dedicate a new reredos. The background is of Painswick stone, and the sculpture is of white alabaster. The figures in the central panel represent our Lord and the two Disciples at Emmaus; and in the panels on either side are figures of St. Peter and St. Paul, the patron saints of the church. The reredos has been designed by Sir A. W. Blomfield, A.R.A.

The parish cross at Lambourn, which for many centuries has stood in the market-place of this little Berkshire town, has just been restored. The Calvary of seven steps of stone has been taken down, and, after repair, has been replaced, new stone being only inserted where the old was too shattered and broken to be used again. Upon the ancient shaft there was remaining some small portion of the foundation of the Cross; after a study of these remains, the architect, Mr. E. Doran-Webb, of Salisbury, drew a plan which, as near as can be, is a reproduction of the ancient work. Upon the western face is the crucifix, with St. Mary and St. John on either side of the Cross, and upon the eastern face is shown the seated figure of the Blessed Virgin Mary with the Holy Child. At the north end, under a canopy, is the figure of a saint, of which the larger part is original, the head only having been added in completion. At the south end the figure of St. Michael has been placed under a similar canopy. The whole is surmounted by finials and a capital.

The annual report on the working of the Ceylon railways for 1894 has only just been published. The capital expenditure on the railways amounts now to a total of 53,109,981 rupees against 50,759,624 rupees at the close of 1893. The total miles of railway now open aggregate $270\frac{1}{2}$ miles against $231\frac{1}{2}$ miles at the close of 1893.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to The Strand Newspaper Company, Limited.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front-page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No Front-page or Paragraph Advertisement inserted for less than 5s.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page Advertisements and alterations in serial advertisements must reach the office by Tuesday morning to secure insertion.

Situations.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., LI., LIII., LIV., LVIII., LIX., LX., LXI., LXII., LXIII., LXIV., and LXV. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Received.—E. R. Barker.—S. African.—R. W.—B. B. S. (Leamington).—L. B. and Co.

"BUILDING NEWS" DESIGNING CLUB.

THIRD LIST OF SUBJECTS.

C.—A Small Town Church in a workmen's neighbourhood, to be built on a corner site, with the angle towards the S.E., the total length being 140ft., and the width 52ft.; the east and south walls of the church to follow the frontage lines, which are square. Light can be had above the houses on the west and north sides. The sills of the west windows (which are optional) may be 25ft. from the floor, and those to the windows on the north side may be not less than 20ft. from the ground. The relative proportions of the nave to chancel are left to the designers, who will do well to refer to our reviews of previous church designs submitted in connection with our Designing Club, published in the Building News for Feb. 22, 1889, Feb. 20, 1891, April 28, 1893, and Dec. 7, 1894. This reference is not to copy the plans therein described, but to gather in a general way the leading points necessary to observe in planning churches for worship, and adapted to the ritual of the English Church as now in use. The sanctuary or altar-platform is to be 3ft. 6in. above the nave-floor; but the position of the seven steps is left to the designer. The vestry is to be on the south side of the building (and towards the western end of the church a baptistery chapel is suggested, about 40ft. long by 15ft. wide, with an altar in it adapted to week-day and early celebrations. This chapel, if introduced, should be so located as to be easily entered from the church without exposing the users to draughts from, or noises at, the main entrance to the building. It would be open to the church, so that the font and baptismal service may be readily seen from the nave). The organ is to open into the choir, and the pulpit is to be on the north side of chancel arch. The seating to be shown on the plan, and the accommodation given in a table. A passage-way for the use of communicants returning from the Sacrament would be an advantage. The church is to be inexpensive, but dignified in treatment, and red brick and stone to be used both inside and out. Roofs in timber, covered with slates. There is to be no tower or spire; but accommodation is required for three bells, one to be used for the sanctus, though hung with the others. Plans and section may be to 1-16in. to the foot; other drawings, $\frac{1}{8}$th scale. A sketch-view is desirable.

Drawings Received.—"Veller," "B" in a circle, "La Cigale," "Tadpole," "Sanitas," "Thistle," "Canary."

Correspondence.

LIABILITY OF CLIENTS.

To the Editor of the Building News.

Sir,—What does the decision of the County Court Judge teach us? That an architect (who has possibly had a large premium paid for him, given, say, five years as a pupil and some years to practical education in building construction) may get hold of a client who only wants to "suck his brains" for nothing—in other words, if a man wants a good, practical plan of a house or practical information which he doesn't possess, he has only to go to an architect and get all the information, &c., he wants, and then abandon his project. But what is to prevent him from carrying out the work in a modified form or making use of the information gained? And then, unless certain technicalities in the law are complied with, the architect, it seems, has no remedy. Now, what is an architect's "stock-in-trade"?—his time combined with practical experience; nothing more. He has no commodity to offer, except his brains, and if he is employed upon bogus plans, how is he to live?

In my opinion, if a man employs an architect, and he afterwards abandons his project, he should at least pay him, say, "daily wage"—that is, a fair price for the time occupied in his service. This should be common law.

I hope these few remarks may elicit opinions from some other of your architectural correspondents, and may lead to a means of making clients liable.—I am, &c.,

Winchester, Dec. 7. T. MICKLAM.

STRESSES IN ROOF-TRUSSES.

SIR,—Following Mr. J. C. Palmer's article in the BUILDING NEWS, on Stresses in a Collar-Beam Roof-Truss, of which you say no method has been published for satisfactorily dealing therewith, there is also another point that I have not seen satisfactorily determined for a collar-beam truss—viz., the direction of pressure of such truss upon the wall below. Professor Rankine, in his "Manual of Engineering," gives two examples, in which he says the line of resistance is the dotted line A D (Fig. 1). Again for a semicircular truss, he says (Fig. 2) B E is the line of resistance, E being midway between A and D. But no general rule appears to be given for any or all forms of a collar-beam truss. I venture to suggest that a line upon this in the BUILDING NEWS would be very useful.—I am, &c., J. WYNNE.

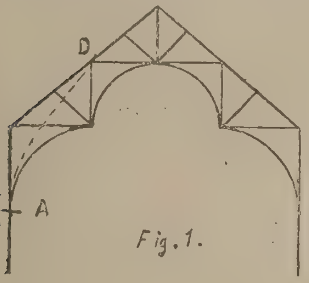


Fig. 1.

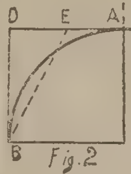


Fig. 2

2, Cooper-street, Manchester, Nov. 23.

PROPOSED N.U. OF ARCHITECTS.

SIR,—That the time has long been ripe for the formation of such a union is an admitted fact, and the thanks of all well-wishers of the profession are due to Mr. Ord for his able and manly advocacy.

During the last few years especially I have noticed a very marked tendency on the part of the public generally, and on the part of the builders particularly, to point the finger of scorn at members of this ancient and honourable profession. On many occasions I have written to various papers in defence of our rights, and appealed to the proverbial fair-play which marks the Englishman, with very little good result. My co-professionals have held aloof, and to that indifference shown by the selfish ones of this world must be assigned the present unstable condition of matters architectural.—I am, &c.,

S. HENRY EACHUS.

Bank Buildings, Lichfield-street, Wolverhampton, Dec. 10.

A CORRECTION.

SIR,—Allow me to correct a misstatement in your issue of Nov. 29, that a new church on Lundy Island is being built from the designs of Mr. C. Pinn, sen., of Exeter. That gentleman acted only as quantity-surveyor to the contractors, who are erecting the church from the designs of yours, &c., JOHN NORTON, architect.

95, Ridgmount-gardens, W.C., Dec. 7.

◆

The corporation of Wolverhampton have obtained the sanction of the Local Government Board for borrowing £5,000 for purposes of electric-lighting.

Intercommunication.

QUESTIONS.

[11464.]—**Rattling Slates.**—I have a mill in an exposed and bleak position, the slates of which rattle. Can anyone tell me the best way to prevent same?—SULPHURLANDER.

[11465.]—**Cold-Air Store.**—What are the requirements of same, and the points to be specially observed in building these? Should they be provided with windows or not?—X. Y. Z.

REPLIES.

[11460.]—**Dormitories.**—In reply to my namesake's inquiry, in all well arranged buildings, dormitories should contain 1,000c.ft. per head. The Local Government Board require 360c.ft. in Poor Law dormitories for both children and adults; but this space is very moderate to what high authorities usually require, and is fixed at the smallest possible minimum, on the supposition that constant and good ventilation is provided. The Education Department do not give any definite regulations on the point in their by-laws respecting public and elementary schools. It must be understood that the less the air space, the more necessity there is for increased ventilation. At the same time, if the air is changed too rapidly, draught and inconvenience will be experienced: hence the desirability of the larger space. Further information will be found in Hurst's handbook, under the heading of "Ventilation."—C. H. CHANNON.

CHIPS.

A new board school at Newhall, Sheffield, has just been opened. It accommodates 720 children, and cost £10,300. It is Renaissance in style, and has a central hall, 86ft. by 36ft., surrounded by ten classrooms. Messrs. Holmes and Watson, of St. James's-road, Sheffield, were the architects, and Mr. S. W. Pattinson, of Ruskington, was the contractor.

The directors of the South-Eastern Railway Company have decided to expend about £20,000 in the enlargement of their carriage building works at Ashford, Kent.

The United Presbyterian Church, Helensburgh, was reopened on Sunday after alterations, renovation, and painting had been carried out at a cost of £500.

At the last meeting of the Margate Town Council a long discussion took place upon a report submitted by the Waterworks Committee. It was agreed to employ an expert in testing the sources of water supply, with a view to extending the works at an estimated cost of about £30,000.

Under the will of the late Mr. James Cowan, of Glengorm, paper-maker, and formerly M.P. for Edinburgh, sums of £500 each are left to Elizabeth, wife of Campbell Douglas, of Glasgow, architect, and Katherine, wife of John MacWhirter, R.A., nieces of the testator.

A special service was held in Farsley Church on Thursday in last week, when the new tower erected to the church in place of the original tower, which it was found necessary to pull down, was dedicated by Archdeacon Bardsley. The cost of the new tower has been about £550.

The reopening of the nave of Erdington parish church, after reseating and the creation of a centre aisle, took place on Sunday. The old high-back pews have been replaced by open seats of pitch-pine, and a pitch-pine screen has been erected at the west end. The work has cost about £360.

Two stained-glass windows are about to be placed by subscription in Selwyn College Chapel, Cambridge, to commemorate the episcopate of Bishop Augustus Selwyn. The windows will be the work of Mr. C. E. Kempe, and the cost of each is estimated at £150.

A party of convicts, in cutting a trench in a field near Borstal Prison, Rochester, came upon three Roman interments 4ft. below the surface. The skeletons lay in line from 6ft. to 8ft. apart, in cists excavated in the chalk. These cists were 7ft. in length, and about 3ft. in width. With the skeletons were found two small vases of brown pottery, and a pattern of black ware. The bodies had been protected by slabs of wood, fastened together in one instance by iron nails. Mr. George Payne, F.S.A., secretary to the Kent Archæological Society, has made a survey of the discoveries.

On Thursday in last week the reopening took place of the chancel of Lowdham Church, Notts, which has been undergoing structural renovation. The work of restoration was rendered necessary owing to the lack of foundations and the action of the damp. Earl Manvers undertook to rebuild a great part of the chancel, and to make provision for drainage. All the eastern portion of the walls has been rebuilt on strong foundations and with the addition of buttresses. Round this portion a dry area has been laid down; and battlements have been added to the roof. The old three-light east window, which was unworthy of the church, has now been replaced by a four-light window.

Legal.

NUISANCE ON VACANT LAND.

THE value of house property and building land may be, and often is, greatly affected by the use made of plots or pieces of vacant land adjoining or in the neighbourhood. In many places, and sometimes even in rising residential suburbs, there are such vacant lands, and if these are let out so as to become a nuisance the effect upon rentals round about is likely to be serious. It is not uncommon for the owners of these waste places, while waiting for someone to build upon them, to let them out for fairs or circuses, or the like, and it is a most troublesome thing for the adjoining occupiers to get this nuisance stopped, In a recent and most interesting case (*Times*, Dec. 4), the Heston and Isleworth Urban District Council brought an action against one Stone, who was the owner of a piece of land adjoining the Kingsley-road, Hounslow, for an injunction to prevent the defendant from letting this place be used as a sort of gipsy encampment. It appeared that since early in 1894 the defendant had been allowing gipsies to keep their vans and tents upon the land for a certain weekly payment, in such a way as, by reason of the insanitary state of the land, absence of proper drainage, overcrowding, noise, dirt, and untidiness, to be a nuisance to the inhabitants in the neighbourhood, and injurious to health. The evidence was, as usual, very conflicting, the defendant, who doubtless made a good thing of the business, calling numerous witnesses, and especially the gipsies themselves, to swear to the sanitary state of the place and its order and cleanliness.

But Mr. Justice Romer, after weighing all the evidence, came to the conclusion that a nuisance had been established. Indeed, the testimony of these dwellers in vans and tents in the open air as to what is a sanitary state of things and what is meant by cleanliness would obviously be unreliable. For, without charging them with giving false evidence, it is clear that these questions are really matters of degree and proportion, and that their savage standard of life would give them no experience of what we nowadays mean by sanitation. The perpetual injunction was therefore granted, and these people will have to go farther away from suburban dwellings to pitch their gipsy encampment.

FRED. WETHERFIELD, Solicitor.

1, Gresham Buildings, Guildhall, E.C.

NOTE.—All questions for reply in this column must be headed "BUILDING NEWS," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

ARCHITECT.—DRAWINGS.—OWNER.—The client can claim the plans when he has paid for them, either by the commission usually chargeable or so much for the work done.

◆

A new porch is to be erected at the Whitby Chapel entrance to Hawarden Church by Mr. Henry Neville Gladstone. It will be in keeping with the style of the other porch, but a niche will be left above the door for one or two figures.

A Local Government Board inquiry was held by Major-General Crozier at the Audit House, Southampton, on Wednesday, as to an application from the corporation to borrow £6,000 for purposes of water supply.

The fourteenth annual general meeting of the West of Scotland Sanitary Association was held on Friday in the Religious Institution Rooms, Glasgow, Mr. R. Easton Aitken in the chair. Mr. W. R. M. Church, C.A., secretary, submitted the report, which recorded that 461 houses had been examined, and 681 inspections made, during the year. The year's expenditure had exceeded income by about £36, and the balance at credit of the society was accordingly reduced to £135. Office-bearers were afterwards appointed, Lord Provost Sir James Bell being elected president.

A cottage hospital has been built in Bank-street, Trowbridge, from plans by Mr. E. Gunstone. It is faced with Atworth stone with Westwood stone dressings. Messrs. Bigwood and Co. were the contractors.

As a memorial of the forty years' service of the Rev. Canon Eldon Bankes, rector of Corfe Castle, new schools have been erected in the parish by public subscription. The builders were Messrs. Chinchin, of Bournemouth, and the architect was Mr. W. J. Fletcher, of Wimborne. The opening ceremony was performed last week by the Bishop of Salisbury.

LEGAL INTELLIGENCE.

An Edinburgh Arbitration. — The second reference case in connection with the acquirement of the two end tenements in North Bridge-street, Edinburgh, necessary for the abutments of the new bridge, was begun on Saturday in the Clarendon Hotel, and has continued throughout the current week. Some weeks ago a four days' proof was led in connection with Messrs. Marshall and Aitken's property, and the proof commenced on Saturday is in connection with the property on the east side belonging to the trustees of the late Mr. James M'Intosh. The claim is for £9,750, and the arbiters are Mr. John Blair, W.S., for the city, and Mr. James Watherston, builder, for the claimants; with Mr. Alexander Ure, M.P., as oversman, and Mr. John Shaw, S S.C., as a clerk to the reference. The claimants' case is supported by the following skilled witnesses:—Mr. W. W. Robertson, of H.M. Board of Works, Master of the Merchant Company; Mr. T. P. Marwick, architect; Mr. Peter Lawrence, surveyor; and others. The witnesses on behalf of the corporation are Mr. W. Hamilton Beattie, architect; Mr. Halden Beattie, builder; Mr. W. Ormiston, surveyor; Mr. James Barr, C.E., Glasgow; and others. The decisions in these two cases will have an important bearing on the prices to be paid for the properties situated between these tenements and the High-street, which will be acquired by the corporation for the widening of the street.

Paving Apportionments.—At Lambeth Police-court, Mr. Hopkins heard, on Tuesday, an adjourned summons taken out by the Lambeth Vestry against the London County Council, as owners of land on the north side of Peckham-Rye Park, to recover £365 11s. 8d., being paving charges alleged to be due from the Council in respect of the paving of Colyton-road. It appeared from the evidence on behalf of the Vestry that a portion of Peckham-Rye Park abuts upon a thoroughfare called Coylton-road, which has been taken over by the Vestry under the powers vested in them by the Metropolis Local Management Act. The cost of paving the road was apportioned among the various owners by the vestry, and a demand was made upon the Council for £365 11s. 8d. as their contribution towards the expenses. Mr. Innes contended that the Council had so dealt with portions of the park as to make them beneficial owners within the meaning of the Act. For the defence, Mr. Avory took the objection that no demand, apart from the notice of apportionment, had been made upon the Council, and contended that the Council were not beneficial owners. Mr. Hopkins said he would take time to consider his judgment.

Warwickshire Railway Arbitration Awards.—Mr. Daniel Watney, the president of the Surveyors' Institution, has issued his award in the cases recently heard before him in London as to claims against the Manchester, Sheffield, and Lincolnshire Railway Company for compensation for land on Lady Hood's estate and for the vicarage of Wolfhamcote (nine miles from Rugby and four from Daventry). In the first case Lady Hood's trustees claimed £7,000 for injury to about 600 acres in the parish of Wolfhamcote, pasture and grazing land, and for 24a. 1r. 28½p. which were actually required for the line. Mr. Elwell, chief surveyor of the Great Northern Railway Company, and consulting surveyor to the War Office, and Mr. Denston Gibson (Messrs. Chesshire, Gibson, Fowler, and Wharton, 98, New-street, Birmingham) were the principal witnesses for the claimants; Mr. Arthur Vernon, High Wycombe, and Mr. Garrard, 8, Frederick's-place, City, were the leading witnesses for the company, and their valuations were about £3,000. The umpire awards Lady Hood the sum of £3,847. In the second case the company were compelled to take the whole of the vicarage and grounds at Wolfhamcote, of which they actually required only twenty perches. The same experts were engaged on the respective sides, and their valuations were (for the claimants) about £1,850, and (for the railway company) £1,050. The award is for the sum of £1,277.

◆

Three new operating-rooms are about to be added to the Western Infirmary at Glasgow, from plans by Mr. J. J. Burnet, A.R.I.B.A., of that city, who, in conjunction with Dr. Macintosh, the medical superintendent of the infirmary, has been visiting the principal Continental operating theatres. The proposed outlay is about £10,000.

The town council of Ipswich decided at their last meeting to purchase another portion of Christchurch Park, consisting of 1,307 rods, lying between the part of the grounds already acquired and Westerfield-road. The cost to the corporation of this, the third section bought, will be £4,750, another £1,000 having been raised by subscription. The town council has already paid £25,000 for the centre of the ground, besides £9,100 subscribed, and the outer ring of land is being built on, whereas in the first instance the entire area was offered for £35,000.

WATER SUPPLY AND SANITARY MATTERS.

Leek.—At Leek, on Friday, Mr. W. J. Bird Clerke, M.Inst.C E, held an inquiry into an application made by the urban district council to the Local Government Board for sanction to borrow £1,100 for works of sewage disposal, and £1,000 to be used in extending and improving the town baths, and also for an extension of the period allowed by the Local Government Board for the repayment of a loan of £1,631, sanctioned in July last, for the purchase of land for allotment purposes. Mr. E. W. Ives, C.E, and Mr. John Wollatt (secretary) represented the Universal Sewage Purification Company (Derby), and the clerk to the urban council stated that that authority had entered into a provisional agreement with the Universal Sewage Purification Company, of Derby, for the erection of an "Ives" tank capable of treating 400,000gal. of sewage per twenty-four hours. The tank was proposed to be used for the south drainage district. Evidence was also given by Mr. Myatt, the surveyor, as to the sewage works and the public baths.

◆

CHIPS.

New schools are about to be built for the East Barnet School Board in the Brunswick Park district, from designs by Mr. W. Pywell.

The December address of Mr. F. Chandler, of Manchester, the secretary of the Amalgamated Society of Carpenters and Joiners, opens with the cheering observation: "It is exceedingly satisfactory to note that in the closing months of the present year trade continues exceptionally good, the percentage of unemployed comparing most favourably with the corresponding period of 1894, when we had at least double the number out of employment."

Mr. W. North, of Gottisham, has been elected highway surveyor to the rural district council of Honiton.

The memorial-stone was laid on Thursday in last week of a chapel which is being added to the workhouse buildings at Elham, near Folkestone, and at the same time the new infirmary was formally opened. Mr. J. Gardner, of Folkestone, is the architect for both buildings, and Messrs. Wallis and Sons, of Maidstone, are the contractors.

At the Manchester Assizes, on the 5th inst., a jury awarded £240 damages to the Manchester Brewery Company, Limited, the owners of some property at Oldham which was partially demolished by the fall of a wall at the old Phœnix Mill during a gale on the 11th February, 1894. The mill had been burned, and the wall which was blown down had, the plaintiffs alleged, been left insecure by the owners.

A town's meeting held at Weston-super-Mare has approved a scheme formulated by the district council, providing for the construction of marine lakes, a low-water pier, and other improvements, at an estimated cost of £128,000.

The schools attached to Crown-street Congregational Chapel, Ipswich, were reopened on Thursday, the 5th inst., after having been reconstructed and enlarged at a cost of £1,230. Mr. Frank Brown, Tower-street, Ipswich, was the architect, and Messrs. Thos. Parkington and Son, of the same town, were the builders.

The city council of Hereford have voted Mr. Parker, the city surveyor, an honorium of £50 for extra services in relaying the water-mains.

An Imperial edict was issued at Pekin, on Sunday, ordering the construction of a double line of railway, 72 miles in length, between Pekin and Tientsin. The cost of the undertaking is estimated at 3,000,000 taels, and the weight of the rails will be 85lb. per yard.

The Monmouth town council have received a letter from the Local Government Board consenting to grant powers to the corporation to borrow £20,000 for the purpose of carrying out the combined scheme of drainage and electric light for public and private lighting in the borough.

The new post-office at Southwold was opened for business last week. Mr. Robert Allen, of that borough, was the builder.

A special committee of the town council of Portsmouth is considering the question of the advisability of purchasing the undertaking of the local water company. The latter ask £1,000,030 for the works, of which £14,000 is allotted as compensation for the directors and officials, including £3,800 for the consulting engineer.

Mr. J. L. D. Meares, C.E., town surveyor of Newry, has, on the recommendation of the Lord Lieutenant, been appointed a magistrate for County Armagh.

The Liverpool Corporation are building a new free library at Everton from the designs of the city architect, Mr. Thos. Shelmerdine. Messrs. Paterson and Son are the builders, and the floors are fireproof, on the "Mark Fawcett" system.

Our Office Table.

Mr. E. J. Poynter, R.A., writes to the *Times*, pointing out that the banqueting house or orangery in Kensington Garden, "a masterpiece of proportion and of picturesque originality," one of the works of Christopher Wren, has for years been used as a potting-shed, and is being injured by neglect. The platform of Portland stone on which it is raised, as carefully studied as to its mouldings and proportions as the rest of the exterior, is, Mr. Poynter says, falling out of repair, and its stones are becoming disjointed and damaged under rough usage. Externally the other architectural features of the building are in good preservation, but the condition of the roof is doubtful. The internal decorations are of the highest beauty, in the rich but purely Classical taste of the time, and of the best work. At each end of the long banqueting-room is a rotunda, panelled and adorned with Corinthian columns, and cornices with elaborately enriched mouldings all in carved wood, executed in the finest taste and at great cost. The principal room was decorated in the same rich way; but a large extent of the panelling, with its carved mouldings, has been torn down from the back wall for the more convenient placing of rows of rough shelves to hold the ranges of flower-pots kept there during the winter. Mr. Poynter pleads for the preservation of this unique example of Wren's work, and makes the apposite suggestion that it might be utilised as a small museum of objects of historic interest, illustrating the record of the old Court suburb.

A general photographic survey of England and Wales is projected on the lines of the one successfully carried out in Warwickshire during the past few years, in connection with the Birmingham and Midland Institute. Such surveys have since been carried on by the Royal Society of Antiquaries of Ireland, and by various English societies. The larger scheme is being initiated by a congress of archæological societies in union with the Society of Antiquaries, and Mr. Ralph Nevill, F.S.A., F.R.I.B.A., has accepted the office of honorary secretary. The Archæological Congress have drawn up a code of suggestions, and will use their representative position to promote the general adoption of county surveys. Now that there are so many workers in the field of photography, it is thought that they will be thankful for some directions that may enable them to join in a general scheme for obtaining so important a survey of the kingdom. Mr. Nevill will send copies of the report to such photographic societies and clubs as may wish to have them and to individuals on receipt of 1d. for postage.

Property owners and those intrusted with the management of property will be interested to learn that the representations recently made to the Lord Chancellor by the council of the Auctioneers' Institute of the United Kingdom with reference to the proposed new rules under the Law of Distress (Amendment) Act, 1895, have been adopted by his lordship. The rule making it obligatory upon a bailiff to get his general certificate endorsed by the Registrar of the County Court of the particular district in which the distraint has to be made, to which the greatest exception was taken by the council of the institute, has been completely expunged. The rules as finally revised will shortly come into operation.

The report of the committee appointed by the conservators of the Thames to consider the question of the Thames floods states that no legislation has imposed on the conservators the duty of dealing with floods, and that the funds provided by Parliament for the conservancy are not available for this object. But the conservators have, in the restoration and improvement of the navigation, so constructed the works as to afford greatly increased facilities for the escape of flood water. Since 1877 £33,000 has been spent in dredging operations above Staines and £18,500 between Staines and Teddington. The report points out that, while the conservators have gone to the limit of their powers to give effect to the views of the Select Committee of the House of Commons which dealt with the subject of Thames floods in 1877, the local authorities and inhabitants of the Thames Valley have taken no steps to carry out those of the committee's recommendations which concerned them. The committee suggest that the conservators should, in the future as in the past, direct their attention to carrying out works for the improvement of the navigation, which will concurrently relieve the valley from floods. They recommend that local authorities and landowners in the Thames Valley should apply to Parliament for powers to raise money, as already granted to the Thames Valley Drainage Commissioners for the district above Long Wittenham. The committee, however, point out that the only really effective plan for reducing the level of the more serious floods is by a systematic enlargement of the sectional area of river, by widening and deepening the channel.

The cable tramway on the Brixton high road has been extended from Telford - avenue to opposite the Tate Free Library at Streatham, an extension southwards of three-quarters of a mile, giving a continuous cable line from Kennington Church to the latter point, a distance of $3\frac{1}{2}$ miles. The formal inauguration took place on Saturday, but the extension had not, however, been brought into use, although passed by Major Marinden on behalf of the Board of Trade. The work has been carried out under the supervision of Mr. James More, engineer to the contractors, Messrs. Dick, Kerr, and Co., of Kilmarnock and Leadenhall-street, E.C., and has been carried out without stoppage of the cars, although the cable to Kennington has been replaced by a new one $3\frac{5}{8}$in. in circumference, made, like the one in the extension to Streatham, by Messrs. Wilkins, of Wapping.

Lord Kingsburgh gave a lecture on Monday night before the Royal Scottish Society of Arts, Edinburgh, on "Electricity in the Household." The chair was occupied by the president (Professor Armstrong). Lord Kingsburgh declared that electricity had come to stay. The development of its use was shown by the fact that in Edinburgh Professor Kennedy, the skilled adviser of the corporation, had laid his plans upon the footing that provision for 40,000 lamps would be amply sufficient for the next three years; but at the end of fifteen months the whole number of lamps was already taken up, and the corporation was engaged in a frantic effort to make the plant sufficient for the demands made upon it. Lord Kingsburgh pointed out that the three main uses of electricity in the household were lighting, heating, and mechanical power. In order that electricity in the dwelling-house might be satisfactory and economical, they must have a current flowing at a certain pressure, and the apparatus to be employed must be adapted to the pressure there was at a particular place. The first thing anyone putting electricity into his house should do was to divide up the sources of supply, after passing the meter, into one or two main branches. It was very important that the proper kind of wires were used, and he urged that the wire section should be large enough. They had to guard against any chance of contact between two wires in the same loop; and especially in the case of the wires carried under the plasterwork, it was a good thing to have them in two separate metal tubes several inches apart. Care should be taken, too, that the wires were not affected by damp, else there would be a loss of illuminating power. He recommended, further, that lamps should be employed which were intended to take a slightly lower pressure than the pressure supplied. His lordship proceeded to illustrate, by the use of apparatus and devices, how economy could be practised in the use of electric light. Comparing it with gas in the matter of cleanliness, he said that if gas had existed three hundred years ago the works of Raphael and the old masters would not have come down to us at all. While they could not speak very definitely as to the cost of domestic lighting by electricity, yet with reasonable economy, and taking into consideration its great advantages, it would be found that the expense was not seriously greater than the expense of gas.

It is proposed to hold an exhibition at the People's Palace, Mile End-road, in 1896, of the arts, trades, industries, and handicrafts existing in the eastern and other industrial districts of London. It will be an extension of the one held at the same institution during the summer of 1887. Of the proposed guarantee fund of £10,000, about £6,000 has already been raised. If any profits should accrue, they will be devoted to social and educational purposes in East London. The scheme will form five sections:—1. A representative exhibition of the industries of the east and other industrial centres of London. 2. An exhibition that shall encourage, by means of public competition, the arts and industries of individual craftsmen in London. A schedule of prizes will be provided for such exhibitors, in addition to certificates of merit. 3. An exhibition of the work of students at the People's Palace and other polytechnics, technical institutions, and public elementary schools of London generally, and of trade apprentices. 4. An historical loan exhibition, showing models of work manufactured in times past. 5. A display of appliances and products bearing upon the social and hygienic welfare of the population, supplemented by lectures.

"Artificial Paving Slabs" was the subject of a paper recently read before the Liverpool Engineering Society by Mr. Arthur Musker. Artificial stone originated, the lecturer remarked, with a Mr. Ranger, who, in 1832, patented a stone made of silicious material in combination with brick or stone, using as a matrix Dorking or other limes in their pure states, mixing the mass with hot water, and then forming it into blocks. In 1842, Mr. Buckwell patented a "Granitic Brescia" stone, using Portland cement as a matrix, and oolitic or magnesian limestone as an aggregate. Slabs of this material laid as pavement in 1845 were in good condition in 1879. The Ransome stone, using silicate of soda as the cementing material, was introduced about the same time. Mr. Highton's Victoria stone was the next in order. This was made of pulverised granite mixed with Portland cement. The concrete thus produced is steeped in a solution of sodium silicate. The granite used must be clean, and to insure this it is thoroughly washed before incorporation with the cement. The usual method of manufacture has been to thoroughly mix the materials, first dry and then wet, as little water as possible being added, in the proportion of three parts of the granite powdered to pass a $\frac{3}{16}$in. mesh to one part of Portland cement. The concrete is then filled into the mould and carefully trowelled. Here it remains a few days, when the slab is removed to mature, which takes about 12 months. Some makers steep the slabs, before being put away to mature, in a solution of sodium silicate for 10 or 14 days. Machinery has been largely used of late years, powerful hydraulic presses being used to compress the concrete into the moulds.

It has been already mentioned that the piece of land which is situated at the bottom of the Haymarket is at last to be covered with a block of buildings. The Opera House itself, of which Mr. Walter Emden, M S.A., is the architect, will occupy almost exactly the same area of ground which the former "Her Majesty's" covered. Its chief entrance will be in Charles-street, on the north side of the building, which has the advantage of not being a thoroughfare. The stalls and grand tier will be reached by marble staircases leading from an entrance-hall of magnificent proportions. The boxes are to be constructed in such a manner that, while maintaining the privacy which is so great a comfort, it will be possible to obtain an improved view of the stage from every seat. The Royal entrance will be in the Haymarket, where also will be additional entrances and exits to all parts of the theatre, which will have their counterparts on the other side, as well as in the existing Opera Arcade, making a total of no less than fourteen besides the grand entrance. It is calculated that by these provisions the entire house will, if necessity should arise, be capable of being emptied without pressure in less than three minutes. Shops will have their place in the Haymarket and Pall Mall, as well as in the Opera Arcade on both sides of the existing thoroughfare, and also in the new Arcade running across the building between the Haymarket and the present Arcade. The remaining portions of the buildings will be occupied by a restaurant of a high class, and by chambers for offices and other purposes. Arrangements have also been made to provide the necessary rooms for a club, should they be required.

The following lecture arrangements have been made for the Royal Institution before Easter:—Prof. J. G. M'Kendrick (six lectures adapted to a juvenile auditory), on "Sound, Hearing, and Speech" (experimentally illustrated); Prof. C. Stewart, eleven lectures on "The External Covering of Plants and Animals: its Structure and Functions"; the Rev. Philip H. Wicksteed, four lectures on "Dante"; Prof. H. Marshall Ward, three lectures on "Some Aspects of Modern Botany"; the Rev. William Barry, D.D., four lectures, "Masters of Modern Thought—Voltaire, Rousseau, Goethe, and Spinoza"; Prof. C. Hubert H. Parry, three lectures on "Realism and Idealism in Musical Art" (with musical illustrations); Lord Rayleigh, six lectures on "Light." The Friday evening meetings will begin on January 17, when a discourse will be given by Lord Rayleigh on "More about Argon"; succeeding discourses will probably be given by Prof. Burdon Sanderson, Mr. W. S. Lilly, Dr. John Murray, Mr. J. J. Armistead, Dr. Edward Frankland, Mr. A. R. Binnie, Mr. Sidney Lee, Prof. T. R. Fraser, Prof. Dewar, and others.

CHIPS.

The parish church of Llandrindod Wells is undergoing enlargement and restoration. The work has been undertaken by Mr. Robert E. Davies, builder, of that town, at £1,200.

Mr. Andrew Carnegie has offered to pay the half of the purchase price and the cost of the reconstruction of Leyden's cottage, on condition that the people of Denholm adopt the Free Libraries Act, and make the cottage their library and museum.

In the case of George Veale Colliver, of Dornton-road, Balham, S.W., builder and contractor, the discharge from bankruptcy has been suspended for two years ending Nov. 7, 1897.

A new infants' school, erected in Bull-lane by the West Bromwich School Board, was opened on the 5th inst. The school will accommodate 298 children, the cost of building was £2,313, the site, furnishing, and other expenses bringing the expenditure up to £3,167. The school has been erected by Mr. C. A. Horton, builder, Brierley Hill, under the supervision of Mr. A. Long, architect.

The United Presbyterian Church, Loanends, Templepatrick, N.B, has been rebuilt and enlarged at a cost of £800. Opening services were conducted on Sunday.

At a general meeting of the Empire Palace, Sheffield, it was stated the cost of the scheme had been nearly £50,000.

All Saints' Church, Barlby, near Selby, which was reopened last week, has been restored at a cost of £900, from plans by Mr. C. Hodgson Fowler, F.S.A., of Durham. Mr. F. S. Ullathorne, of Selby, was the contractor.

Additional accommodation has just been provided for patients at the County Asylum, Prestwich, Lancashire. The floors have been laid with wood blocks upon Roger Lowe's system, of Farnworth, near Bolton.

What was formerly Junction-street Hall, Leith, was opened on December 5th as a church for the Ebenezer United Presbyterian congregation, for whom the interior has been reconstructed. A new platform has been constructed, with the pulpit in the centre, at the south end of the church, with accommodation in front for the choir. Galleries have been carried along both sides, and the entire building now has sitting accommodation for about 800 persons, the seats being made of pitch-pine. The building has been repainted and redecorated. A hall for mission purposes has been constructed at the back for 200 persons. The architect was Mr. W. N. Thomson, Leith.

The Belgian Government has let the contract for the construction of a ship canal, six miles in length, from Heyst to Bruges, making the latter a seaport, to Messrs. Coiscau and Cousin, contractors. The total cost of the work will be £1,560,000, towards which the State contributes £1,080,000 for the port at Heyst, while £200,000 will be paid by Bruges.

The Bishop of St. Alban's unveiled, in St. Alban's Cathedral, on Monday, a memorial to the late Bishop Blomfield, first suffragan of the diocese. The memorial, which takes the form of a sarcophagus of Caen stone, with richly-carved traceried panels, ornamented with statuettes of the four Evangelists, stands close to that recently erected to the late Bishop Claughton. The work was executed from a design by Sir Arthur W. Blomfield, A.R.A., brother of the late bishop.

The Prince of Wales presided on Monday night at a dinner of past and present members of Trinity College, Cambridge, held at the Hôtel Métropole, to celebrate the completion of the buildings of the Trinity College Mission, Camberwell. The buildings have been erected in two sections, from plans by Sir A. W. Blomfield, A.R A., at a total cost of £12,000. Subscriptions promised during the evening amounted to four hundred pounds more than the £2,200 required to clear off the debt which had been incurred.

Mr. Thomas Gildard, for twenty-seven years an architect in the service of the Corporation of Glasgow, died on Friday at his residence in Berkeley-street in that city. Tall, and of striking appearance, Mr. Gildard was a well-known figure in the city, and was popular in artistic and literary circles. Born at Luss, Loch Lomond, in 1822, Mr. Gildard had entered upon his seventy-fourth year.

MEETINGS FOR THE ENSUING WEEK.

Monday.—Royal Institute of British Architects. "Græco-Phœnician Architecture in Cyprus," by Dr. Max Ohnefalsch Richter. 8 p.m.

Tuesday.—Society of Arts. "Jamaica," by Frank Cundall. 4.30 p.m.

Society of Architects. "A Year's Work under the London Building Act of 1894," by Ellis Marsland, hon. sec. St. James's Hall, Piccadilly. 8 p.m.

Institution of Civil Engineers. "Design and Testing of Centrifugal Fans," by H. Heenan and W. Gilbert. 8 p.m.

Glasgow Architectural Association. Lecture by J. A. Morris, F.R.I.B.A., of Ayr.

Wednesday.—Architectural Association. Combined Meeting of Discussion Section and Camera Club. "Holland House," by E. W. M. Wonnacott. 7 p.m.

Society of Arts. "Machines for Composing Letterpress Printing Surfaces," by John Southward. 8 p.m.

Northern Architectural Association. Evening meeting at Consett Iron Works. To meet at Consett Station 6.10 p.m.

Friday.—Architectural Association. "Leadwork," by C. Hill; and "Woodwork," by R. Rust. 7.30 p.m.

Carpenters' Company. Sanitary Examination. Carpenters' Hall. 5 p.m.

Saturday.—Carpenters' Company. Sanitary Examination. Carpenters' Hall. 2 p.m.

◆

The Society of Architects.

Founded 1884. Incorporated 1893.

The SECOND ORDINARY MEETING of the Society of Architects for the Session 1895-96 will be held at the Rooms of the Society, at St. James' Hall, Piccadilly, W., on TUESDAY, December 17th, at Eight o'clock p.m., when a Paper will be read by Mr. ELLIS MARSLAND, Honorary Secretary, entitled: "A YEAR'S WORK UNDER THE LONDON BUILDING ACT OF 1894."

MONTAGU BALDWIN, Acting Secretary.

◆

CHIPS.

The full tale of the loss caused by last winter's severe and prolonged frost is scarcely yet told. The directors of the Grand Junction Water Company report their losses by the frost at £20,559, besides an expenditure of £15,000 on lowering their mains. The consequence is that the dividend for the half-year comes out at the reduced rate of 6 per cent.

Mr. W. Banks Gwyther, A.R.I.B.A., of the Public Works Department, Calcutta, has been appointed examiner of the school of art in that city in succession to the late Mr. W. H. Jobbins, who was also the head master.

The casting of the great bell for the tower of St. Francis de Sales Church, Cincinnati, has been completed. It is claimed that it is the largest bell in the United States, and 15 tons of bell-metal were used in the casting. In addition to this, the clapper weighs 640lb. The main dimensions of the bell are: Diameter of the ring 9ft., diameter of the crown 5ft. It is 7ft. high. Swung in the tower, the bell is to cost £2,000 sterling.

An institute and working-men's club, which the Duke of Westminster has presented to the parish of St. Mary-without-the-Walls, at Handbridge, on the outskirts of Chester, has just been opened. The building contains an entrance-hall and staircase, 20ft. by 16ft., leading to two billiard-rooms. The upper floor consists of a large meeting-room, 48ft. by 24ft. The building is of red brick, with stone dressings and mullioned and transomed windows, the whole forming a free treatment of English Renaissance. The contractors were Messrs. Parker Bros., and the architects Messrs. T. M. Lockwood and Sons, of Chester.

Four tenders have been received by the Swanage Pier Company for the erection of a new pier at Swanage, the lowest being that of Messrs. Dixon and Thorn, of Cannon-street, London, and the next that of Messrs. Roe and Grace, Southampton.

A spire has been added to the Presbyterian chapel in Manchester-road, Rochdale. The old tower was 40ft. in height, and it has been carried up two additional stages, so that it is now 70ft. high. The spire rises to a further height of 56ft., its total height from the ground, therefore, being 126ft. Messrs. W. A. Peters and Sons, of Rochdale, have carried out the building operations from plans prepared by Messrs. Butterworth and Duncan. The cost of the addition has been about £1,000.

The town council of Glasgow discussed at their last meeting whether the proposed competition for decorating the walls of the banqueting hall at the Municipal Buildings should be thrown open or restricted to eight firms, as proposed by a committee. Eventually the committee's recommendation was adopted.

The decoration of St. Anne's Roman Catholic Cathedral, Leeds, described by us last week, p. 835, foot of first column, was carried out by Mr. Robert Hitch, and not, as therein stated, by his brother, Mr. Nathaniel Hitch.

At the Rochdale County Police-court, on Friday, the Whitworth Urban District Council was fined £50 and £5 costs for disobeying a river pollution order made in October, 1893, by polluting the river Spodden between June and November, 1895. The council was also ordered to have its sewerage works completed by the 31st August next.

At Knypersley Church, Staffs, a new organ was opened last week. The instrument is of three manuals and 26 stops. The fittings are of oak, and the front pipes of spotted metal. There are altogether 1,050 pipes, and the pedals are on the double-acting composition principle. Messrs. Steele and Keay, of Burslem, are the builders.

The new gas-holder at Plymouth was formally inaugurated on Thursday in last week. It is constructed entirely of Bessemer steel, is 150ft. in diameter and 155ft. in height from the base of the trench when full. The capacity of the holder when fully inflated is two million cubic feet of gas. The tank contains 2¾ million gallons of water. The gas is carried into the holder, and distributed from it in pipes of 3ft. internal diameter. The exposed position of the holder, being open to the full pressure of S.E. and S.W. gales, has necessitated the use of massive trellised steel guide-framing. This is composed of eighteen standards 125ft. in height, and 72 steel girders, each 30ft. long and 3ft. wide, the whole braced in all directions by steel wind-ties. There are 216 rollers and carriages which guide the vessel as it rises and falls. The tank and holder has been constructed by Messrs. Willey and Co., of St. Thomas, Exeter, from plans by Mr. John West, M.Inst.C.E.

A deputation representing all the district lunatic asylums in Ireland, with the exception of the Belfast and Londonderry Asylums, waited upon the Chief Secretary for Ireland at Dublin Castle on Friday, for the purpose of asking his assistance in obtaining a reduction of the rate of interest charged by the Treasury on loans for building purposes from 3½ per cent. to 2½ per cent., and also with the view of obtaining an increased capitation grant. The Chief Secretary, in reply, said that the rate of interest could not be reduced, for if it were the Treasury would lose 1 per cent. With regard to the capitation grant, that was a different question altogether, and he would not fail to present the views of the deputation to the Treasury in the most favourable light.

St. Mark's Church, Coventry, was reopened on Friday after renovation. The work was intrusted to Mr. Johnson, of Holyhead-road, Coventry, and included the colouring of the walls, and the painting of a dado, with a stencilled border, the design of Mr. H. Quick. The woodwork has also been painted. A new heating-apparatus has been provided, and at the east end within the altar rails the walls have been hung with painted canvas, supplied by Watts, of London, the designs, which are the work of Messrs. Bodley and Garner, being executed in green, blue, and gold. A hanging of velvet has also been placed there, and in front of the altar rails the tiles are covered with Axminster pile.

At Monday's meeting of the town council of Walsall it was reported that plans for extensions at the Pleck Gasworks, prepared by the gas manager, for which a loan of £50,000 had been applied for, had been ordered to be proceeded with; and that the town hall scheme and a proposal to buy a field adjacent to the baths in Lichfield-street, with a view to the erection of municipal buildings thereon at some future time, would both remain in abeyance for twelve months. The reports were adopted.

There was unveiled in East Bank United Presbyterian Church, Hawick, on Friday, a portrait of the Rev. Professor Orr, D.D., Edinburgh, the professor having formerly been minister of the congregation. The portrait is in oil, three-quarter length, and has been executed by Mr. Frank Wood, art master, Hawick.

The space on the north side of Henry VIII.'s Chapel, Westminster Abbey, and that adjoining the Chapter-house will soon be cleared for by order of H.M. Commissioners of Works, the entire block of eighteenth-century houses in Abingdon-street, long a source of danger from fire, are about to be sold by auction and demolished. No decision has been arrived at as to what shall be done with the site, which will be temporarily levelled, and laid out with turf.

An American paper says:—Botany and gardening are made branches of general education in the Old World, and consequently botanic gardens are far more numerous than they are with us. In France there are 22, in Germany 35, Great Britain and Ireland 11, Indian Empire 9, Italy 22, Russia 14, and even the comparatively insignificant islands of New Zealand have three, while there are but five public ones in the whole United States. While almost every cultivated person in the Old World is familiar with nearly every plant and tree that is seen more or less in every-day life, a large majority of our cultivated people would consider themselves pedantic to use even the commonest botanical name.

New board schools are in course of erection in Barcroft-street, Cleethorpes. Mr. Marrows, of that town, is the builder.

The Lord Provost of Dundee opened on Friday the new public baths and library which have been provided for Lochree, erected out of a bequest of £10,000 by the late Mr. Thomas Cox. The greater part of this sum has been utilised for the erection of the structure, the remainder being set aside for annual upkeep. The style adopted is Flemish Renaissance. A swimming-pond has been fitted up, measuring 60ft. by 25ft., and having 6ft. 6in. depth of water at one end. A laundry and drying room is provided, while the reading-room measures 30ft. by 22ft.

Mrs. J. R. Green gave a lecture on Saturday night at the Working Men's College, Great Ormond-street, on "History in Dress," showing how dress, in respect of materials, colours, style, and ornament, had been affected by exploration, conquest, trade, war, international relations, political partisanship, the diffusion of wealth, social distinctions, and the means of internal communication.

An east window, designed by Mr. G. F. Bodley, A.R.A., is about to be placed in the chancel of St. Paul's Church, Burton-on-Trent. It consists of large single figures of early English saints, and in the centre is the Holy Child in His mother's arms, surmounted by Our Lord enthroned in glory and encircled by the members of the angelic host. It will be ready for dedication at Easter. The present window has been presented to the parish church at Plumstead. It was inserted in St. Paul's Church at the time of the consecration, 21 years ago, and is not in harmony with the new reredos.

◆

HAM HILL STONE.
The attention of Architects is specially invited to the Durability and beautiful Colour of this material.
Quarries Well Opened; Quick Despatch Guaranteed; Stonework Delivered and Fixed Complete. Samples and Estimates Free.
Address:—
THE HAM HILL STONE COMPANY,
NORTON, STOKE-UNDER-HAM, SOMERSET.
London Agent:—
Mr. E. A. WILLIAMS, 16, Craven-street, Strand, W.C.

FAMBRINI & DANIELS,
Manufacturers of IMPERISHABLE CONCRETE MASONRY for
CORNICES, STRING-COURSES, MODELLED PANELS, AND EVERY STONE-WORK REQUISITE.
LANDINGS and Plain or Moulded and Mitred STEPS, durable throughout.
WORKS AND OFFICES: LINCOLN.

DOULTING STONE.
CHARLES TRASK & SONS.
(THE DOULTING STONE COMPANY),
DOULTING, SHEPTON MALLET.
London Agent:
E. A. WILLIAMS, 16, Craven Street, Strand, W.C.

JOHN GRUNDY,
HEATING APPARATUS MANUFACTURER.
ESTIMATES FREE. SUCCESS GUARANTEED.
Foundry: TYLDESLEY, MANCHESTER.
Showrooms and Workrooms:
TYLDESLEY BUILDINGS, TORRENS STREET, ISLINGTON, N.
West End Showrooms: 57, WIGMORE STREET, LONDON, W.
Chief Office:
30, Duncan Terrace, City Road, London, N.

WM. OLIVER & SONS,
MAHOGANY, WAINSCOT, WALNUT, TEAK, VENEER, and FANCYWOOD MERCHANTS,
120, BUNHILL ROW, LONDON, E.C.
The most extensive Stock of every kind of Wood in Planks and Boards, dry and fit for immediate use.

◆

TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender; it adds to the value of the information.

Bermondsey, S.E.—The London School Board are erecting a new school in Page's-walk, Bermondsey, to provide accommodation for 1,174 children, and the following tenders have been received for providing and fixing a complete system of low-pressure hot-water apparatus for warming the building:—

Rosser and Russell	£688	0	0
Ellis, J. C., and J. S. (Limited) ...	549	10	0
Russell and Co.	537	10	0
Purcell and Nobbs	472	0	0
Jones and Attwood, Old Queen-street, Westminster (accepted) ...	458	0	0

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXIX.—No. 2137.

FRIDAY, DECEMBER 20, 1895.

MISTAKES AND ABUSES.

IN one of his works, Oliver Wendell Holmes speaks of "one-story intellects, two-story intellects, and three-story intellects, with skylights," and he goes on to say that all fact-collectors who have no aim beyond their facts are "one-story men." And this is true of architects, amongst others. The "one-story" men are those whose only aim is to design a building upon simply commonplace principles, who make designs to satisfy the average public wants and tastes. The one-story man uses all those ordinary properties of plans and styles which seem never to pall on the popular taste—those ideas which have taken root because they are the least troublesome and save thought—and for a like reason he employs all those materials which modern manufacture has produced to obtain effect at the least cost. While there may be some good in buildings designed by these collectors of ideas and facts, they have, nevertheless, the fault of stereotyping plans and methods which are unsuitable and of perpetrating abuses. There are plenty of "one-story" men in the profession. They only take what comes readiest to hand—their facts consist in collecting plans or looking up buildings without discrimination. If they have to design a town-hall or a public library or public baths, they refer to the plans of buildings already built or competed for, and make use of such points or ideas in the plans as they think will suit them. We do not say they purposely copy, but they appropriate ideas which have cost their inventors many hours or days of thought, but which ideas may not always be adapted in other circumstances. To take a few instances of these mistakes. We are constantly meeting with plans of buildings which do not fulfil their intended purpose. A mistaken position of an apartment or an entrance, a wrong-shaped room, or a department a long distance away from its proper entrance are frequent. The corridor is pressed into all kinds of service for every sort of building, and is often a substitute for thought. When, for instance, we see it made to turn corners at oblique angles, badly lighted and narrow, it serves only to awaken our pity for the straits to which the designer has been put, and for the visitor who has to grope about to find the apartment he wants. There is one class of building where it seems to be thought indispensable—baths and washhouses. Those who have seen the designs for the Shoreditch Baths and Washhouses will be struck with the amazing ingenuity, or rather stupidity, which certain authors have shown in its application to a site hemmed in on the main entrance side, and which forms a neck to a large area of land within. No other expedient was thought of than to run a series of corridors through this contracted opening from the main street to the baths, and after passing the narrow neck-like space between old houses and the library block, make them diverge to the several doorways by twisting them, like so many indiarubber tubes, to their destination. Only one competitor has avoided this by making a quadrangle or court open to the street, from which the several entrances to the baths directly open, thus cutting short the length of corridors, and saving all twistings and contortions, besides making a pleasing architectural feature of the inner court. Thus by merely cutting off so many useless feet of corridors, the author obtains the same result at less cost. Circuitous corridors are always wasteful, and to a certain extent dangerous in public buildings where any of them are used as a means of egress from public assembly-rooms. Another lesson is learned from the same competition, as to the planning of entrances and exits to public halls for the easy dispersion of large assemblies of people. Not a few architects think that if a certain number of doors or staircases are placed on one side of a hall they are sufficient. Thus we find several plans which show three doors at one end as exits, and perhaps one or two staircases to the gallery at one end of the hall. This concentration of exits at one end or side is worse than useless as a relief, and may become dangerous should there be any panic. They should be distributed, and the only reasonable rule is to place them as far apart as possible, if they are confined to one side; or, better, to put them at opposite sides or ends of the hall. The staircases also should divide the gallery accommodation equally, and this can be done by placing them at both ends, or at alternate corners, so that the crowd can break up into two parts, one side and end gallery descending by one staircase, and the other side and end by the other staircase. By thus breaking up into portions the crowd of persons, ease and safety are insured. How many mistakes are made in the size and position of a doorway to a room. It is put in the centre of one side, at one corner, or just wherever the draughtsman likes to place it in reference to other parts, but without consulting the convenience or the necessary fittings of a room, exposing the occupants to gusts of cold air, or to the gaze of all those who enter the building or corridor. As to the position of a doorway to, say, a public hall or office, it should be central with the main approach if possible, or of sufficient size if in a corridor to give it importance. Generally we find a series of doors of similar size in a long corridor of a municipal building which are undistinguishable and confusing. Again, the public access to a building or a public hall should be direct: we should be able to approach it without having to make a number of circumambulations or circumflections round corners. The common mistake is to make the route from the street to the hall doors circuitous or indirect—a fault we find in nearly every competitive plan for a public building. It is a pity the architect does not study more the principles of what we may term obvious arrangement—that is, of shortening the routes between the main external entrance and the main hall; of making them so direct and obvious that no one can mistake them, thus obviating the frequent jostling of persons who take wrong routes. When a person goes to a public building and wants to find his way to the accountant's or sanitary office, or goes to take a bath, he should not be able to go wrong after entering the right entrance to the building. The corridor should be short, and lead him nowhere else, if possible, but to the particular department or room. There ought to be no mistaking the direction or the doorway; but somehow, when we enter a modern building of this kind, all is bewilderment; the principal doorways are perhaps in a corner, or round a corner, out of view, and some insignificant clerk's office or closet door is thrust into prominence. Then there is the window, which often seems made for the elevation, and not for the room it lights. It is either too large or wide, flooding the room with light in summer, and making it unendurably cold in winter; or too small, quite insufficient in area to light more than a few feet of the room, and without any relation to the depth or length of the apartment.

Let us look at the villa or private dwelling. It is often full of mistakes of one kind and another. Even our ordinary sitting-room or parlour is not designed for real comfort, but as a place to put fashionable furniture into, its size and shape being left to the accident of the plan—made in fact to fit in the plan, not designed for itself as a whole. The uncomfortable modern parlour one sees in suburban villas is the result of planning a space without any other intention than to make a room with window, fireplace, and door for holding certain conventional pieces of furniture. It is square or oblong, just as chance decides, lighted on one or two sides, entered by a door anywhere. Instead of which, the room should be designed to be interesting in itself, complete, if possible, with the least amount of furniture of the portable kind; large enough to live and sit about in, instead of being perpetually in a fidget that you are going to break something, or tread on someone's toes. And this ideal can only be obtained by having fewer and larger rooms, by making sometimes the hall a room for reception; but mainly by making all constructional features — like fireplaces, windows, and recesses—decorative as well, so that little furniture may be necessary to cover up bare walls and niggardly details. The average architect has not yet grasped the capabilities he has of turning what is essential and constructive to the best account. Even a handle, the latch, or the hinges of a door may be made something very different to what they are now. The mortise lock is hid in the stile or rail of the door, when really it may be turned into a decorative feature. So again the butts, which are buried in the rebates, as if there was a virtue in concealing the visible means of hinging, might be made ornamental. Window bays, recesses, firegrates, can all be turned to some decorative value instead of being plastered, painted over, or concealed by worthless ornament. The idea of the average architect, like that of the builder, is to provide so many rooms for others to decorate and furnish according to their several tastes; the object of the true designer ought to be to design each room for its intended purpose, and to make it as perfect and complete as possible, and to design everything for its place;—not, for instance, to plan a fireplace, and leave the ironmonger to fill it in, or the owner to select a pattern from a catalogue. The one good living-room ideal of the house is sacrificed to half-a-dozen small and uncomfortable rooms; the hall is reduced to the merest passage, instead of being what it once was—the common living-room or centre of the household life; and such fittings as the grate and the overmantel, instead of being designed for their places, are left to the taste of the furnisher or ironmonger. All these mistakes in modern buildings are largely owing to the custom of blindly following the public demand, to the existence in the profession of a large number of "one-story" men—men who are satisfied to supply the ordinary article without any effort to make plans of their own, or to use their brains.

An old adage tells us we may have "too much of a good thing," and it is just this surfeit of style or material which makes our modern buildings so lacking in character and substantiality. Many of them look like trade specimens—those model erections one sees at exhibitions, advertising Mr. Brown's tesselated tiles, Mr. Smith's decorative plaster, and Mr. Jones' fittings. Just now our public and commercial buildings are being turned into exhibitions of the manufacturers. On entering, we find the floors, walls, and ceilings covered by manufactured goods, tesselated pavings, "art faïence," Lincrusta, and a variety of other materials, each good and useful in its way, but sadly overdone. Even the columns or stanchions supporting girders or walls are covered with tile or terracotta slabs, the panelled walls are enriched by faïence decoration; the ceilings are decorated by Mr. Somebody's decoration, and the windows filled by stained glass. Not a square foot of plain wall or floor remains, the builder's work is all covered up, and one feels that we we have too much of the show-room. It is easy to step beyond the limit of useful adaptation. What may be tolerable in one situation may be abuse in another. Take, for example, the "art-tile" craze. At first it was employed in small decorative panels, to fireplace stoves, to wall panels; but now we find it used to cover the vestibules of restaurants, or to line the walls of shops, and even exteriors. The glazed brick, when confined to lavatories, bathrooms, and wherever light and a clean, washable surface are necessary, is reasonable; but we find whole buildings now lined with it. Glazed terracotta is also overdone in the same direction. A very common instance of abuse is to be noticed in stone-carving. No doubt well designed and artistically executed stone-carving in appropriate positions and points of interest add much to the decorative completeness of some buildings; yet we find it often carried to a riotous excess which is positively distasteful, as in the over-carving of keystone, door, and window, and the underneath surface of oriel corbels. Leaded stained-glass work, and other kinds of decoration, tolerable in themselves in their right place, are now so redundant in some of our modern shops and business premises as to become painfully obtrusive.

PROMISED PAYMENT FOR EXTRAS.

QUESTIONS of extras often turn on the final payment or certificate of the architect, and no doubt the granting of a certificate is the usual and reasonable course to establish any claim for extras; but the recent appeal from a judgment on a question of extras in the case of contractors against the Corporation of Huddersfield is instructive to contractors and public authorities, for one or two reasons. It may be of interest to consider the grounds on which the Court of Appeal dismissed the Corporation's appeal. As to the evidence. The contractors, in this case, were engaged to execute certain sewerage works for the Corporation of Huddersfield, and during the progress of the work, it appears, it was found necessary to tunnel through a mass of rock, which the plaintiffs naturally charged as an extra. The borough surveyor refused to make any allowance for this work on his own authority, but advised the contractors to apply to the health committee of the Corporation, and this committee gave them a promise (not in writing) that they should receive proper remuneration for the work. At the first trial the plaintiffs brought an action for the recovery of a balance of payment. By the agreement certain payments on account were to be made as the work proceeded, and the final payment made on the certificate of the surveyor. The plaintiffs relied, in the first place, upon an alleged certificate of the borough surveyor; but the jury found no such certificate had been given. Next they sought to establish their case on the word-of-mouth promise given by the committee, and on this issue the jury gave a verdict for the plaintiffs for the amount of balance. The Corporation, it seems, afterwards urged that judgment ought to be entered for them on two grounds:—First, that the contract relied upon by the plaintiffs was not under seal, and therefore not binding; and secondly, that by Section 200 of the Public Health Act, 1875, the committee could not enter into any contract to bind the Corporation. The judge who tried the case refused to entertain these points, as they had not been taken before verdict. Thereupon the Corporation appealed to have the verdict set aside for the above reasons; but, as we have seen, the Court dismissed the appeal, holding that they had urged the points too late. The decision, therefore, of the Court was founded on the verbal promises which the health committee had given the contractors—that they should receive remuneration for the extra work; but the question whether this promise was binding on the Corporation or not was not argued. The case, quite apart from the particular circumstances—which we do not know—is important in its lessons. Referring to the Public Health Act, Section 200 runs: "Every urban authority may from time to time appoint out of their own number so many persons as they may think fit for any purposes of this Act, which, in the opinion of such authority, would be better regulated and managed by means of a committee, provided that a committee so appointed shall in no case be authorised to borrow any money, to make any rate, or to *enter into any contract*, and shall be subject to any regulations and restrictions which may be imposed by the authority that formed it." The italics are ours.

The Act of 1848, Section 36, required the local board to approve of the acts of the committee, but there was a doubt as to the effect of this approval. This requisition is said to be now removed. Considerable powers have been granted to committees by local boards, such as paving streets, and it has been held that such acts did not require the statutory approval of the Council. Some legal authorities are doubtful, moreover, whether such approval is necessary in the case of a committee appointed for the purpose of this Act; and this and other decisions may be taken as showing it is not necessary. One important case may be cited to show that a contract entered into by a committee is binding on the Council, that of "Eaton v. Basker," in which it appears that a contract was entered into by a committee, and it was held that the Council were bound by the contract as having been made by their agents; but that as it was made with the committee collectively, and not with the members of it individually, the latter were not personally liable upon it.

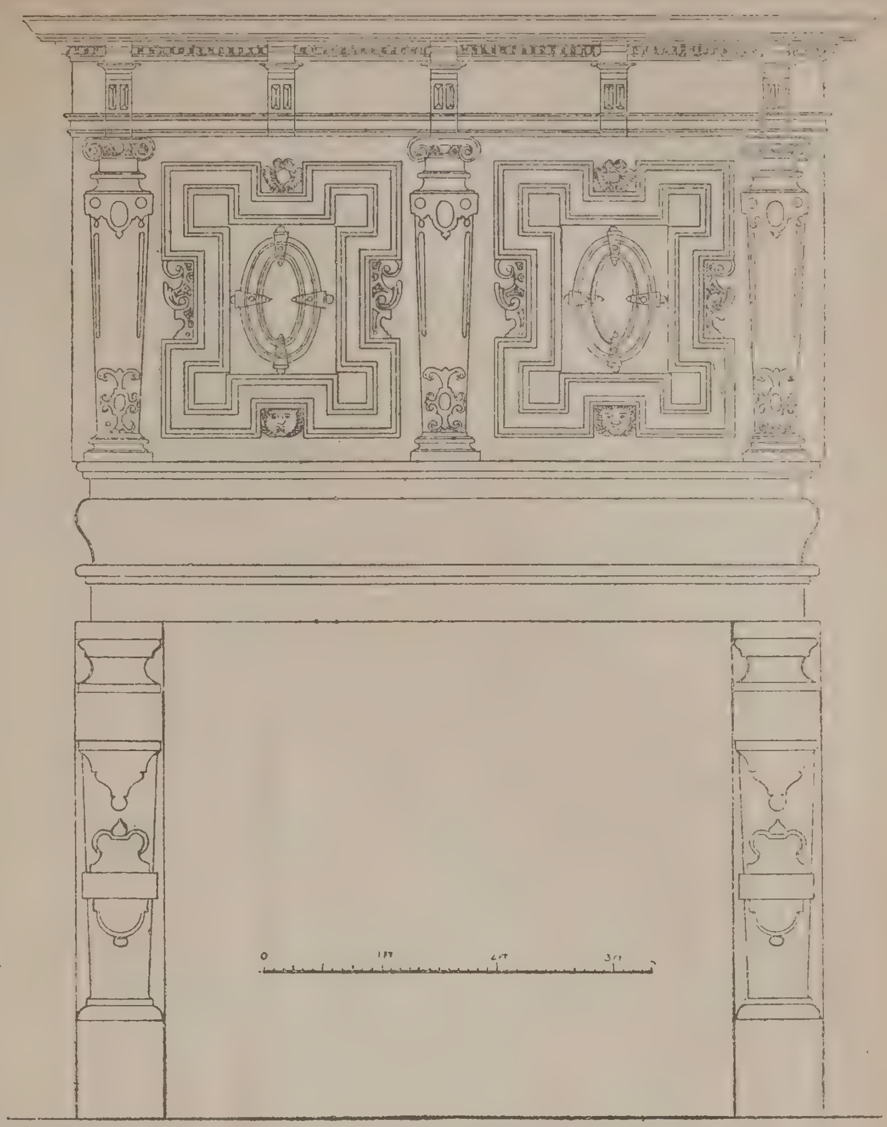
This decision appears to show that a committee as such can make a contract with a person that shall be binding on the corporation, notwithstanding the section in the Act we have quoted, that the committee are "not to enter into any contract." The decision in the Huddersfield case may be also said to confirm the opinion that a committee can make a contract, though in this particular instance the contract was merely a verbal one. We cannot be surprised at the ruling. A contractor encounters a considerable addition to his work, and applies to the surveyor, who, not willing to make an allowance on his own personal authority, refers him to the committee in charge of this particular contract, who give him a promise, though not in writing, that he shall be remunerated for any extra work incurred, and so the matter ends. No doubt the business-like way would have been to have pressed the committee for a written order for the extra work at the time; but contractors are not all so pressing. They rely upon the fairness of their employers in remunerating them for such extra work. The chief point to which we draw attention is the plea urged by the appellants, that by virtue of the Act the committee could not enter into any contract to bind the Corporation. If this were so, a contractor ought not to take any orders or instructions not confirmed by the corporate body, and in a large number of cases considerable delays in the carrying out of contract works would arise if the committee had not the power to enter into understandings with the contractor when emergencies arose. The decision will be of some practical use if it makes corporations more cognisant of their responsibilities, and contractors more particular in obtaining written orders.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE fourth ordinary meeting for the present session of the Institute was held on Monday evening. The President, Mr. F. C. Penrose, F.R.S., who occupied the chair, announced that by resolution of the Council the two following architects had ceased to be members of the Institute: Francis Drummond Greville Stanley, of Brisbane, Fellow; and George Poole, of Perth, Western Australia.

GRÆCO-PHŒNICIAN ARCHITECTURE IN CYPRUS, WITH SPECIAL REFERENCE TO THE ORIGIN AND DEVELOPMENT OF THE IONIC VOLUTE.

An exhaustive paper on this subject, illustrated by original drawings by the author and photographs, was read by Dr. Max Ohnefalsch-Richter, who described the excavations he had carried out during many years in the Island of Cyprus, and especially the three so-called "royal" tombs he had discovered near the ancient city of Tamassos. Dr. Richter admitted that he found no inscriptions to justify the title of "royal" given to the tombs, but he gave them that name on account of the beauty and finish of the masonry, their prominent position near the principal gate of the city, a former tribal capital, and the valuable objects he found in them, although they had all been rifled for treasure ages since. These sepulchres were of a Græco-Phœnician type of architecture, and although the presence of lime mortar joints at first seemed to indicate a later date, they were, he maintained, of the end of the 7th or beginning of the 6th century B.C. A feature of peculiar interest in these subterranean stone buildings was the direct imitation in stone of constructions of wood, and this in a perfection which had never before been met with in remains of ancient monuments. Wooden columns, windows, locks, bolts, roofs were all reproduced in stone, the blocks, especially in the roofs, being of colossal dimensions. He had found their counterparts surviving in modern buildings of Cypriote villages. One of the tombs contained weapons, helmets, plates, vessels of bronze and iron, a semi-globular drinking cup of silver, and a golden nail from an iron sword like those on the sword of Agamemnon. In different villages he had discovered modern capitals whose ornaments bore an astonishing resemblance to the ancient ones. Dr. Richter then proceeded to give in detail reasons for his conclusion that the Ionic volute was derived from the Egyptian lotus-flower design, and that the same origin was traceable in regard to the Greek palmette and anthemion. The theory which would ascribe the origin of the Ionic volute to the Assyrian sacred palm tree could no longer be maintained. A small clay model of a sanctuary—evidently a votive offering—recently discovered at Idalion, in Cyprus, actually showed the two lotus capitals on the columns supporting the porch. Some Hathor capitals discovered in Cyprus demonstrated the fact that Cyprian artists during the Græco-Phœnician period combined Egyptian, Assyrian, and Greek elements. On one of the columns was sculptured a design of a complicated lotus-tree with winged sphinxes. Dr. Richter next referred to an ingenious theory put forward by Herr Koldewey, a German architect, in his book "Neandria," distinguishing between three classes of archaic capitals with curved volutes—the first, with cross lines, the Cyprian; the second, with vertical volutes, called Æolian; and the third, with horizontal volutes, called Ionic. Those three he considered to be branches all growing out of the same trunk, which was of old Cappadocian origin, and which he declared to be the prototype. Herr Koldewey denied any connection of the Ionic capital with Egypt or the Egyptian lotus-flower. Herr Puchstein, in his book on the Ionic capital, appeared to be of the same way of thinking. The Cappadocian columns of a baldacchino from a rock relief which had been put in evidence by the above-mentioned authors were extremely simple. The whole volute merely consisted of two spirals connected by a canalis and bent downward. In the upper line of the canalis of this Cappadocian capital Koldewey saw the horizontal tendency of the Ionic volute to be latent. The two spirals touched the vertical line of the shaft of the column, and in this fact Koldewey saw the vertical tendency of the Ionic volute in the same Cappadocian capital. Dr. Richter, however, had found, during the excavations which he had carried out for the German Emperor, a small votive column even more regular and more simple than the Cappadocian column. The canalis above



CHIMNEYPIECE FROM AN OLD HOUSE IN LIME STREET, E.C. (About 1620 a.d.)
(Now in South Kensington Museum.)

was horizontal, and was covered already by an abacus. The spirals also touched the shaft with their inner and lower parts in a more finished and regular form than in the Cappadocian example. He maintained that the columns from Cappadocia, Cyprus, the oldest archaic Ionic volute from Uyra, Olympia, and other places were simplifications of much more complicated Græco-Phœnician volutes, which on their part derived from the Egyptian lotus. A reference to the architectural details of one of the three "Royal" tombs of Tamassos showed how a complicated lotus-bud design was changed into a more simple form, and thus prepared the way for the formation of the Hellenic Ionic volute. From a long series of Græco-Phœnician Cyprian capitals, with palmettes over the volutes, of which drawings were shown by Dr. Richter, he showed that the three types of capitals classified by Koldewey actually occurred in Cyprus. The Ionic volute, with its beautifully ornamented cymation, which belonged to the archaic Temple of Diana at Ephesus, and which had been lately pieced together by Dr. A. S. Murray from fragments in the British Museum, he fully admitted to be the oldest existing example of a pure Hellenic Greek volute. As a last illustration, Dr. Richter exhibited a photograph of an Ionic Greek capital now in the Cyprus Museum at Nicosia, and discovered at Larnaca in 1879. In this case, there was no ornamental cymation properly speaking. The sole decoration below the lower margin of the canalis and the spiral consisted of two palmettes or lotus-flowers growing out of the corners. The upper and lower margins of the canalis were not straight, but considerably concave, and both lines ran parallel to each other. The proportions of the capital were very harmonious and Greek, but it was difficult to date it. The concavity of the lines of the canalis seemed to point to a later date than the archaic Ephesian volute of the Artemisium.

Mr. George Aitchison, A.R.A., proposed a vote of thanks to the lecturer for his profound and instructive paper. His own theory as to the origin of the Ionic capital had been that it was derived from the spiral form of a univalve shell; but Dr. Richter's series of illustrations had established the fact that it was derived from a plant, either from the palm or lotus, and probably from the latter, although certain links in the chain of evidence were still missing. As to the presence of lime mortar in the joints of the masonry at the tombs of Tamassos, that was no argument against the antiquity of the work, for many years since the speaker had brought home, and had analysed, some mortar from the Great Pyramids, with the result that the mortar from the exterior was composed of lime and sand, and that from the interior of almost pure plaster of Paris.

Sir Henry E. Bulwer, G.C.M.G., High Commissioner of Cyprus during Mr. Richter's examinations, seconded the vote of thanks, remarking that the lecturer commenced his training in actual examination of the ruins, forming his own conclusions with a free and unbiased mind, afterwards studying up the subject in the museums of Germany, France, and England.

Mr. E. Falkener remarked that he had never seen an Ionic column in Egypt, although he discovered a Doric column in that country. Dr. Richter must have heard of the wonderful imitations of wooden forms in the rock tombs of Lycia, but, singularly enough, he had not even mentioned the name of the country in his lecture.

Mr. L. Alma-Tadema, R.A., said his independent studies led him to the conclusion that Cyprus was a land to which many outgrowing sprays of architecture spread and took root, especially Phœnician, but that it was not a country to which we might look for original development. He could not see his way to acceptance of the theory that the Ionic capital was developed under Cypriote influence, nor had Dr. Richter explained the difficulty that in all the drawings of Cyprian capitals the dominant lines of the rude Ionic capitals were aspiring and vertical, whereas in Hellenic work they were as undoubtedly horizontal.

Mr. R. Phene Spiers suggested that most of the Cypriote forms of ornament were derived, not from wooden originals, but from beaten metal.

Mr. Sidney Vacher could not follow whether the lecturer regarded the Cypriote forms of decoration as developed from an Egyptian or an Assyrian source.

The President, in closing the discussion, observed that while the origin and development of the Ionic capital could not be regarded as finally settled, yet Dr. Richter had brought forward some new points towards the solution of the problem. The wooden origin of this was suggested by the late James Fergusson in Part IV. of his "Ionic Architecture." Lime mortar was undoubtedly known to the ancients, for it had been found in the early work at Mycenæ. His own belief was that the latter was one of several sources from which the Ionic capital was developed, but certainly not the only one, and that it originated in a simple spiral, such as they found at Mycenæ. The volute could not have been erected from the helical windings of a shell, which were based on an equiangular spiral; whereas the Greek volute of the Ionic order was produced by a string coiled round a cylinder. Mr. Penrose then put the vote of thanks, which was carried by acclamation, and acknowledged by Dr. Richter.

CLASSIC DETAILS AND THEIR APPLICATION.*

By G. A. T. Middleton.

XXI.—ENGLISH RENAISSANCE.—THE ELIZABETHAN PERIOD.

THE Renaissance first appeared in England at a time when the country was peculiarly ripe for change in architecture. The detestation in which the monks had been held, followed by the dissolution of the religious houses, disinclined the builders of the time, symbolising the newly-rising civil power as they did, to adopt the forms which in their minds had been closely associated with clerical supremacy. But the new forms which were to replace the Gothic had to filter to England by devious routes, the political circumstances of the time cutting us off from much communication with the Continent, and especially from Italy, its headquarters; and a transitional style was the result, full of coarse vigour, and wonderfully suggestive of a people thrown upon their own resources and founding an empire under most disadvantageous circumstances by sheer force of manful strength.

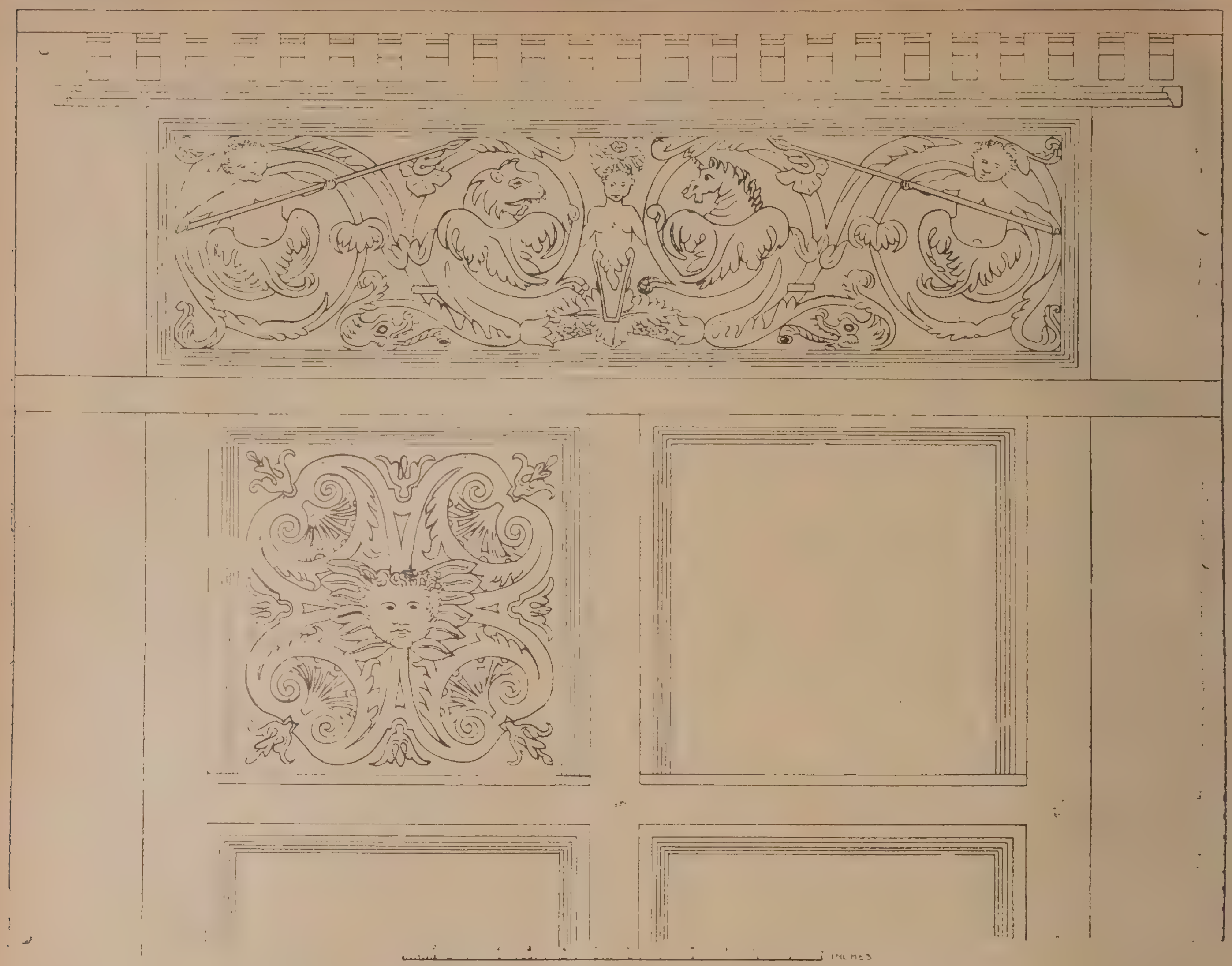
The great houses of this, the Elizabethan period, were planned somewhat upon the lines of Gothic fortresses, and in design they differed much, from dignified Wollaton, with its large windows, and its Orders superimposed in proper sequence—curious Orders, rich and coarse, like those of the later work at Heidelberg—to coarser Bramshill, and plain Knowle, this last with little to show that it belongs to the Renaissance at all, but with a square mass of masonry over the entrance gate, itself four-centred, having a long range of low buildings on either side, with dormers of contorted outline, such as are characteristic of the style in smaller domestic work.

Perhaps the greatest characteristic of the time was the absence of anything like refined proportion. Even in the smaller features, where this might be expected to be found, it is almost invariably absent. Take the Arlington Tomb, in the Rolls Chapel, as typical of numberless other similar monuments. In this the order, *per se*, is not particularly faulty, but the design is wrecked by the entablature being supported by ornament between the columns, and by the central pier being broken by the panel upon which the three kneeling children are carved—this last subversive of all harmony.

Ill-proportion is even more noticeable in the chimneypiece from Lime-street, in that the Doric Order, forming the mantel proper, is scarcely recognisable, with its bandings, its

---

* All rights reserved.



CARVED OAK PANEL FROM A HOUSE IN LIME STREET, E C. (About 1620 a d.)
(Now in South Kensington Museum)

small reversed ogee as an apology for a capital, and its large reversed ogee for a frieze; and the Ionic order is little better. But it is the utter want of any attempt to design with delicacy, the entire absence of refinement, in general scheme and in detail alike, which is so noticeable here and in all the thousands of examples which are to be found scattered up and down the country. The impression given is that of solid wealth and comfort, certainly; and so the style is frequently admired, and even loved, by English people, who often worship these things above all else; but there is little beauty in it.

KNOWLE HOUSE, KENT.

It is the same with the carving, when that is introduced, and it is something to be able to say in its praise that it suits its surroundings. Occasionally, however, it does more, particularly when, executed in wood, it consists of elaborate patterns in slightly raised bands. When anything further is attempted. it is apt to be a coarse travesty of the delicate Florentine or the Early French; but the evidence of wealth is always ostentatious in the outlines and curves, the brilliant colouring upon which so much depended in other lands being entirely absent, and the whole effect depending upon the forms wrought in the native wood or stone.

While freely criticising the Elizabethan, therefore, as examples of Classic detail, it is as Classic detail misunderstood rather than deliberately misapplied or deteriorated. The result is much the same as in the deteriorated German work; but the cause was different, and possibly it would have developed of itself into something much more admirable, had not the great Civil War occurred, causing a complete change in England's relations with other powers, and for a time stopping all building operations.

SHOREDITCH PUBLIC BATHS AND FREE LIBRARY.

[WITH PHOTO-LITHOGRAPHIC ILLUSTRATIONS.]

OWING to the generally expressed feeling of dissatisfaction with the award in this competition to which we referred last week, when we published the design placed first, the illustration today of the second prize scheme, by Mr. A. Hessell Tiltman, cannot fail to be interesting, though the author does not feel justified in printing detailed copies of his plans, which comprise some arrangements peculiar to himself as the result of personal experience. By the key-plan attached to the perspective view, it will be seen that the author has treated the problem, as far as the baths portion of the scheme is concerned, upon his well-

ARLINGTON'S TOMB, ROLLS CHAPEL.

RESTORATION HOUSE, ROCHESTER.

known quadrangle arrangement, as exemplified in two of his most recent buildings; and in the author's opinion this mode of treating the very numerous entrances of a public building of this character is really demanded by the exigencies of such a site, abutting, as it does, on to a thoroughfare so crowded as that of Pitfield street. Apart from the emergency exits from the first-class swimming-bath, and the entrance to the public washhouse, absolutely eight distinct entrances are required, and for the proper conduct of business "this necessary arrangement," Mr. Tiltman says, "is impossible by any other treatment of a site with so small a frontage as this." The quadrangle permits of the perfect localisation of all departments with their proper entrances and exits, and of an arrangement generally of great simplicity on plan, besides avoiding long and devious corridors (so difficult of management to those concerned when a large number of unruly boys are leaving) represents, so the author states, a saving of at least 50 per cent. in the superficial area of the collective corridor spaces. This has to be reckoned with in the structural cost of the buildings, involving, as it does nearly always, an expensive mode of roofing—viz., lead flats. The special entertainment entrances of the first-class swimming-bath are entered entirely from this quadrangle, whilst the exits open into Bowling Green-walk, which, from its narrowness, &c., is unfit for any other purpose. The Commissioners, by their own conditions, state that not only must the selected plan meet the requirements of the London County Council, *but that it will not be considered accepted until such sanction has been obtained.* Mr. Tiltman has called upon the Commissioners to carry this condition to its logical conclusion, by obtaining the sanction provisionally to the arrangement shown for this purpose *on the competition plans before they are altered, as now proposed,* and that, failing this test, Mr. Tiltman's plans should be subjected to the same ordeal. The accommodation furnished is "based upon the conditions, supplemented, however, by many important items of accommodation not recognised at all by the conditions, but which were regarded by the author of the design as absolutely essential to the establishment. The cost of this extra accommodation was more than compensated for by a reduction upon some of the extravagant heights, &c., required by the conditions, and by the *saving in the run of corridors* by the adoption of the quadrangle treatment of the plan." "Unless this modification had been made in the schedule of accommodation, it would have been impossible," Mr. Tiltman says, "to have carried out this (the baths portion of the scheme), constructed and finished as required for the amount named—viz., £30,000. The women's slipper-baths are arranged entirely on the first floor, over the drying-closet of the washhouse, and other portions that were equally low in height on the ground floor, so as to obviate any great height for the ascending staircase; and it is a distinct assertion of the architect that there are many advantages, and no material disadvantage, in placing all the women's slipper-baths on the first floor—a course, too, far preferable to spoiling the ground floor of establishments (as has been on several occasions done in London) by the unnecessary and persistent attempt to get *all* the slipper-baths upon one floor. The public washhouse is entered entirely from Coronet-street, and not through the quadrangle—a very desirable distinction and separation, and has over it on the second floor, but communicable by the staircase with the ground and basement floors. The Commissioners' board-room, clerk's office, and the superintendent's residence are all accommodated in the two floors over the arched entrances to the quadrangle facing Pitfield-street." In respect to his library plans Mr. Tiltman "has no remarks to make, except that he provides the accommodation asked for on two floors only, and that he does not believe the arrangement of it to be in any way equal to the baths portion of his scheme—a strong enough argument against the principle of giving *two equal premiums* to each of the successful competitors."

THE SOCIETY OF ARCHITECTS.

An ordinary meeting of the Society of Architects was held on Tuesday evening at St. James's Hall, Piccadilly; the President, Mr. Edwin J. Hamilton, in the chair. The following three new members were elected:—David MacBean, Office of Public Works, Glasgow; Hezekiah Mitchell, Topsham, Devon; and Frederick E. Simpson, 14, Park View-terrace, Heavitree, Exeter.

A YEAR'S WORKING OF THE LONDON BUILDING ACT, 1894.

The following paper was read by Mr. Ellis Marsland, honorary secretary, and district surveyor for Camberwell:—

It was my privilege a year ago to read a paper before the members of this Society giving a general description of the principal povisions of the new Building Act so far as it concerned us as architects. I then pointed out that considerable modifications and amendments had been made in the new measure since its introduction into Parliament as a Bill till its emergence as a complete Act for regulating the streets and buildings of the Metropolis. It was then a matter of speculation with me whether these modifications and amendments had produced a good and complete measure, or the conflicting interests at work against the Bill had been a case of too many cooks. In the few critical remarks I shall make this evening, I am afraid I must confess that the latter surmise has been the correct one, and in the words of Dr. Longstaff in his paper before the Architectural Association on the 22nd ultimo:—"It will probably be necessary to go to Parliament once more, not so much to strengthen the hands of the Council as to remove ambiguities or inconsistencies in the law which practice has brought to light. In some cases amendments introduced in committee by irresponsible opponents (and not always expressed in the clearest possible manner) lead to inconsistent or even absurd results, for it is an admitted defect of our legislative machinery that there is no means of redrafting a Bill after its emergence from committee so as to insure harmony in its several points." In my remarks this evening I make no pretentions to a complete critical analysis of the Act; but I wish to point out some defects which have occurred in my own practice, which will of necessity be directed more from my official position as district surveyor than from the standpoint of an architect. I shall make them as brief as I can, as I should wish as much time as possible left for the discussion, which, I trust, may afford architects an opportunity of stating their view of the case. I am free to admit that, in endeavouring to insist upon what was the intention of the new Act, the council and those responsible for seeing the Act enforced have up to the present not been very successful. This may be accounted for in some instances by the indiscreet surrenders those in charge of the Bill felt, in the interest of the safety of the measure, they were compelled to make, and the cases that have been taken into the law and police courts are, in the majority of instances, the result of ambiguity in the wording of the clause or section to which they refer. The difficulties and differences which have arisen are both legal and structural. One would have thought that with such an array of legal talent as was engaged upon the Bill it would have been possible that a legal distinction could have been made between a contract entered into by a builder for erecting a building and a building agreement taken up by a man who took so many acres of land and agreed to cover it with roads and houses in a certain number of years; but such, it appears, is not possible, and Section 212 (the interpretation of which, as now settled by the Law Courts, was farthest from the minds of the framers of the Act) allows houses erected in years to come to be carried out under the old Act if only a building agreement for their erection had been executed before the 25th August, 1894. This seems to me a most calamitous result for suburban house-building, looked at from a sanitary and structural point of view, for side by side we shall see houses being erected under the old Act, while those whose owners have been less fortunate as to the date of their building agreements will have to proceed under the new. This will be especially noticeable with respect to the open space in rear, thickness of walls, and a properly lighted and ventilated staircase. In Section 13, clause 5, which allows the re-erection of buildings that are now less than the prescribed distance from the centre of the roadway (provided the position of the old building has been certified by the district surveyor), seems to me to be a defect, as although no more land is to be occupied in the re-erection than was occupied by the old building, there is no restriction as to the height to which the newly-erected building may be carried, and whereas the old building may only have been one story in height, the new one may go to the extent of 80ft. Section 21, dealing with schools under the School Board the sites of which were acquired before the new Act came into operation, allows such schools to be completed under the old Act, yet it was only, I take it, intended that they should be exempted from the sections under Part II.—viz, the formation and widening of streets—as Section 21 comes within this division, or else the section is not in its correct position. In Part III., relating to lines of building frontage, I do not see that a very important section in the old Act has been re-enacted—viz., that giving the superintending architect power to deal with the frontage lines of buildings which abut upon more than one street. The old Section 33 in the General Powers Act, 1890, appears to have been repealed, and nothing substituted. Passing to Part V., which details the open space to be provided about buildings, I venture to think that it was a mistake for the council to exclude from the advantages of this division offices and counting-houses, as the occupants of such buildings pass a considerable portion of their time there, and the need of air and light seems essential to health; moreover, adjacent domestic buildings suffer if the whole of these sites can be covered with buildings perhaps of considerable height. Section 40 does not appear to answer the purpose for which it was intended. It is a section meant to provide light and air to habitable basements, but beyond the fact that a hundred square feet is to be provided in rear, it need not have any further relation to the habitable rooms supposed to be benefited thereby, and the concluding sentence, "which open space, notwithstanding anything hereinafter contained, need not necessarily adjoin the rear boundary of the premises," seems to be one of those interpolations inserted to appease some opponent, the meaning of which is not very apparent. Section 96 of the Public Health Act comes somewhat to the rescue, but that is a section that applies only when the building is occupied, and cannot be enforced during its construction. Section 41, detailing the amount of open space required for a domestic building upon a new site abutting upon a new road, seems, notwithstanding its somewhat complex character, to be working out so far as my experience goes in a satisfactory manner, and it is a great pity that the same conditions should not have been imposed upon a new site on an old road, instead of permitting the diagonal line to be drawn at a level of 16ft. above the pavement, and the open space to be also provided at this level, as this practically makes matters very little better than under the old Act. This Section 41, it may be observed, applies only to domestic buildings abutting upon a street; but what is to be done when a domestic building is to be erected upon a site that does not abut upon a street, is left to conjecture. Firstly, as to whether it can be erected at all, and secondly, what open space is required, as Section 42 only provides for the erection of dwelling houses to be inhabited by persons of the working class, upon sites not abutting upon a street. Under this section an important decision has been given, whereby a stable abutting upon a street is deemed a domestic building, and requires open space in rear; but had it not abutted upon a street, I fear no open space in rear could have been insisted upon. Section 43, dealing with a domestic building to be erected on an old site (where plans of the previously existing domestic building have to be certified by the district surveyor), states that such domestic building may be re-erected so that no more land shall be occupied by the newly-erected building than was occupied by the previously erected domestic building. Nothing is said as to the height, which may be anything up to 80ft. I find, on referring to the draft Bill, that it states "that the owner may then rebuild it to an extent and height not exceeding in any part the then dimensions so certified." This would have been, to my mind, reasonable; but I presume the Council had to give way on this point. In section 45, relating to courts within buildings inclosed on all sides, difficulty appears to have arisen in some cases in providing for the ventilation by means of a communication between the lower end of the court and the outer air, as it necessitates lowering the ceiling of a room on the ground floor, or raising the floor of the room immediately above it. The communication thus formed has a tendency to get choked up with rubbish, and is not very accessible for cleaning. Turning to Part VI., containing the sections relating to the construction of buildings, we find many points for controversy and many ambiguous clauses, some of which can be traced to the opposition. In section 54, dealing with recesses and openings in external walls, it recites such recesses and openings may be made *above* the ground story equal to half the whole area of the wall, but what is to be allowed *upon* the ground story is by no means clear, especially if your building is only one story high. It may mean you can have none, or have the building all open, which latter course will bring you into contact with the Schedule, which states every "building is to be inclosed with walls." This point has been a fruitful source of controversy in my experience. The only way out of the difficulty appears to me to apply to the superintending architect, who has in this particular case supreme power to decide the point at issue without any appeal to the Tribunal. Schedule 58 tells us practically that when a party-wall is built as a party-wall it shall be deemed to be a party-wall. What useful purpose this Section serves in the form we now have it I am unable to say. In the original draft of the Bill it was intended to prevent openings being made in the upper part of the wall dividing the buildings, one of which was higher than the other, but when the opposition defeated this idea, the whole Section had better been omitted. In its present form it means very little, or nothing, as the definition of a party-wall is fairly clear in Section 5, Sub-section 16. There seems to be a discrepancy between Sections 55 and 73 (4). The former restricts the frames of doors and windows of shops, if they are flush with the face of the wall to the ground story, whereas the latter fixes the limit of height to 25ft. This height would certainly embrace two stories, so that it is difficult to know which to follow. It is another of those instances in which a re-drafting would have insured harmony. What is required is that the following words be omitted from Section 55:—"and frames of doors and windows of shops on the ground story of any building." Section 74 causes to architects whose work is principally in commercial buildings a good deal of anxiety. It is the Section relating to a composite building used partly for purposes of trade and partly as a dwelling-house. The Section is very badly drafted, and is capable of varying interpretations. The problem to be solved is this:—If persons are living above the business portion of the premises, you must provide sufficient means of escape for them should the business portion be on fire. For this Section to come into operation the new building must exceed 1,000sq.ft.. It also comes into operation when two buildings are united and their united areas exceed this superficial area, and it is here where much difficulty arises. There are, of course, many hundreds of buildings which already infringe this new rule; but directly any addition, however small, is made the whole building comes within the scope of the Section, for Section 207 states:—"It shall not be lawful (unless with the consent of the Council) to make any alteration of any building in such manner that when so altered it will by reason of such alteration not be in conformity with the provisions of this Act applicable to new buildings." And, again, in Section 77, Sub-section 2:—"Buildings shall not be united; if, when so united and considered as one building only, they would not be in conformity with this Act." It is a mistake to suppose that this Section can be evaded by dividing your building up into divisions less than 1,000sq.ft., and putting iron doors to any openings that may be made in such divisions, as iron doors are only permissible for dividing warehouses into blocks of 250,000c.ft., or for dividing into blocks of this size the part used for trade. When once the united premises exceed the 1,000sq.ft. the rule has to be observed, and no number of iron doors will obviate fire-resisting separation of the trade portion from the dwelling-house; this, of course, means in many cases a large outlay. Now, of what is this division to consist? The section states it is to be by means of walls and floors of fire-resisting material; the thickness of neither is stated, but it may be inferred that inasmuch as the least thickness of a wall is 9in., that the vertical separation is to be this thickness; but district surveyors are not agreed upon this point. But what as to the horizontal separation, as neither the thickness nor the material is mentioned in the Section, but if we turn to the schedule of materials deemed to be fire-resisting, we find in clause 7, "That concrete composed of broken brick, stone chippings or ballast, and lime cement or calcined gypsum when used for filling in between joists of floors" is considered as such, but what interpretation are we to put upon the word "joists"—does it mean iron or wood? In my opinion, if it means the ordinary wood joists, the construction would be unsound, as the wood joists having no air-space around would have a tendency to go rotten, and would very soon bring about the collapse of the whole floor; then, again, no thickness is given, which might lead to a disagreement between the architect and district surveyor. Again, when is a fire-resisting staircase required? It appears from a recent decision that where you entirely separate the part used for purposes of trade from the dwelling-house portion by floors and walls of fire-resisting material, you need have no fire-resisting stairs. With all due respect to the learned magistrate who gave this decision, I venture to disagree with him on this ground, that he conceived the idea that a composite building within the meaning of this section contained only two elements—viz., the portion used for trade and the dwelling-house portion, and entirely overlooked the third element—viz., "all passages, staircase, and other means of approach," and came to the conclusion that the passages and staircases, &c., if not in the trade portion, must necessarily be in the other, and not a separate portion of the building. I think it essentially necessary that the staircase to the dwelling-house, and consequently from it, should be fire-resisting, in addition to the horizontal and vertical divisions, and the section, to my mind, states that it is to be so. For of what use is the vertical division with its doors in it if the doors are left open? (and there is nothing to oblige them to be kept shut). The fire would rush through these doors and possibly attack the staircase, if not of fire-resisting material, and render the escape of those above impossible, and thus defeat the obvious intention of the section. Another point of difficulty is with the doors in the vertical separation, which may be of 2in. teak or oak; but no mention is made of a frame or linings, and whether these are allowed, or the door is to be fitted to a rebate in the brickwork, is a moot point. I think I have shown some of the difficulties surrounding this section, and the direction in which—if it is to be of any practical value—it will require amendment. The intention of the section is good, and calculated to prevent the sacrifice of human life we have had formerly to deplore. The same difficulty as to the construction of the floors arises in the third clause of this section in buildings exceeding 2,500sq.ft. in area, and used as separate sets of chambers or offices. I may add that the new Act does not provide for the horizontal division of buildings of the warehouse class into sections of 250,000c.ft., which it was hoped it would. In Section 80, having reference to the construction of churches, chapels, public halls, &c., although the widths of the staircases, internal corridors, and passage ways are defined, no width for the entrances and exits is given. The doors and barriers are to be made to open outwards, and no outside locks or bolts are to be affixed thereto; but what manner of fastenings you may have is somewhat problematical. It would be a good thing, I think, if this section were allied to the regulations issued by the Council for the Construction of Theatres and Music-Halls, and I make it my practice to take these as my guide in dealing with public buildings generally, and more particularly for public halls, as I find it saves the owners considerable expense if they subsequently require to apply to the Council for a music license. One word with respect to exemptions from the operations of the Act contained in section 201. It must be borne in mind that all buildings, of whatever description and to whom they may belong, are the subject of notice to the district surveyor, or how else is he to ascertain that they comply with the conditions by reason of which they are exempted? and it must also be noted that they are only exempt from Parts VI. and VII. This implies that they are not exempt from the remaining parts of the Act, such as lines of frontage, open spaces, height, and the operations of the by-laws, all of which under section 138 come under supervision. I think a mistake has been made in exempting altogether the construction of detached greenhouses, without any restriction as to the distance away from any other building or the ground of any adjoining owner. A builder may now erect a large wooden greenhouse right up to his neighbour's boundary, and within an inch of any other building, with impunity, thereby largely adding to the risk of fire. A case came recently under my own observation, in which the back of a greenhouse some 9ft. or 10ft. high and 12ft. or 15ft. long was erected of matchboarding, and close up to the boundary of the adjoining land. If in this case the builder had been compelled to have executed this part in brickwork, he would, I think, have hesitated, and constructed more of it with sashes and glass, which, from an æsthetic point of view at least, would have been an advantage. I would also point out that exempted buildings are only exempt so long as they are used for the purpose or retain the character by reason whereof it is so exempt or privileged, so that you cannot build a greenhouse and subsequently use it as a billiard-room or workshop without incurring a penalty under Sections 200 (12) and 211 (4). I have endeavoured, somewhat imperfectly, I am afraid, to point out some of the defects and difficulties experienced in the working of the new Act, although a year's working is scarcely sufficient to test either its good points or its deficiencies; but I think we must give the London County Council credit for an earnest endeavour to provide a workable Building Act, as although some of its clauses are ambiguous owing to the large amount of opposition it encountered, yet I think the intention is clear; and it will, I feel sure, have the loyal support of the members of the Society of Architects, in order that it may be carried out in the spirit in which it was conceived.

Mr. Henry Lovegrove, as the most hard-worked district surveyor in the Metropolis, proposed a hearty vote of thanks to Mr. Marsland for his carefully prepared paper, which would be of the greatest value to his fellow officials and the profession generally. For himself, he found fault with the very title of the measure, and could not understand why it was to be cited as the "London" Building Act, instead of, like its predecessors, by the more correct name "Metropolitan." The term "London" had indeed replaced Metropolitan throughout the statute. He thought that the various sections relating to new streets and frontage were clear, and could be easily understood. Section 61, Sub-section 2, was an important piece of new legislation. It required access to be given to the roof in case of fire; but failed in one point, inasmuch as it did not define whether such provision of access was required in cases of alterations, or was demanded only in new buildings. Section 73, Sub-section 5, gave permission for the erection of bay windows, but said nothing about their construction, so that probably the portion above the sill might be wholly of wood. The requirement that parapets should be carried to a height of 3ft. in warehouse buildings above 30ft. high, was a very great improvement on the old Metropolitan Building Act; but it seemed absurd that parapets should be insisted upon between the roofs of adjoining w.c.'s, which were not buildings at all likely to take fire. The provision in Section 63 that every new building 60ft. in height and over should have means of escape in case of fire, was an excellent one. The district surveyor had now to ascertain, under Section 66, that there was a space of at least 18in. between the top of any oven and the floor above. Section 73, Sub-section 8, might well, he considered, have included some reference to lamps and other projections, which were now erected under the sanction of the vestry authorities. Some day there would be, he ventured to predict, a catastrophe caused by the giving way of one of the supports of these huge projections, and it could not be doubted that to leave them under the sole control of the vestries was a source of danger to the public. He fully concurred in all Mr. Marsland had said as to the slip-shod draughtsmanship and dubious interpretation of Section 74, relating to buildings used in part as dwellings and in part for trade purposes. His own experience was that this section was an extremely difficult one to work under in cases of alterations. In new buildings the architect was able to so plan the domestic portion as to be separated from the trade portion, as the section demanded; but in carrying out alterations, it seemed to need some definition as to the precise stage at which an alteration of the existing building was required. Sub-section 3 settled a disputed point as to the method of charging district surveyors' fees on buildings containing separate sets of chambers. Section 75 appeared to follow the decision in the case of "Holland and Hannen v. Wallen"; each portion of a warehouse building exceeding 250,000c.ft. must now be separated by party-walls, and not merely by a party structure. This seemed to be the meaning of the Act; he confessed that it was rather difficult to persuade architects that it was so. He had a case now before him, in which an architect wished to place on a site of limited extent a building containing three times the maximum area of 250,000c.ft., and proposed to circumvent the Act by dividing the structures by fire-resisting party-structure floors. The building would, of course, exceed the 60ft. limit of height, and he had informed the architect that such plans could not be passed except by the special sanction of the Tribunal of Appeal. Reverting to Section 13, clause 5, he agreed in the main with Mr. Marsland's criticisms, but thought it was very fair to the owner. He would point out that Section 21, dealing with the exemption of board schools from the Act, only affected the question of frontage lines. As Mr. Marsland had shown, section 40, relating to the light and ventilation of habitable basements, was very badly worded, and the next section, 41, referring to the space at the rear of domestic buildings, would render matters worse than under the old Act, for it enabled the owner to build over the space at the back to a height of 16ft. above the pavement. Sections 42 and 43 were very indefinite as to who were intended by the "working classes," and the assumption throughout the Act that a stable was a "domestic building" was very absurd. The rules as to recesses and openings in Section 54 were very good, and abolished some ludicrous arrangements previously adopted by knowing builders for burying brickwork in the foundations so as to comply with the old requirements, that the opening should not exceed one half the area. The reference to the part of building above ground story ought, however, to have been better defined. He could not but regret that the rules as to what were party-walls were based on the decision — an unwise one in his judgement—in the well-known case of "Williams v. Bull." If in two adjoining houses one was two stories higher than the other, commonsense demanded that the portion of the wall which separated the buildings should be regarded as a party-wall; but the upper portion, which merely inclosed the two upper floors of the loftier building, was no more than an external wall. He must repeat the warm thanks they all owed to Mr. Marsland for his well considered summary of the weak points revealed during the first year's operation of the new Act.

Professor Banister Fletcher, J.P., in seconding the motion, observed that their Society could not be better employed than in discussing such practical points among themselves as the subject of Mr. Marsland's interesting and valuable paper. As to the confusion which had arisen between a contract for building and a building agreement, he suggested to the framers of the Bill, when it was in committee, that they were wrong. As usual, they produced counsel's opinion to prove they were right; but within a month after the measure came into operation that counsel's opinion was shown to be mistaken. The application of a new restrictive Act should be, he contended, slow and gradual, and there should be no atttempt to interfere with private rights and arrangements made at great cost unless the public interests imperatively demanded such a change. The alterations made by the new Building Act, as compared with the one of forty years ago, were, after all, comparatively infinitesimal, and notwithstanding what Mr. Marsland had said, he was glad that the ambiguous point as to contracts and agreements had been so interpreted by the Courts as to protect owners of, and still more important, takers of, land partially built upon from altering their proposed arrangements. He did not agree with Mr. Marsland's interpretation of Section 13, Clause 5. He believed that the Act provided not only that in the reconstruction of old buildings no more land should be covered, but where the street was not 40ft. wide the new building could not be raised higher than the old one; it certainly could not be raised to the height of 80ft., as Mr. Marsland had asserted. As to the defects in Section 40, relating to new basements, no better provision to limit the use of basements could be required that was to be found in the Public Health (London) Act; the further requirement of the London Building Act was to provide an area of 100ft. square at the rear of the premises, "or contiguous thereto"—what the last three words meant he could not conceive. The new Act was, in regard to shop areas, a vast improvement on the old one, and got rid of many subterfuges to evade the verbiage of the Act. It was very difficult to understand why stables were treated as "domestic buildings" under the new Act in Section 42. A grave difficulty would occur in the future when a decision was required in a case where a man proposed to build a stable "not abutting upon a street," as such a case was not provided for under this section. Were such a point to come before him, he should reply that no man wanted to put up a building which did not front a street at some distance or other. It was to be regretted that there was no definite decision as to what constituted an old and what a new street, and the latest decision, "Perry v. London County Council," if supported, would relieve owners of land from giving notice in cases where hitherto it was thought necessary. There had been, unfortunately, contradictory decisions as to the legal definition of a street; but this was not to be wondered at when they considered the different standpoints of architects and lawyers. Lawyers were incapable of defining anything, but were ready to pick to pieces the definitions framed by practical architects. For example, the framers of the present Act, aided by expert architects, agreed on the definition of a building, but lawyers found it absolutely impossible to adopt the terms arrived at, or to suggest any others more acceptable; the consequence was that the House struck the clause absolutely out, and there was passed a Building Act containing no definition of a "building."

Mr. William Woodward supported the vote of thanks, and having referred to district surveyors' measure of control over public buildings, pressed Professor Fletcher for chapter and verse in the new Act for his interpretation of Section 13, clause 5, as to the restriction of the height of reconstructed buildings.

Professor Fletcher repeated that he believed the spirit of the Act was, that if a building in a street less than 40ft. in width were pulled down, it could not be raised in rebuilding to a greater height than the old structure; but he could not recollect off-hand the precise clause.

Mr. J. C. Jackson asked as to the meaning and extent of the restriction of the height of buildings in a street less than 50ft. wide laid out before August, 1862.

Mr. Philip Condy said there were many anomalies in the new Act which could only be rectified by an amending measure.

The vote of thanks having been passed by acclamation, Mr. Marsland replied, remarking that he utterly differed from Professor Fletcher in his interpretation of Clause 5 of Section 13; he read it that so long as new buildings did not exceed 80ft. in height, there was no restriction on adding to the height of buildings reconstructed in streets less than 50ft. in width laid out before August, 1862. It was quite true, as the professor had remarked, that regulations as to underground rooms existed in the Public Health (London) Act; but this only came into force when the rooms were already erected and occupied. It was a defect in the new Building Act that rooms in basements were not dealt with when originally planned. The Act was not clear as to the extent of shopfront areas. It was quite true, as Mr. Woodward had shown, that not a single building, whether erected by H.M. Office of Works or a railway company, was free from notice by the district surveyor; certain buildings were exempt from Sections 6 and 7, but not from other sections.

LONDON MASTER PLUMBERS' ASSOCIATION.

A MEETING of London master men, convened by the National Association of Master Plumbers, was held on Monday at the Westminster Town-hall, for the purpose of formally inaugurating a branch in the Metropolis. Mr. A. R. Marshall occupied the chair, and explained that the National Association was formed in Leeds in May of the present year. Branches had already been established in Manchester, Bolton, Leicester, Oldham, Halifax, Blackburn, York, Newcastle-on-Tyne, Hull, Bradford, Sheffield, and other provincial centres. The proposal to formally inaugurate a London branch was formally submitted, and was adopted unanimously. After some discussion as to what should be the objects of the London Association, it was eventually agreed that these should be (1) to raise generally the status of the plumbing trade; (2) to prevent, if possible, the great bulk of the contract work of the country being done at prices which are unremunerative; (3) to unite by a system of federation all master plumbers; (4) to mutually protect and honour each other, and so act generally in concert for the protection of the trade; (5) to support each other in cases of strikes or labour difficulties; (6) to confine plumbers' work to plumbers; and (7) to bring about improvements in the contracting system. The rules of the branch were next submitted and adopted with slight amendment. The election of officers was then proceeded with.

* * *

At the London Institution on Monday night a lecture on "The Old Norman Builders," illustrated by dissolving views, was delivered by Mr. Arnold B. Mitchell, A.R.I.B.A. Mr. Mitchell described the development of Norman architecture in our churches, pointing out that many of these were also built as the village fortresses—a condition retained by the tower of Warkworth Church to this day, and, in conclusion, advised those Londoners who wished to study a specimen of Norman simplicity to visit the church at Waltham Abbey.

In Shields-road, Heaton-on-Tyne, on Tuesday afternoon, the popular tragedian, Mr. F. R. Benson, laid the corner stone of a new building designed to serve as the Grand Theatre for the playgoers of Heaton and Byker. This new play-house will cost £13,000, will hold 2,500 people, and may be ready for opening at Eastertide next. Mr. William Hope, of Newcastle, is the architect, and Mr. S. F. Davison, of Heaton, the builder.

The London County Council, on Tuesday, empowered the engineer, Mr. A. R. Binnie, to obtain assistance in promoting an inquiry, with a view to the restoration of the Thames as a highway. In regard to the water-supply, the recommendations of the Parliamentary Committee were negatived, and the proposal that the Government should be asked to promote a measure for placing the entire control of the water-supply within the Metropolitan area in the hands of the Council, conjointly with the City Corporation, was carried by 56 against 43.

At the last meeting of the Liverpool Dock Board objection was raised to a proposal of the Works Committee to give notice to representatives of the timber trade to quit premises occupied by them on the east side of the Canada Dock in consequence of prospective dock improvements. It was complained that sufficient attention was not being paid to the wants of the timber trade. The chairman of the committee denied that the timber trade had been unfairly used, and the proposal was eventually adopted.

OBITUARY.

Mr. Benjamin Bucknall, architect, the friend and companion of Viollet-le-Duc, died at Algiers on November 16th, at an advanced age, from an attack of influenza. He had translated many of Viollet-le-Duc's principal works into English, and was his guest while the great French architect was rebuilding the Château of Pierrefonds for Napoleon III. Mr. Bucknall, who went to Algiers about 22 years ago in search of health, was so pleased with the country and his surroundings that he settled there permanently. "With singular knowledge and good taste," says a correspondent of the *Times*, "he adapted Moorish art to modern requirements, and the many beautiful villas in the neighbourhood of Algiers which he built or reconstructed for French, as well as for English, owners are very graphic evidences of his genius and good work. So successful was he that he was employed by wealthy natives as well as by Europeans. His funeral was so largely attended by persons of all nationalities and classes that it assumed almost a public character."

CHIPS.

The finance committee of Aberdeen Town Council have approved a draft Bill to be promoted in Parliament in the event of the council deciding to purchase the tramways. A valuation of the system is to be carried out.

The city council of Wells, Somerset, have resolved to make a final offer to the local gas company of £14,700 for the undertaking and plant.

On Thursday in last week a new Congregational chapel, recently erected at Wall Heath, near Kingswinford, was opened. The builder was Mr. Cave, and the architect Mr. Beck, both of Wolverhampton.

At the meeting of the Edinburgh Architectural Association, held at the Royal Institution in that city, on Wednesday night, a paper was read, illustrated by limelight views and photographs, by Mr. Thomas Arnold, A.R.I.B.A., of London, on "The Mausoleum at Halicarnassus." Dr. R. Rowand Anderson, the president, occupied the chair.

It is proposed to restore the tower of the parish church of Llangynllo, Radnorshire, from plans by Mr. F. R. Kempson, F.R.I.B.A., of Hereford. The church itself was restored in 1878, with the exception of the tower, which is now very dilapidated.

The guardians of Chorlton Union have adopted plans by Mr. J. B. Broadbent, of Princess-street, Manchester, for a group of cottage homes, with workshops, hospitals, and schools, to be erected by the board at Styal, Cheshire.

The Napoleonic Museum at Ajaccio is about to be enriched with a collection of paintings and various other curiosities relating to Napoleon I. They were bequeathed to the town of Ajaccio by the will of the late Baron Hippolyte Larrex.

The rural sanitary authority of Taunton have adopted an amended scheme by Mr. Hawkins, C.E., for the drainage of Somerton village, at an estimated cost of £1,500, exclusive of £450 to be paid for land at Barpool. The same authority are also arranging outworks of water-supply for Somerton.

The new hospital, Heywood, has been warmed and ventilated by means of Shorland's patent Manchester stoves with descending smoke-flues, the same being supplied by Messrs. E. H. Shorland and Brother, of Manchester.

A group of public offices are about to be erected at Hunstanton, for the urban district council of that watering-place. Messrs. G. J. and F. W. Skipper, of Norwich, are the architects, and Mr. S. Hipwell, of Wisbech, is the contractor. The outlay will be a little over £2,000.

At a special meeting of Dunfermline Town Council, held on Friday, Mr. Andrew W. Bell, of the Office of Public Works, Glasgow, was appointed burgh engineer, master of works, sanitary inspector, &c., at a salary of £250 a year.

At the last meeting of the Leeds Corporation Waterworks Committee, the city engineer (Mr. Thomas Hewson) reported that the new 30in. main from Swinsty to Arthington was completed, with the result that there are now three gravitating mains between Swinsty and Eccup, and the total quantity of water which can be sent to Leeds without pumping at Arthington is over 18,000,000 gallons per day, the daily consumption at the present time being 14¼ million gallons.

The Bishop of Lincoln has unveiled a seven-light stained-glass window which has been erected above the reredos in the chancel of St. Leonard's Church, Newark. The window, which represents the Ascension of Our Lord, has been raised by public subscription, at a cost of £250. Mr. C. E. Tute, of Gray's Inn-square, W.C., was the artist.

COMPETITIONS.

Brownhills.—At the last meeting of the Brownhills Urban District Council, a report by Mr. Eayres, West Bromwich, the assessor, with reference to the competitive plans for the drainage of Walsall Wood was considered in committee. It was then decided to adopt the scheme by Mr. H. B Nicholls ("Forward"), Grosvenor Chambers, Corporation-street, Birmingham, by eight votes against four for Mr. H. W. Radford ("Gravitation"), Nottingham, who was awarded the second premium.

Christ Church Schools, Horsham.—On Wednesday last the appointment of quantity surveyors for the new school buildings in Sussex, of which Messrs. Aston Webb and Ingress Bell are the architects, was determined by the committee of the Governors. A large number of applications were, naturally enough, received from surveyors in all parts, as the cost of the works will be probably about £400,000. Three firms were finally selected for ultimate choice—viz., Messrs. Hunt and Steward, Mr. J. Gandy, and Messrs. Gardener, Son, and Theobald. The first-named firm, Messrs. Hunt and Steward, have been elected.

Coventry.—The city council received, on Tuesday, a report from the joint Estates and Finance and Watch Committees, respecting the plans for new municipal buildings, with reference to accommodation for the police, &c. After consultation with the architect, Mr. Quick, the committee recommended a rearrangement of the plans, which secured sufficient accommodation on a much less ambitious scale. The joint committees also submitted correspondence with the Home Office, showing the necessity of prompt measures being taken to prevent the loss of the Exchequer contribution to the cost of maintenance of the police. The Mayor moved the adoption of the report, and gave details of the accommodation proposed to to be provided, and Alderman Marriott seconded, stating that he estimated that the revised plans would result in a saving of something like £10,000. The question of the plans for municipal buildings generally, of course, stood over. After considerable discussion, in which Mr. Lee pointed out that they had paid large premiums for the best plans and then laid them aside for plans of their own making, the report was adopted, and full powers in the matter were delegated to the Watch Committee to submit the scheme to the Home Office for approval, and apply for the necessary borrowing powers.

Hetton-le-Hole.—In consequence of the dilapidated condition of the present church at Hetton, built 65 years ago, it was decided to rebuild it, and £1,200 having been promised towards the reconstruction, competitive designs were invited. Nine firms of architects sent in their plans, and the committee selected the designs of Mr. Stephen Piper, M.S.A., Westgate-road, Newcastle-on-Tyne. Mr. Piper's design is that of a simple Early English church, consisting of chancel, nave, north and south transepts, and narrow aisles, organ chamber, and side chapel, with a clergy vestry on the north side of chancel, and choir vestry at the west end of church. The accommodation is for 600, and the estimated cost £3,450, after taking into consideration the existing building material and seating.

Reading School Board.—The resolutions passed by the Board on June 12 and July 10, to obtain by competition plans for the school and buildings to be erected on the Swansea-road, were rescinded on the 11th inst., and it was decided that Mr. G. W. Webb, F.R.I.B.A., Market-place Chambers, Reading, be appointed to prepare plans, &c., for the new buildings. The schools are to accommodate 1,000 to 1,200 children on the classroom system, with central halls; also a cookery centre for 54 scholars, a manual instruction centre for teaching metal and woodwork, and playsheds for gymnastic apparatus, &c. The architect is also to report as to providing a swimming-bath in the basement of schools.

Welshpool.—The Governors of the County Intermediate Schools at Welshpool have intrusted Messrs. Woodhouse and Willoughby, architects and surveyors, of 100, King-street, Manchester, with the duty of assessing the competitive designs for their new school buildings.

* * *

A new mill, warehouse, and stables are about to be built at Congleton, Cheshire, from plans by Mr. John W. Rodger, of High-street, Cardiff.

CONTENTS.

Mistakes and Abuses ... 877
Promised Payment for Extras ... 878
Royal Institute of British Architects ... 878
Classic Details and their Application ... 879
Shoreditch Public Baths and Free Library ... 880
The Society of Architects ... 881
The Master Plumbers' Association ... 884
Obituary ... 884
Competitions ... 884
Our Illustrations ... 885
The Building News Directory ... xiii
Building Intelligence ... 904
Architectural and Archæological Societies ... 904
Notes on Approximate Estimates ... 905
Concert Halls and Assembly Rooms.—VII. ... 906
Correspondence ... 908
Intercommunication ... 908
Legal ... 908
Legal Intelligence ... 908
Water Supply and Sanitary Matters ... 909
Our Office Table ... 909
Trade News ... 910
Tenders ... 910

ILLUSTRATIONS.

"THE HOLY FAMILY," BY HANS MEMLINC (A.D. 1495).—SECOND PREMIATED DESIGN FOR THE SHOREDITCH BATHS AND FREE LIBRARY.—LAMBETH BATHS.—HEAD MASTER'S RESIDENCE, MERCHANT TAYLORS' SCHOOLS.—NEW DINING HALL, CXLIV. HIGH STREET, SOUTHAMPTON.

Our Illustrations.

OLD MASTERS ON THE CONTINENT: XXVIII.—"THE HOLY FAMILY," BY HANS MEMLINC.

"The Seven Joys of Mary," in the Old Pinakothek at Munich, the Madonnas at Antwerp, Florence, Bruges, and Madrid, and also the "Virgin and Child Enthroned," one of the two examples representing this great Flemish master in our National Gallery, are similar in many ways to the dignified and beautiful painting which we reproduce to-day from the Royal Gallery at Brussels, entitled "The Holy Family," but which might be described more correctly as a votive picture of the Virgin and Child with St. Anne, the donor, a monk, kneeling in prayer by the side of the sacred group, which forms so admirable a composition, and furnishes so appropriate an illustration on the eve of the festival of Christmas. Some account of the works of Hans Memlinc, written by Mr. Charles Eastlake, the Keeper and Secretary of the National Gallery, will be found in the Building News for Nov. 3, 1893, on which occasion we illustrated the painting of the "Virgin and Child Enthroned," already referred to. On the 1st of November of this year we gave another specimen of Memlinc's masterpieces, and we hope to give others shortly in this same series, which is being reproduced from magnificent photographs taken direct from the original paintings by Mr. Hanfstaengl, of Munich.

SHOREDITCH PUBLIC BATHS AND LIBRARY SECOND PREMIATED DESIGN.

(For description, see p. 880.)

NEW BATHS AND WASHHOUSES, KENNINGTON ROAD, S W.

This establishment of public baths and washhouses, for which tenders are to be sent in to-morrow, is to be erected at the corner of the Kennington and Lambeth roads by the Commissioners for Baths and Washhouses for the parish of Lambeth, and is the first of the series projected by them, and for which plans have been prepared by the architect of these buildings illustrated by us to-day—viz., Mr. A. Hessell Tiltman, F.R.I.B.A. The site is probably one of the finest that could be obtained in London for this purpose, and the extent of its two frontages enables a proper distribution and separation of the numerous entrances to the various departments; and, of more importance than all, it secures thereby a well-arranged series of entrances and exits to and from the men's first-class swimming-bath on the occasion of the latter being used for public entertainment, and thus with many other points of arrangement meets the requirements of the London County Council in respect of its license for the use of this part of the buildings for such purposes. The ground floor (as shown by the key-plan published), together with the first and basement-floor plans, provide the following accommodation:—Men's first-class swimming-bath, 143ft. by 57ft., with pond, the clear size of which is 132ft. by 40ft.; men's second-class ditto, 100ft. by 43ft., clear size of pond 90ft. by 30ft.; women's ditto, 65ft. by 41ft., clear size of pond 60ft. by 25ft. There will be 24 first-class slipper-baths for men and 39 second-class; 14 first-class slipper-baths for women and 17 second-class. There is room for the enlargement of all branches of the women's baths. The public washhouse will accommodate 64 washers, together with all the necessary accessory accommodation, and many new arrangements for the comfort and convenience of those using and governing this portion of the establishment as the outcome of the architect's special experience. The estimated cost of the establishment, including site, engineering, &c., will not exceed £55,000, and its author states that not only will it be the equal in size of another of his establishments already erected—viz., that at Hornsey-road, N. (the largest in England), but that it will have many improvements over it, in the shape of more suitable finish in every part, for the special avoidance of periodical repairs—an item of very great importance not even yet done justice to.

MERCHANT TAYLORS' SCHOOL—HEAD MASTER'S HOUSE.

This perspective shows the new buildings which have recently been erected for the Merchant Taylors' Company, for the head master of their school in Charterhouse-square, E.C. The buildings are faced with red brick, and Portland and Bath stone are largely employed in the windows and stringcourses. In the rear are two spacious dining-rooms for the boys, about 300 dining every day out of a total of 500 boys. The plan explains the general arrangement of the house, and there is a handsome oak staircase going up to the top story. The drawing-room is on the first floor, and the oriel window which is seen in the drawing gives a good view over the playground. The buildings have been carried out from the designs of Mr. W. Hilton Nash, F.R.I.B A., and the builders were Messrs. Dove Bros. The cost of the work was about £10,000.

NO. CXLIV. HIGH STREET, SOUTHAMPTON.

This curious and very ancient place of business dates from the time of the Normans, who, 800 years ago, constructed the barrel-vaulted cellar (under the front shop) to store wine in, which purpose it fulfils to day. In the stonework many rings and hooks of old Hampshire iron remain, and throughout the premises tiles, pottery, and coins of various dates have been discovered. The well marked A on plan is steined with worked stone. In designing the new portions the irregularities of the site, instead of being "squared off" were pressed into service, and now form useful recesses, spanned by the curb of an octagonal roof. The whole of the timber is unvarnished pitch-pine, the dado of red and white deal, and the fireplace of red Mansfield and Caen stone. An old bakehouse has been converted into a kitchen, between which and the dining-hall is a ventilated chamber containing the grill. Messrs. H. Stevens and Co. have carried out the work for the owner, Mr. G. B. Cundell, under the supervision of the architect, Mr. R. M. D. Lucas, at a cost of about £600.

FONT CANOPY, ST. PETER'S, LONDON DOCKS.

This richly-sculptured, spire-shaped canopy shown by the architect's detail drawing, which is reproduced herewith to-day, was lately executed by Messrs. Farmer and Brindley, the elaborately-treated metal-work hoist having been carried out in wrought iron. The sculptured statues in the niches round the octagonal body of the cover represent:—1, "Noah, with the Ark and Dove," foreshadowing Redemption; 2, "Moses with the Two Tables of the Law," recalling the Passage through the Red Sea, a figure of the Waters of Baptism; 3, "St. John the Baptist," bearing the *Agnus Dei*, and wearing his garment of camel's hair; 4, "St. Peter with the Keys," the patron saint of the parish; 6, "St. George and the Dragon," the heroic martyr of Nicomedia, A.D. 285, and patron of St. George's-in-the-East, in the old parish of which the mission of St. Peter's, London Docks, largely extends; 7, St. Charles Borromeo, born Oct. 2, 1538, died Nov. 3, 1584, Archbishop of Milan and Cardinal, after whose name the founder of St. Peter's, Old Gravel Lane, Charles Lowder, was christened; 8, "St. Vincent de Paul," leading a child. He was the founder of the "Order of Lazarites," or "Fathers of the Mission," in Paris, 1642, and the "Order of Sisters of Charity" in 1655, five years before his death at the advanced age of 84. The cover is surmounted by a *Pelican in her Piety*. The red spot at the end of the bird's beak having led people to suppose that while preening its feathers it was feeding its young with its own blood originated the use of the Pelican as a beautiful symbol of Him who in like way sustains the Church in the Sacrament. The figures of the Evangelists on the stone shaft supporting the oaken beam of the font's cover-hoist were carved by Mr. Nathaniel Hitch from the architect's full-size drawings. The same artist sculptured the kneeling statue of an angel at the foot of the staircase leading round the baptistery to the west gallery of the church. A view of this building appeared in our pages for May 11, 1894, from the Royal Academy drawing of the architect, Mr. Maurice B. Adams, F.R.I.B.A.

CHIPS.

The Edinburgh and Leith Water Trust have appointed Mr. Jervis, who was formerly in charge during the construction of the Moorfoot works, as chief inspector of the Talla works of water supply, at a salary of £300 per annum.

In last Saturday's issue of *La Construction Moderne* an article is devoted to the description of the Passmore Edwards Public Library at Hammersmith, and accompanying it a reproduction is given of the Royal Academy drawing of the building, exhibited this year by the architect, Mr. Maurice B. Adams.

The Shoreditch Public Library in Kingsland-road is about to be considerably enlarged at the cost of Mr. J. Passmore Edwards, who presented the original building to the parish a year or two since, when it was opened by the Duke of Devonshire. The new façade is to be in Portland ashlar with cornices and pediments. The architect nominated by the commissioners, and appointed by the donor, for the work is Mr. Maurice B. Adams, F.R.I.B.A.

At University College, Gower-street, on Monday, Professor Bonney, the well-known geologist, was presented with a portrait of himself painted by Mr. Trevor Haddon, and subscribed by past and present students at the College and at Cambridge University.

The work of demolishing the first block of eight houses in Poets'-corner and Old Palace-yard, Westminster, was commenced on Tuesday. This clearance, which is being carried out by H.M. Commissioners of Works, will provide a much-needed open space on the north-east of the Abbey Chapter House and Henry VII.'s Chapel, and this will, for the present at any rate, be laid down with turf.

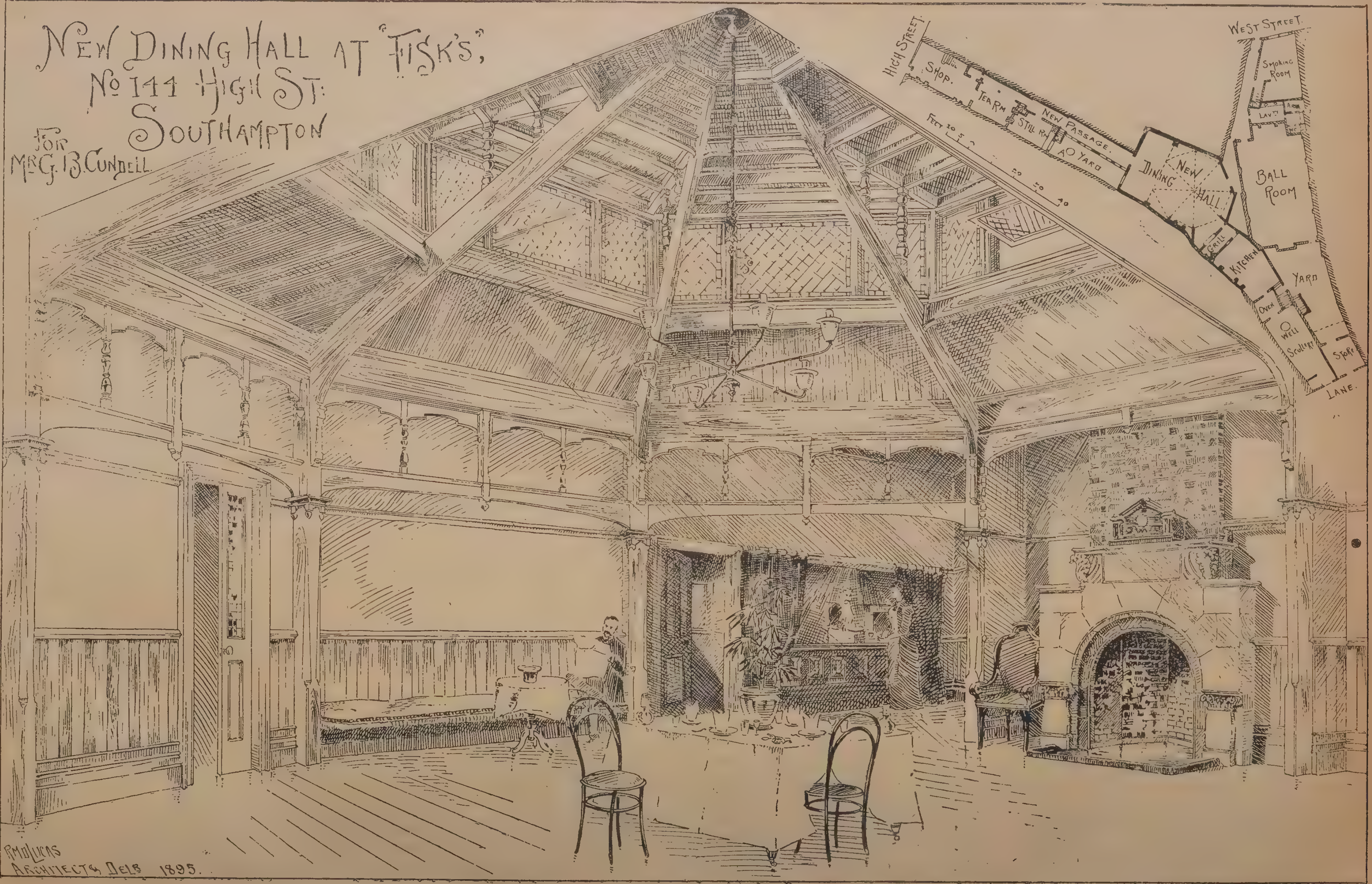
The foundation-stone of a new branch Jewish Synagogue, to be erected in Lauderdale-road, Sutherland-avenue, Paddington, was laid on Sunday afternoon by Mr. Sebag Montefiore. Messrs. Davis and Emanuel, the architects, are described in the official document placed under the stone as the "designers of designs." Messrs. S. J. Jerrard and Sons are the builders.

At the Audit House, Southampton, on Wednesday week, Major-General H. D. Crozier, R.E., held an inquiry on behalf of the Local Government Board into the application of the Southampton Corporation for sanction to borrow £6,000 for covering in the two revervoirs on the Common, at present open, and holding about six million gallons. Mr. W. Matthews, waterworks engineer to the corporation, explained the proposal. Further applications were made on behalf of the corporation for sanction to borrow £4,000 for laying an 18in. cast-iron intercepting sewer from Simnel-street to the Town Quay, and sums of £545 and £475 for improvements in Bedford-place and Blechynden-terrace.

The town council of Dunbar decided on Friday to expend £2,000 in supplementing the supply of water with some to be drawn from the Cold Burn, above Pathhead.

In the case of Edgar Charles Newby (late tradin as E. C. Newby and Co.), Cardiff, contractor, the discharge from bankruptcy has been suspended for three years and six months, ending April 3, 1899.

The Watford Urban District Council having applied to the Local Government Board for sanction to borrow £900, for the erection of a new council chamber, an inquiry was held by Mr. John Ord Hasted, one of the Local Government Board inspectors, at Upton House, on Friday. The clerk to the urban council explained that the contract for building had been entered into by Mr. Eames for £580, the architect's commission and expenses were estimated at £40, and £280 would be required for furniture and fittings.


New Dining Hall at "Fisk's",
No 144 High St:
Southampton
For
Mr G. B. Cundell
High Street
Shop.
Tea Rm
Still Rm
New Passage.
Yard
Feet 10 5 0 20 30 40
Dining
New
Hall
West Street.
Smoking Room
Lavy
WC
Ball Room
Grill
Kitchen
Yard
Oven
Well
Scullery
Store
Lane.
R. M. Lucas
Architect & Delt 1895.

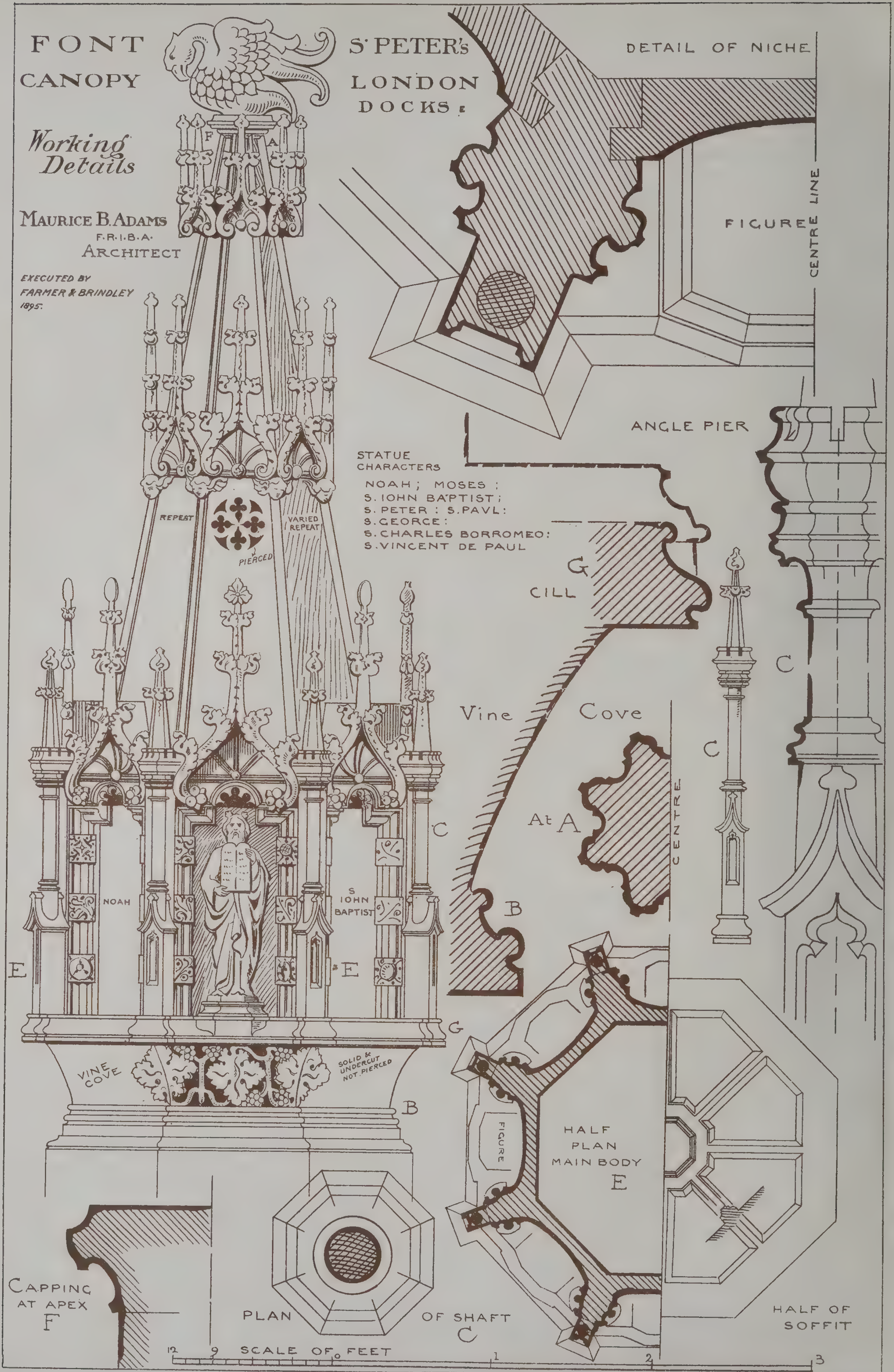
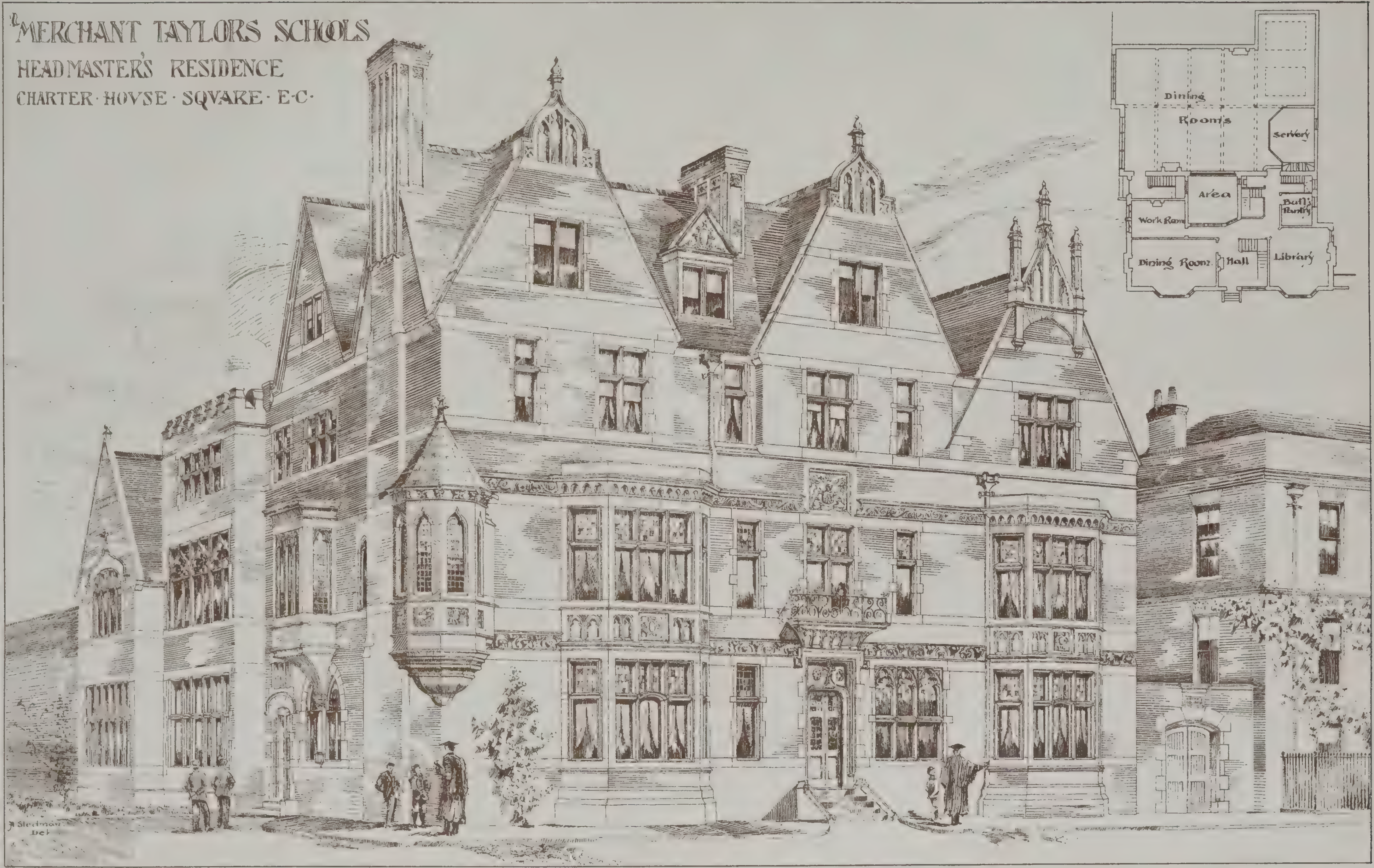


Photo-lithographed & [illegible]

MERCHANT TAYLORS SCHOOLS

HEADMASTER'S RESIDENCE

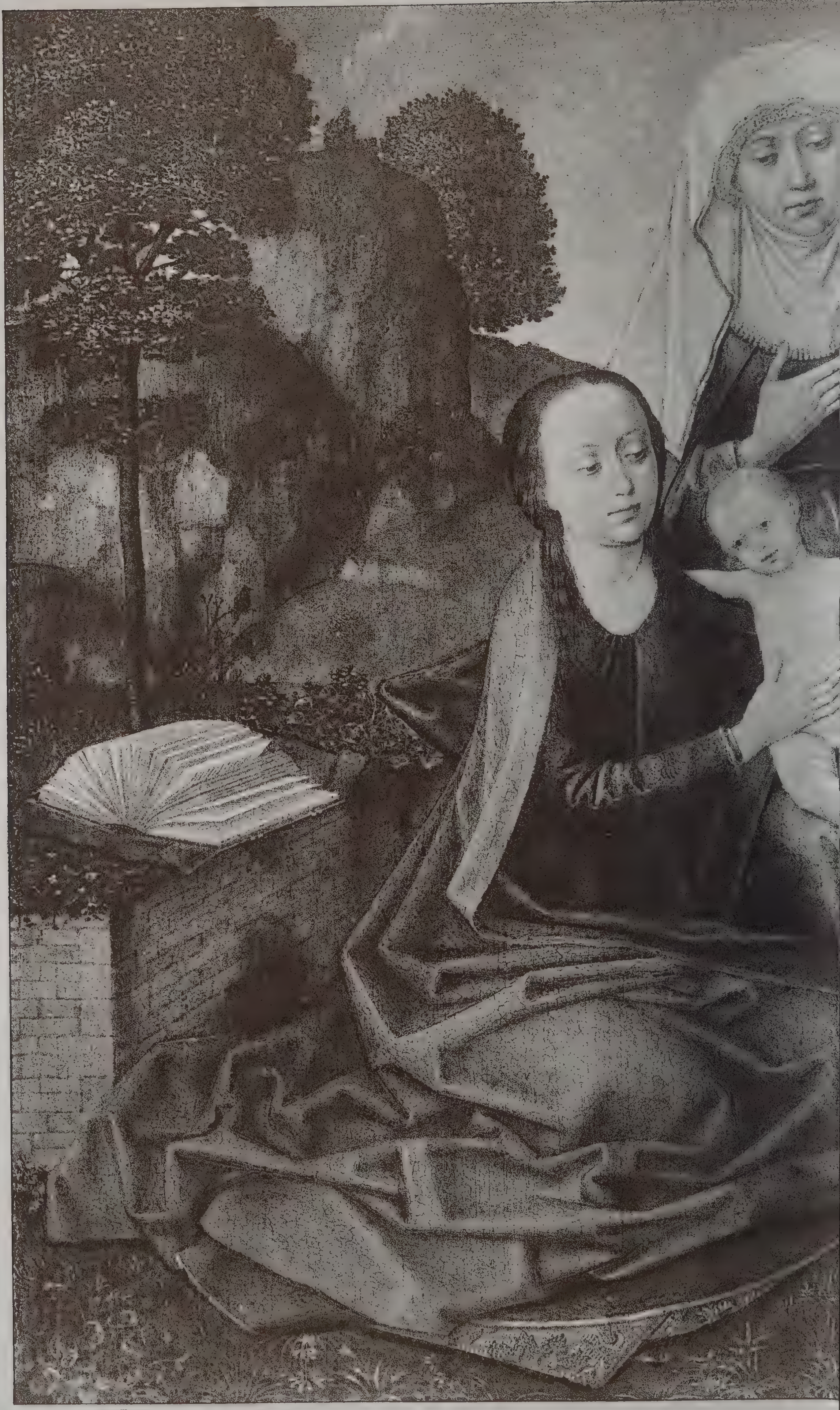
CHARTER · HOUSE · SQUARE · E·C·



W. HILTON NASH, F.R.I.B.A., ARCHITECT

Photo Lithographed & Printed by James Akerman, 6, Queen Square, W.C.

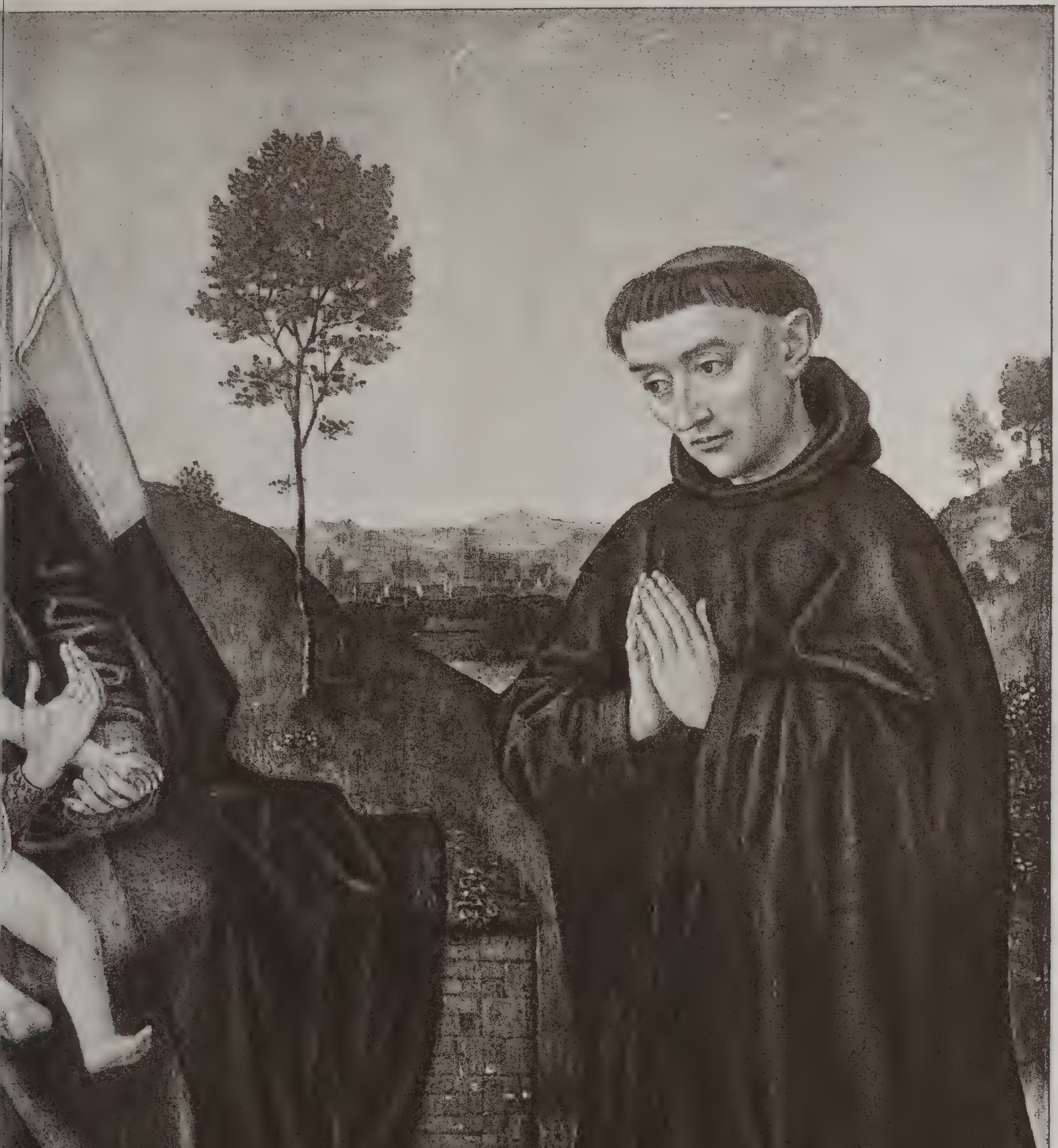
UNIVERSITY OF ILLINOIS



– PHOTO·BY·FRANZ·HANFSTAENGL.–

OLD·MASTERS·ON·

THE·HOLY·FAMILY·(BRUSSELS)·BY·H



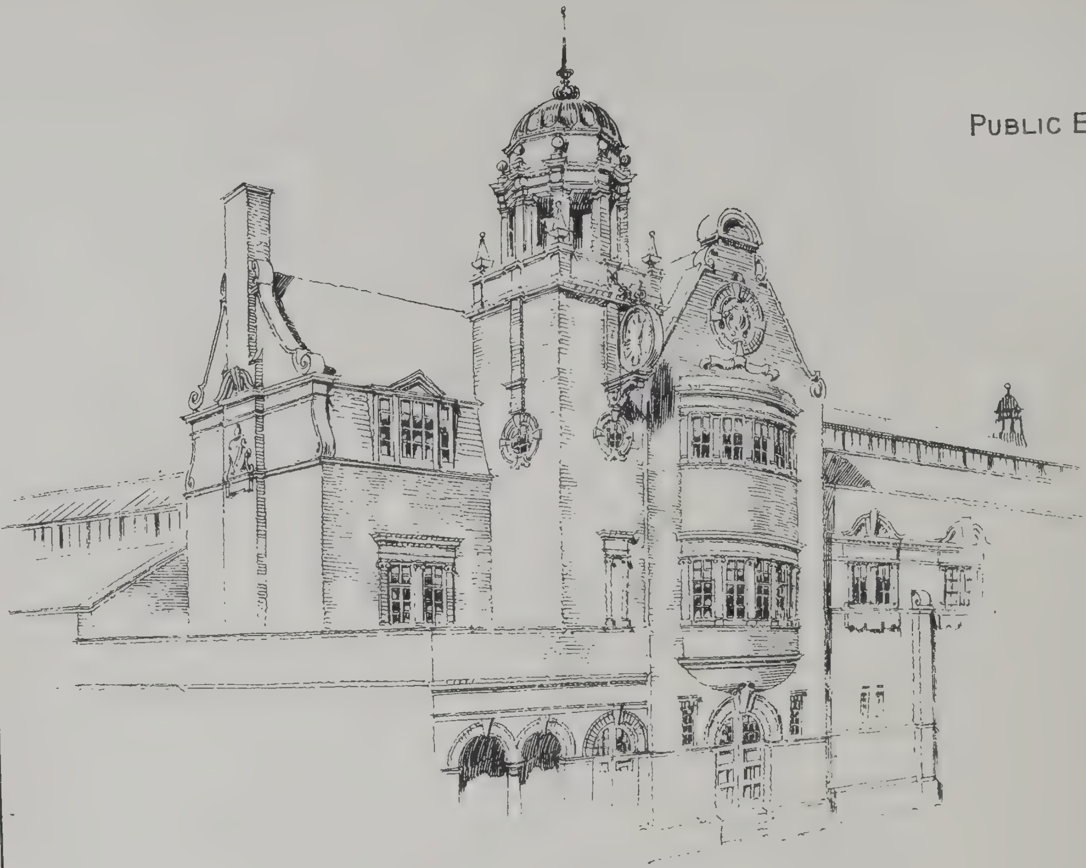
"Photo-Tint," by James Akerman, 6, Queen Square, London, W.C.

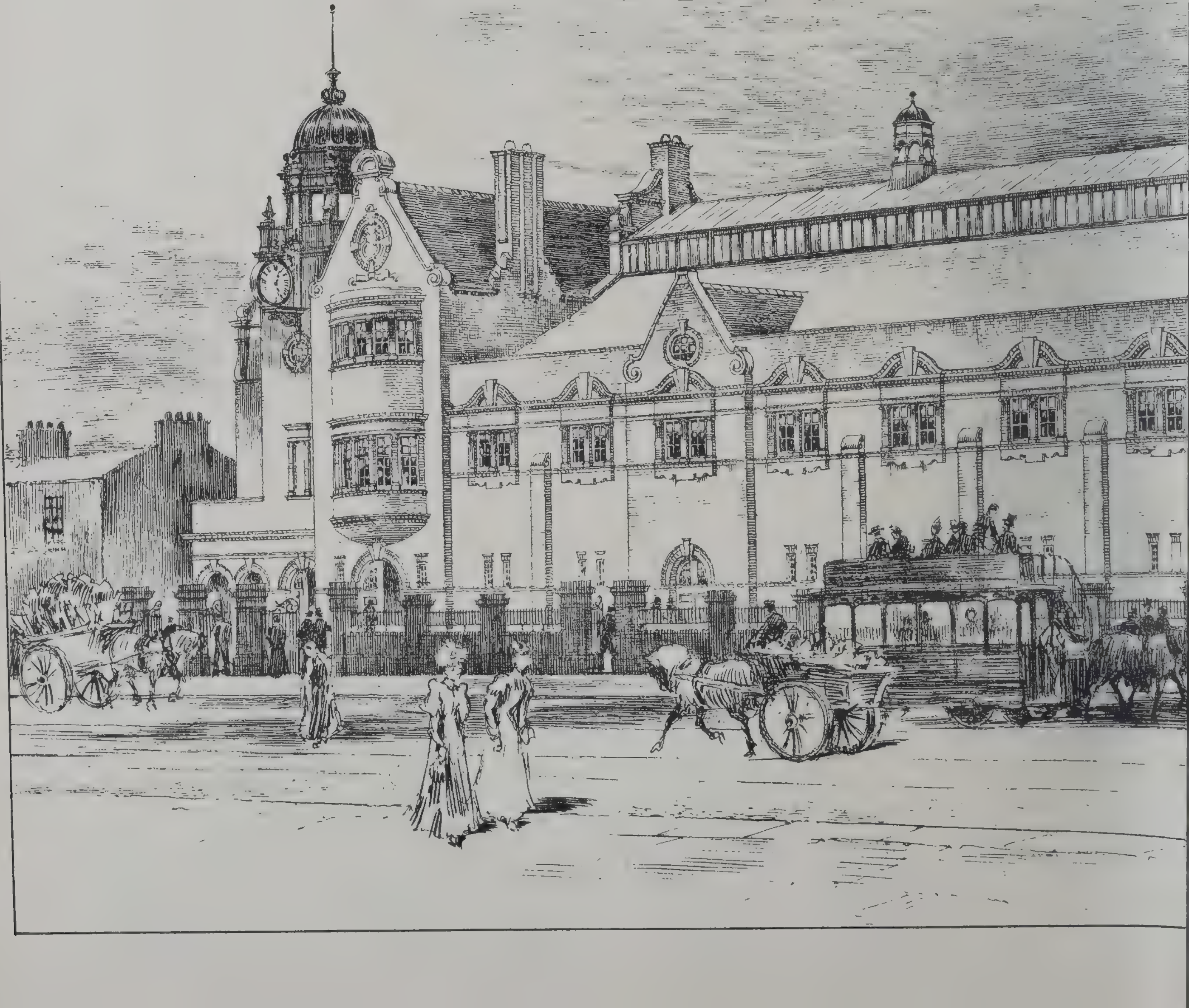
e · Continent · N°28·

ns · Memlinc · (b-? d·1495) Flemish · School ·

PUBLIC BATHS & WASHHOUSES, KI

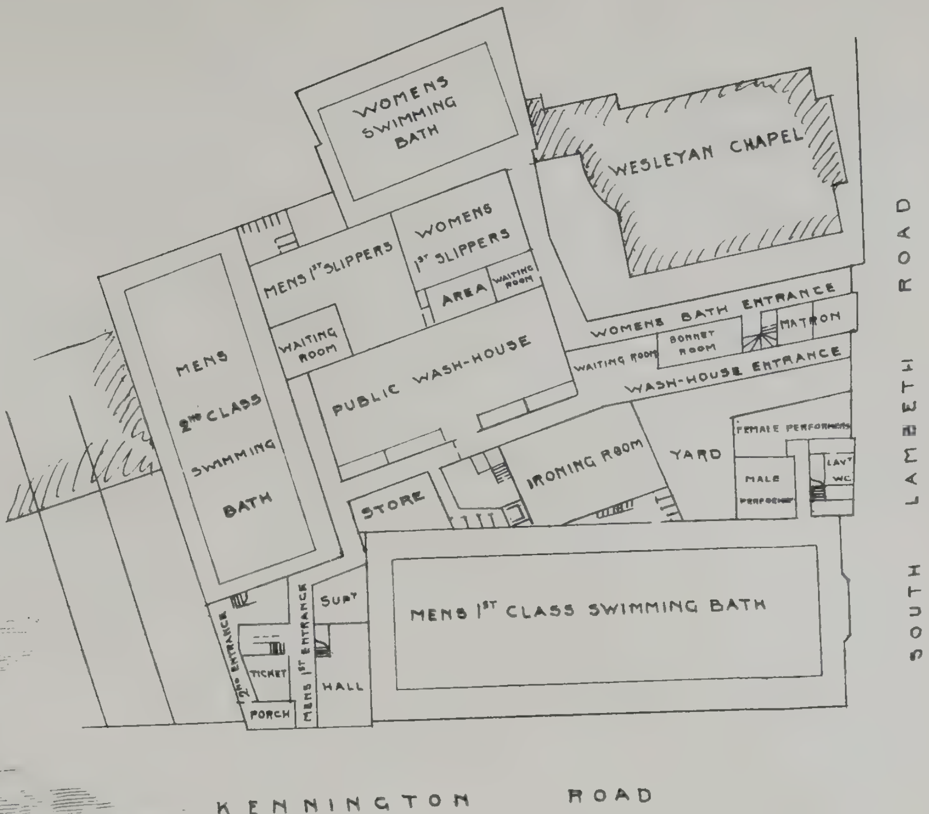
A. HESSELL TILTMAN, F.F





NINGTON ROAD, LAMBETH,

B.A., ARCHITECT.



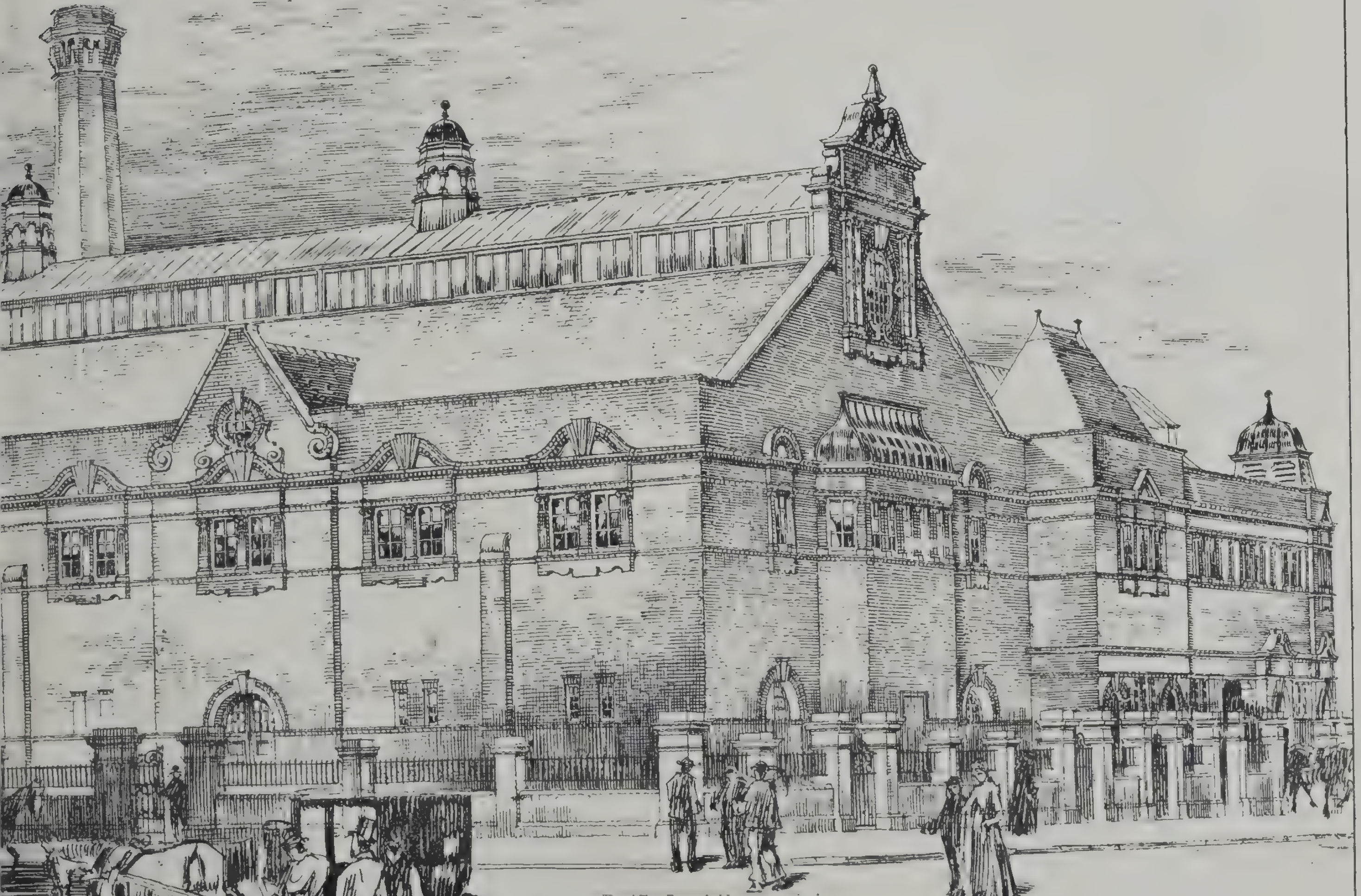
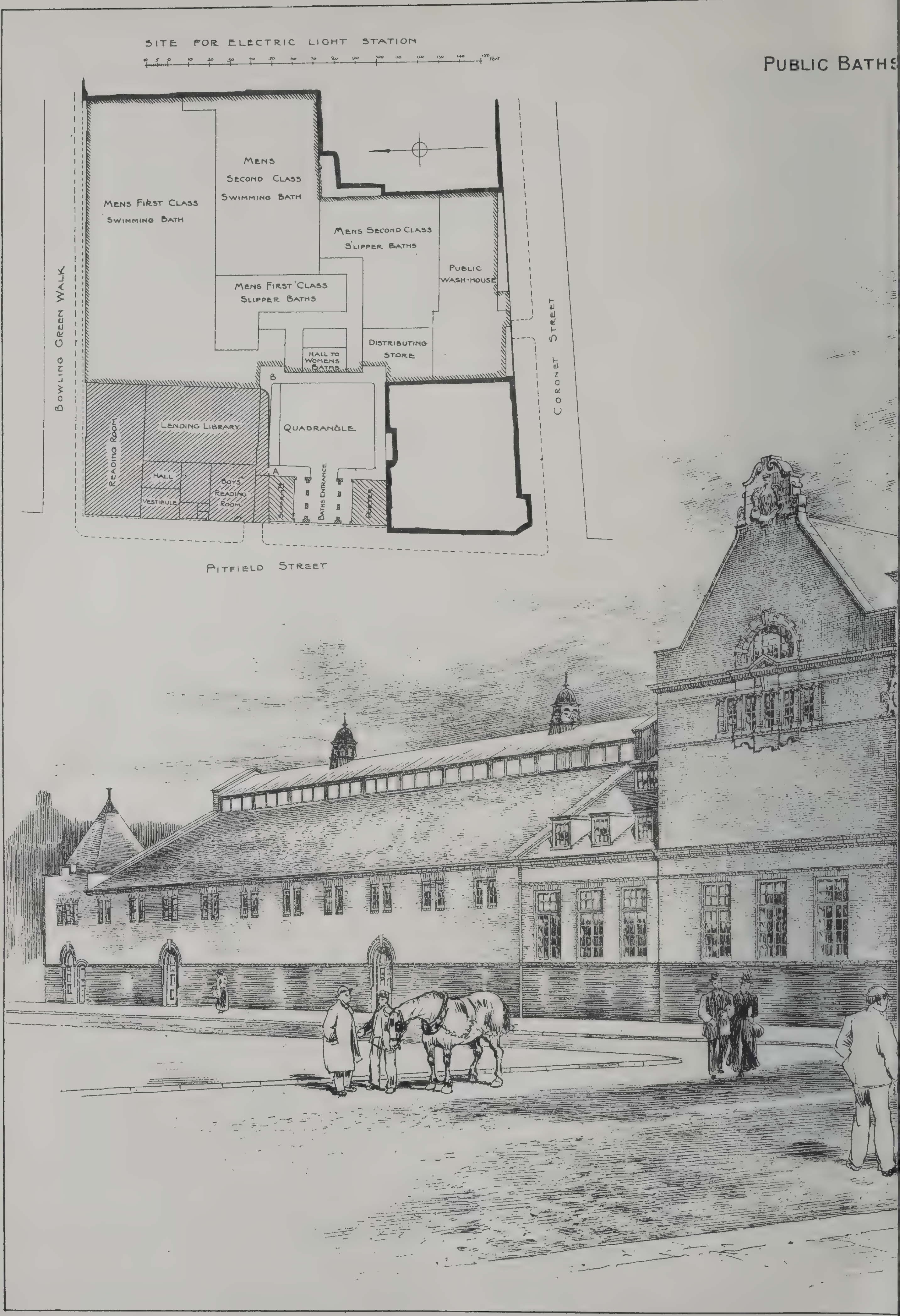


Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C

PUBLIC BATHS


SITE FOR ELECTRIC LIGHT STATION
10 5 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 FEET
MENS SECOND CLASS SWIMMING BATH
MENS FIRST CLASS SWIMMING BATH
MENS SECOND CLASS SLIPPER BATHS
PUBLIC WASH-HOUSE
MENS FIRST CLASS SLIPPER BATHS
DISTRIBUTING STORE
HALL TO WOMENS BATHS
B
BOWLING GREEN WALK
CORONET STREET
READING ROOM
LENDING LIBRARY
QUADRANGLE
HALL
A
BOYS' READING ROOM
VESTIBULE
BATHS ENTRANCE
PORTER
PITFIELD STREET

& FREE LIBRARY (PASSMORE EDWARDS) SHOREDITCH.

SECOND PREMIATED DESIGN BY A. HESSELL TILTMAN, F.R.I.B.A., ARCHITECT.

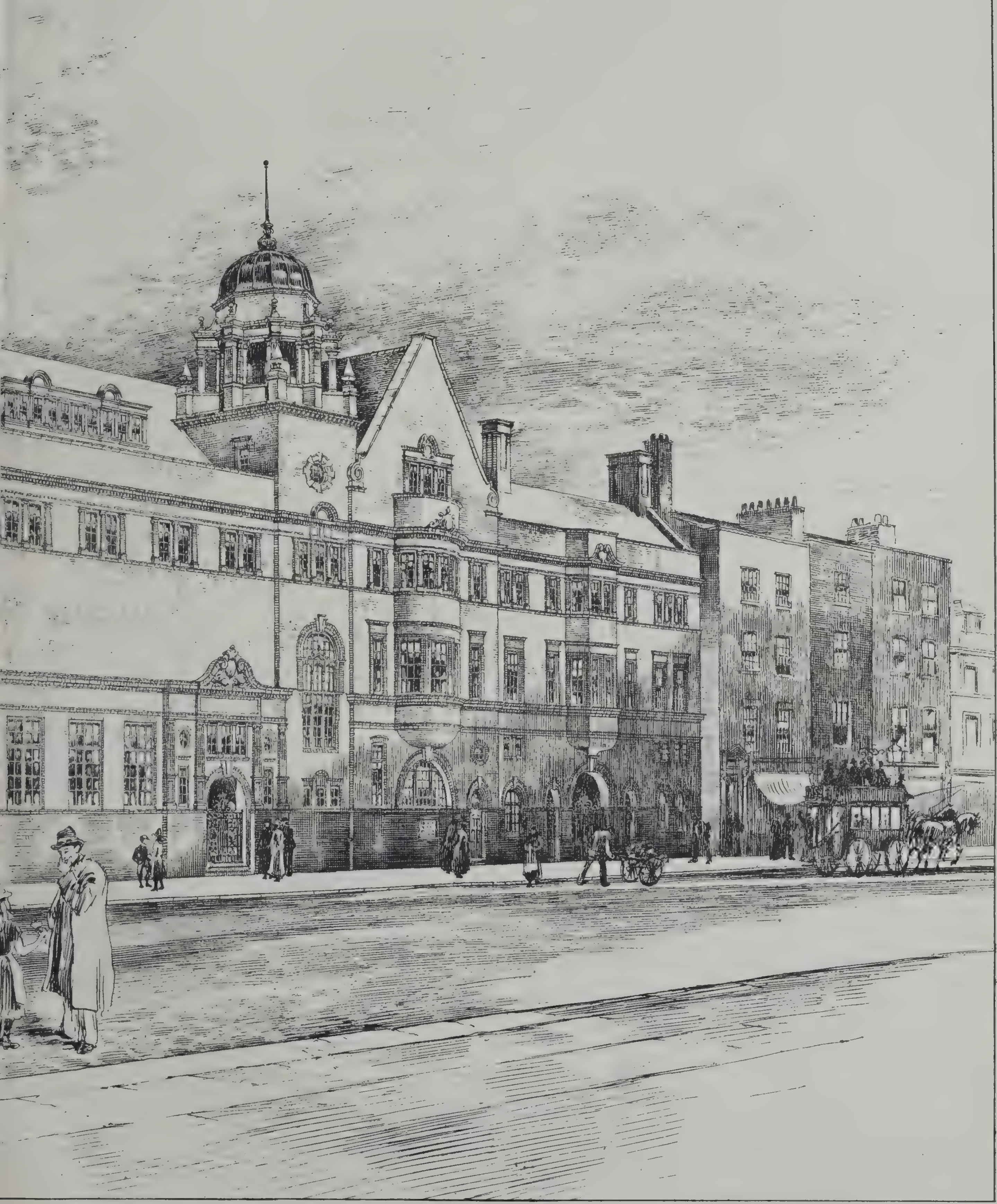
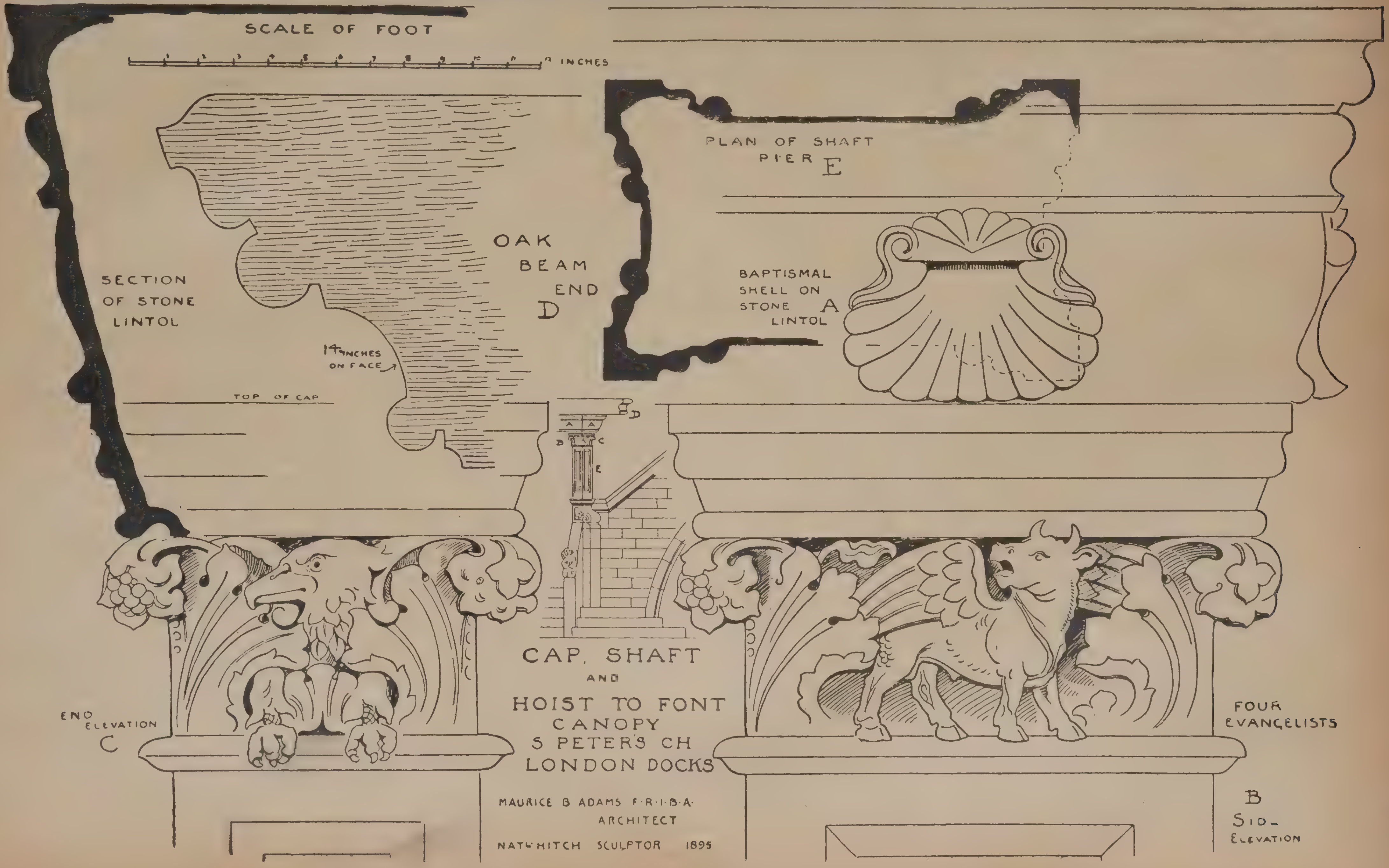


Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C.



CAP. SHAFT
AND
HOIST TO FONT
CANOPY
S PETER'S CH
LONDON DOCKS

MAURICE B ADAMS F·R·I·B·A·
ARCHITECT
NATL HITCH SCULPTOR 1895

Building Intelligence.

Birkenhead.—The new fire station, which has been erected for the Birkenhead Fire Brigade in Borough-road, was formally opened on Tuesday. The buildings comprise the fire-station proper, with superintendent's house, engineer's house, and quarters for twelve single men. The engine-house fronts to Whetstone-lane, and has accommodation for two steamers and a tender, all of which can be taken out direct by means of three large folding-doors opening on to the road. Adjoining are a recreation-room, duty-room, and superintendent's office. The buildings have been erected from the designs and under the superintendence of the borough engineer, Mr. Charles Brownridge, A.M.Inst.C.E., Mr. James Merritt, of Marion-street, being the contractor.

Gateshead.—The foundation-stone of the new church of St. George, Durham-road, Gateshead, was laid on Monday by Lord Northbourne. The building, which is a simple treatment of 13th-century style, is being erected at a cost of £5,900, including the tower. The accommodation is for 630 adults. The church consists of chancel, nave, north and south transepts and aisles, and organ chamber, with choir and clergy vestries on the south side. The latter are arranged so that they may be used as one room for meetings, and have an entrance from Inskip-terrace. The nave is 27ft. wide and 49ft. high to the ridge. It is divided into five bays, with narrow aisles, and without a clerestory, an arcading of high pitched arches being thus obtained. There are three entrances, the principal being at the south-west angle, through the tower. The exterior walling is of local stone, sneck-faced, and the interior piers and arches are of stone, chisel dressed, the general finishing being plaster with a cleated dado. The floors of the nave will be of wood, with wood-block flooring in the passages. The floor of the chancel will be covered with encaustic tiles. The windows will be filled with tinted cathedral glass in leaded lights; and the heating is to be by hot water, on the low-pressure system. Mr. Stephen Piper, M.S.A., 52, Westgate-road, Newcastle-on-Tyne, is the architect, his plans having been selected in a limited competition, in which Mr. W. Walton-Wilson, F.R.I.B.A., was the assessor. The contractor is Mr. Alexander Pringle, of Gateshead, and Mr. Richley is acting as clerk of the works. It is expected that the building will be completed next autumn.

* * *

New works of water supply are about to be carried out for Wargrave and Twyford, Berks, from plans by, and under the superintendence of, Mr. A. Marshall, C.E., of Swadlincote. The contract has been taken by Mr. M. S. Kitteringham, of Enfield, at £4,240.

The Liverpool School Board have assented to the inclusion in its contracts of a clause binding contractors to pay the current wages and observe the recognised hours.

A Local Government Board inquiry was held at Harrogate on Tuesday as to an application by the corporation for sanction to borrow £27,000 for the purposes of electric lighting; £4,000 for the construction of new storage reservoirs for surplus water; £1,500 for the provision of underground conveniences on the Stray; £1,050 for works of storm-water overflow, the covering of a water-course, and the erection of a shed for mixing asphalte; and £150 for the provision of conveniences at the Victoria Baths.

Colonel G. T. Plunkett, late Royal Engineers, has been appointed by the Lord President of the Council to the Directorship of the Science and Art Institutions in Dublin. In this capacity he will have the same administrative control of the Science and Art Museum, the Metropolitan School of Art, the Botanic Gardens, and the National Library, as the late Director, Dr. Valentine Ball, C.B., and at the same time will be responsible for the duties at present connected with the office of secretary to the Royal College of Science, which post Colonel Plunkett has hitherto held.

The Chester Town Council had before it, on Friday, a proposal for the erection of a new high-level bridge over the Dee, to connect the city and the residential district of Queen's-park. The plans, prepared by Mr. Beswick, show a structure in two spans of 212ft. and 160ft. respectively, and 27ft. in width, running from St. John's Churchyard to the Queen's Park Estate, and the estimated cost is £11,500, towards which £5,000 and the land on the estate abutment would be provided by the residents in that suburb. The matter was referred to a sub-committee.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

York Architectural Society.—The council of this society, in their thirteenth annual report, state that the total number of members on the roll is 58, being an increase of three since the last report was issued. Six new members have been elected, and three have left the city. Papers were read during the session by Messrs. H. W. Chubb, of London; F. W. Bedford, of Leeds; J. W. Longfield, London; John Lane, and N. R. Yeomans, and excursions were made to Tadcaster, Pickering, and the city sewerage works at Fulford and Naburn. The treasurer's report shows a balance in hand of £37 18s. The following are the arrangements for the present session:—Jan. 10 (Friday), Annual Social Gathering and distribution of prizes; Jan. 30 (Thursday), lecture, "The Mediæval Manor House," by Mr. Francis W. Bedford, A.R.I.B.A., Leeds; Feb. 14 (Friday), lecture, "The Ventilation of Buildings," by Mr. A. H. Claypoole, A.M.I.C.E., York; March, lecture, "To Ancient Rome," by Mr. G. Bertram Bulmer, F.R.I.B.A., Leeds; March 27 (Friday), lecture, "Old York," by Mr. George Benson, York.

Glasgow Architectural Association.—A lecture was delivered in the rooms, on Tuesday, by Mr. James A. Morris, F.R.I.B.A., architect, Ayr. Subject, "Architecture: What is it?" the President, Mr. A. N. Paterson, M.A., in the chair. Reference was made by the chairman to the loss the association had sustained in the death of Mr. Thomas Gildard, hon. member and past hon. president of the association. Mr. Morris then said that the general acceptation of architecture was the art of building or construction. Now, while this may be accepted as an undoubtedly popular definition, it seemed to the lecturer that one might quite as accurately define poetry as the art of grammar; for if a knowledge of building or constructing is to make a man an architect, it may be quite as reasonably argued, that a knowledge of grammar will make a man a poet; a contention as unreasonable as it is absurd. An architect should undoubtedly realise his architectural conceptions by the aid of good materials and sound construction; but it does not follow that a knowledge of these two last-named sciences must of necessity make one an architect. When, then, is architecture, considered as a fine art, as it is, and not merely as utilitarian in its aims and end? It will be well, he urged, if we accept architecture as something serious, something ennobling, existing in the same high world as poetry and music and the sister arts. If a man knows or cares nothing for this spirit in art, this ideal, then is the man no true artist; and if he has this spirit, let it be ever so feeble a spark, and does not submit to it, and walk up to it, then is he no true man. Is it uncharitable to think that this is surely different from the spirit in which much of our modern work is carried out; this, wherein some deem to run architecture as they would a commercial business, the end and aim of which appears to be to get increase of work, and thereby money? As an almost invariable rule, and one with few exceptions, the biggest businesses in the architectural world, and those in which architectural fortunes are made, are precisely those run on purely commercial principles; and those are the businesses in which the architectural quality of the work is nearly always in the inverse ratio to the amount of work done. And why? Is it not through press of business the principal often degenerates into the office feeder, bringing grist to the mill, and leaving it to a more or less competent staff to attend to its grinding? What is architecture is as yet unanswered, and no one can define it for you in words. If, however, we have eyes to see, and the power to understand what we see, we will find an abundant answer in every line of a Greek temple, in every stone of a Mediæval church, and in all work that is high in aspiration, noble in conception, and true in itself. A large number of lantern slides were shown, illustrating the lecture, and at the close Mr. Morris was awarded a hearty vote of thanks from a crowded audience for his able and interesting lecture.

Bristol Society of Architects.—At the ordinary monthly meeting of this society, held at the Fine Arts Academy last week, a paper entitled "The Temples and Buildings of Ancient Greece as we see them To-day," with personal notes from Greece, Sicily, and South Italy, was read by Mr. Mowbray Aston Green, A.R.I.B.A. A description was given of the origin, history, and progress of the style and contemporary arts, and the paper was admirably illustrated by photographs of the best examples of temples, theatres, and other buildings, and of sculpture and mural paintings, which were exhibited by limelight. A discussion followed the reading of the paper, and at its close a vote of thanks was unanimously accorded to Mr. Green for his address.

CHIPS.

The rural district council of King's Norton have raised the salary of Mr. Webb, the assistant surveyor, from £156 to £250 a year.

A special meeting of the Belfast Corporation has been held for the purpose of specially authorising the Bill in Parliament for the extension of the city boundary. Deputations from outlying districts objected that the measure was premature and too sweeping, but the Bill was approved by a large majority.

A Roman Catholic church, erected from designs by Messrs. Pugin and Pugin, Westminster, at a cost of about £3,000, was opened at Morecambe on the 12th inst. by the Right Rev. Dr. Whiteside, Bishop of Liverpool. The edifice is in the Early Decorated style, built of brick, with facings of Yorkshire pierpoints and dressings of Whittle stone, and will seat about 250 persons.

A new Presbyterian church at Craigie, Perth, was opened on the 12th inst. The church has been erected at a cost of £4,000. Sitting accommodation has been provided for over 500, but by the addition of transepts the building will ultimately be enlarged so as to accommodate 800.

The town council of Great Yarmouth have received eight tenders for the erection of a refuse destructor, varying in amount from £7,802 to £12,769. A committee has been appointed to advise as to the best form of destructor to adopt.

Mrs. Warde-Aldam, who recently restored Hooton Pagnell Church, at a cost of £6,000, has presented to the same church a set of chimes and clock, costing £600.

The chief engineers for the construction of the Mombasa-Uganda Railway (670 miles in length), Messrs. Anderson, Napier, and John, with several assistant engineers and a small staff, have now arrived at Mombasa from England. The preparations for the starting of the railway works have already been taken in hand, and a small railway plant has now arrived, and will be laid down as soon as possible.

The new Town-hall and Municipal Buildings at Croydon will be formally opened by the Prince and Princess of Wales in May or June next. The group of buildings has been erected on the site of the former Central Station from plans by Mr. Charles Henman, A.R.I.B.A., of Cannon-street, E.C., whose design, as selected in competition, was given in our issue of June 3, 1892.

The Paisley Town Council having agreed to convert the Quarry Park, which they purchased from the Road Trustees at a cost of £4,000, into a public park, have now decided to spend about £1,200 on the levelling of the ground and the erection of wall and railings.

The death of Mr. John Smythe, J.P., of Maidstone, occurred on Saturday night after a prolonged illness. Deceased, who was 70 years of age, was head of the firm of Messrs. J. and A. S. Smythe, timber merchants, in that borough.

Under the will of the late Philip H. Rathbone, an alderman of Liverpool, the permanent collection of art works in the Walker Art Gallery of the city will be enriched by a gift of eight valuable pictures. Six of the works are by Italian artists, the largest being by Ghirlandajo, and the majority were painted in the 16th or 17th century by painters whose identity it is difficult to establish. The seventh picture is by the late Albert Moore, R.W.S., and the other is a copy of the Sistine "Madonna and Child," by Raphael. These pictures will remain at Greenbank Cottage during Mrs. Rathbone's lifetime, and afterwards will be handed over to the trust of the Liverpool Corporation.

The eighth annual dinner of the North-Western Sanitary Inspectors' Association was held in Liverpool on Saturday, when it was stated that the association had, since its inauguration, steadily progressed, and now had a membership of 120, representing 50 urban and public health authorities.

The new chimney which has been built at the Royal Infirmary, Edinburgh, at a cost of about £2,000, from designs by Messrs. Sydney Mitchell and Wilson, being now completed, was inspected on Friday by the House Committee. It is 180ft. high, 16ft. in diameter, and 3½ft. thick at the base, and it diminishes to 8in. at the top. In its construction about 200,000 hard red bricks have been used, as also 2,500c.ft. of Hailes pink stone. The whole weight of the material in the structure amounts to about 2,000 tons. Messrs. Bruce and Sons, of Greenside, were the contractors.

NOTES ON APPROXIMATE ESTIMATES.*

CIVIL BUILDINGS, WORKS, &c.—(*Continued.*)

	Average Cost.		
	Per foot cube.	Persquare of 100ft. super.	Per unit.
201. Sheds, Iron. Closed. Height, 8ft. from floor to eaves. Roof and walls of corrugated sheet-iron; iron roof trusses; concrete floor.	2½d.	£17 0 0	—
202. Sheds. Wagon or cart	4d.	—	—
203. Shelter, Cabmen's. 16ft. by 10ft., and 8ft. high to eaves	—	—	£150 each
204. Shops. Suburban, with dwelling attached	7d.	—	—
205. Shops. (See "Workshops.")	—	—	—
206. Sinks, Housemaids. Stoneware, complete with waste, &c., but exclusive of water-supply	—	—	£6 each
207. Sinks, Scullery. Complete with bracket, waste, &c., but exclusive of water-supply	—	—	£4 each
208. Skittle Alley, complete...	6½d.	—	£200 each
209. Smithery, complete	6⅓d.	—	—
210. Stables (first class)	10d.	—	£150 per stall
211. Stables (second class)	8d.	—	£100 per stall
212. Stables (third class)	6d.	—	£60 per stall
213. Stable Fitments for stalls, complete, including iron ramp and sill, filled in with 1½in. deal V-jointed matchboarding, iron heel-post, manger, hayrack, head and heel chains, halter rings, &c., 1st class	—	—	£16 per horse
214. Stable Fitments. Ditto ditto, 2nd class..................	—	—	£10 per horse
215. Stable Fitments. Ditto ditto, 3rd class	—	—	£7 per horse
216. Stable Fitments. Ditto for loose boxes, including door, fastenings, &c., 1st class	—	—	£20 per loose box
217. Stable Fitments. Ditto ditto, 2nd class	—	—	£12 per loose box
218. Stable Fitments. Ditto ditto, 3rd class	—	—	£9 per loose box
219. Stable Paving. Comprising 2½in. granite concrete paving, laid on 4in. p c. concrete, with 6in. of broken brick rubbish under, including finished surface with all falls, grooves, channels, &c......................	—	£6 0 0	11s. per yard super. or £6 12s. per horse.
220. Staircases, Iron Circular. Complete, including fixing, 3ft. 6in. diameter..............	—	—	14s. per step, or £1 1s. per ft. in height
221. Staircases. Ditto, ditto, 4ft. 6in. diameter...............	—	—	18s. per step, or £1 7s. per ft. in height
222. Staircases. Ditto, ditto, 6ft. diameter	—	—	25s. per step, or £2 2s. per ft. in height
223. Staircases, Iron, Straight, Complete, including string and handrail on each side, 3ft. wide	—	—	£2 per step, or £3 6s. per ft. in height
224. Staircases. Ditto, ditto, 4ft. wide	—	—	£2 5s. per step, or £3 8s. per ft. in height
225. Staircases, Stone. Spandrel steps, including handrail, balusters, &c. 3ft. 6in. wide	—	—	£2 2s. per step, or £3 12s. per foot in height.
226. Staircases. Ditto, ditto. 4ft. 6in. wide......................	—	—	£2 12s. per step, or £4 10s. per foot in height.
227. Staircases, Wood. Deal risers, treads, strings, and balusters, with mahogany handrail, newel, &c., complete. 3ft. wide	—	—	15s. per step, or 25s. per foot in height.
228. Staircases. Ditto, ditto. 4ft. wide	—	—	20s. per step, or 34s. per foot in height.
229. Staircases. Ditto, but with deal risers, cut and mitred string, mahogany handrail, newel, &c., complete. 3ft. 6in. wide	—	—	30s. per step, or 50s. per foot in height.
230. Staircases. Ditto, ditto. 4ft. 6in. wide......................	—	—	38s. per step, or 65s. per foot in height.
231. Stores. (See "Warehouses")	—	—	—
232. Straw Stores	2½d.	£28 0 0	—
(Height from floor to eaves 12ft.)			
233. Tanks. Cast Iron, fixed complete, including wood cover, &c., but exclusive of water supply, capacity 3,500 gallons..................................	—	—	£56 each
234. Tanks. Ditto, ditto, 5,000 gallons..................................	—	—	£75 each
235. Tanks. Ditto, ditto, 10,000 gallons.........	—	—	£110 each
236. Tanks. Underground. Complete with concrete walls, bottom and roof, including digging in clay, gravel, and similar formations	1s.	—	2d. per gal.
237. Tar Macadam. For roads, formed with 3in. of 1½in. granite mixed with 12 gallons of tar, ½cwt. of pitch, and two gallons of creosote to every ton of granite, well rolled, and covered with granite chippings 1in. thick, mixed with tar, &c., as before. The whole to be then dusted with dry limestone chippings and rolled	—	£2 15	5s. per yard super.
238. Technical Schools	8d.	—	—
239. Town Halls	1s. 1d.	—	—
240. Theatres	1s. 3d.	—	—
241. Tramways, Cable. Double track, as for streets in England, with paving of granite, setts, &c., complete, including equipment, 3ft. gauge	—	—	£18,000 per mile

242. Analytical Table of Average Cost per Mile of Double-Track Cable Tramway Complete.

Description.	Rails, sleepers, chains, bolts, &c.	Wire cable, supporting pulleys, and ironwork for central tube.	Laying cables and permanent way.	Excavating and making good to roads, including granite setts, concrete foundations, &c.	Depot, including engines, boilers, &c.	Equipment.	Total.
3ft. gauge	£2,000	£3,000	£500	£6,800	£1,700	£4,000	£18,000

	Average Cost.		
	Per foot cube.	Persquare of 100ft. super.	Per unit.
243. Tramways, Electric Traction. Double track, as for streets in England (overhead system), with paving of granite setts, &c., complete, including equipment, 3ft. gauge	—	—	£11,000 per mile
244. Tramways, Horse Traction. Double track, as for streets in England, with paving of granite setts, &c., complete, including equipment, 3ft. gauge	—	—	£10,000 per mile
245. Tramways, Steam Traction. Ditto, ditto, ditto, 3ft. gauge	—	—	£12,000 per mile
246. Tramways, Electric Traction. Single track, as for country districts in Ireland, complete including equipment, 3ft. gauge	—	—	£5,000 per mile
247. Tramways, Horse Traction. Ditto, ditto, ditto, 3ft. gauge	—	—	£2,000 per mile
248. Tramways, Steam Traction. Ditto, ditto, ditto, 3ft. gauge	—	—	£3,000 per mile
249. Tramways. Wire rope, for precipitous or hilly situations, having a running wire rope driven by a stationary engine. Including engine, timber supports (about 28 to the mile), carriers, &c., complete. To carry about 10 tons per hour..................................	—	—	£1,300 per mile
250. Tramways. Ditto, ditto, having two fixed wire cables for supporting the load carriers, the carriers being attached to a running wire rope driven by a stationary engine. Including engine, framed timber supports, concrete foundations, carriers, &c., complete, to carry a load of 10cwt. per carrier	—	—	£3,000 per mile
251. Tree-Guards. As for public parks, thoroughfares, &c., wrought iron, unclimable, 2ft. diameter, 5ft. high	—	—	16s. each
252. Tree-Guards. Ditto, ditto, 3ft. diameter, 5ft. high	—	—	£1 each
253. Tunnels, Railway. In limestone or clay and lined ..	—	—	16s. per yard cube
254. Unions. (See "Workhouses")	—	—	—
255. Urinals as for public institutions, &c., complete, with enamelled slate back, divisions, earthenware basin and waste, copper supply pipe, stoneware gutter, &c., but exclusive of water supply, walls, roof, &c.	—	—	£8 10s. per person
256. Urinals, Street. Complete, with ornamental iron screens, divisions, roof, &c., but exclusive of water supply, for three persons ..	—	—	£60 each
257. Urinals. Add for each additional person	—	—	£10 each
258. Ventilation, complete for dwellings, with fresh air inlet, foul air outlet, and including flue in chimney-stack	—	—	£2 per room
259. Ventilation for stables, complete	—	—	£1 per horse
260. Verandahs, Ornamental. Complete, with slate or stone floor, iron columns, railing, roof, eaves gutters, &c., width 3ft. 6in.	—	—	£3 per foot run
261. Verandahs, Plain. As for infirmaries, workhouses, &c., complete, with slate or iron perforated floor, iron columns, railing, roof, gutterings, &c., width 3ft. 6in.	—	—	£1 10s. per foot run
262. Walls, Brick Inclosure. As for yards, &c., 7ft. high, brick coping, concrete foundations, digging, &c., 9in. thick	—	—	7s. 6d. per foot run
263. Walls. Ditto ditto ditto 14in. thick	—	—	10s. per foot run
264. Walls. Ditto ditto 10ft. high, and ditto 9in. thick ...	—	—	9s. 6d. per foot run
265. Walls. Ditto ditto ditto 14in. thick	—	—	13s. 6d. per foot run
266. Walls, Brick, External. In lime mortar, including digging and filling. Concrete footings, damp-course, brick plinth, stringcourse, and cornice; external facings, finished fair and lime-whited inside; doors, sashes and frames, and usual finishings. Walls built solid, 9in. thick	—	£6 10 0	—
267. Walls. Ditto, ditto, ditto. 14in. thick	—	£8 2 0	—
268. Walls. Ditto, ditto, ditto. 18in. thick	—	£9 12 0	—
269. Walls. Ditto as before, but walls built *hollow* with 2¼in. cavity, including bonding bricks. 11¼in. thick ...	—	£7 18 0	—
270. Walls. Ditto, ditto, ditto. 16in. thick	—	£9 8 0	—
271. Walls, Brick, External. In lime mortar, including digging and filling. Concrete footings, damp-course, brick plinth, string-course, and cornice; external facings; plastered and papered inside; doors, sashes and frames, and usual finishings. Walls built solid, 9in. thick	—	£7 12 0	—
272. Walls. Ditto, ditto, ditto. 14in. thick	—	£9 4 0	—
273. Walls. Ditto, ditto, ditto. 18in. thick	—	£10 16 0	—
274. Walls. Ditto as before, but walls built *hollow*, with 2¼in. cavity, including bonding bricks. 11¼in. thick ...	—	£9 2 0	—
275. Walls. Ditto, ditto, ditto. 16in. thick	—	£10 14 0	—
276. Walls, Brick, Internal, in lime mortar, including digging, concrete footings, finished fair, and lime-whited both sides; internal doors and usual finishings. 4½in. thick	—	£3 18 0	—
277. Walls. Ditto, ditto, ditto. 9in. thick	—	£5 8 0	—
278. Walls. Ditto, ditto, ditto. 14in. thick	—	£6 18 0	—
279. Walls. Ditto, ditto, but plastered and papered both sides. 4½in. thick	—	£5 2 0	—
280. Walls. Ditto, ditto, ditto. 9in. thick	—	£6 16 0	—
281. Walls. Ditto, ditto, ditto, 14in. thick	—	£8 8 0	—
282. Walls, Brick, Extra only to. For each chimney-flue, including digging, concrete footings, lead flashings, chimney-pot, &c., but exclusive of chimneypiece, grate, or kitchener	—	—	£6 each
283. Walls, Brick, Extra only to. For each bay-window, including digging, concrete footings, roof, lead flashings, sashes, frames, and finishings of ordinary description	—	—	£10 each
284. Walls, Stone, External. In lime mortar, including digging, concrete footings, damp-course, coursed rubble hammer-dressed walling with half-brick internal lining, wrought stone plinth, string-course and quoins, finished fair and lime-whited inside. 20in. thick..	—	£11 0 0	—
285. Walls. Ditto, ditto, ditto. 24in. thick	—	£12 5 0	—
286. Walls. Ditto, ditto, ditto, but plastered and papered inside instead of lime-whited. 20in. thick	—	£12 5 0	—
287. Walls. Ditto, ditto, ditto. 24in. thick.........	—	£13 10 0	—

(*To be continued.*)

---

* All rights reserved.

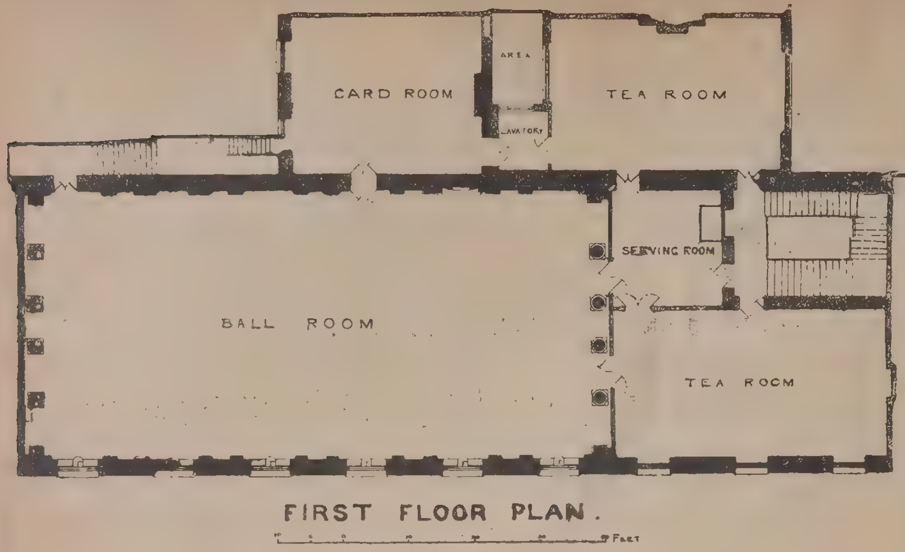


Fig. 1.

CONCERT HALLS AND ASSEMBLY ROOMS.—VII.

By Ernest A. E. Woodrow, A.R.I.B.A.

It will be seen from the drawings of Willis's Rooms (Figs. 1, 2, and 3) that a magnificent dancing saloon existed on the first floor, 40ft. wide by 85ft. long and 29ft. in height from floor to ceiling. This room—which I have chosen as an illustration because it was one of the most noted assembly rooms of fashionable London for very many years—was approached from King-street by a staircase 6ft. wide. At one side of the room was a card-room, 28ft. by 24ft., and a tea-room or second card-room, 35ft. by 24ft. This room could also be used as a retiring-room or a drawing-room for those who wished to rest during the dances. The large tea-room at the end of the hall measured 42ft. by 23ft. This was the reception-room; people arriving passed from the landing at the top of the staircase through this room into the ball-room, and were here received by the host and hostess when private dances were given. It was in this room that for a long time the meetings took place of the Dilettante Society. Between the two reception-rooms was a serving lobby, with a lift to the kitchens below, and it was from this serving-room that the light refreshments were passed into the tea-rooms.

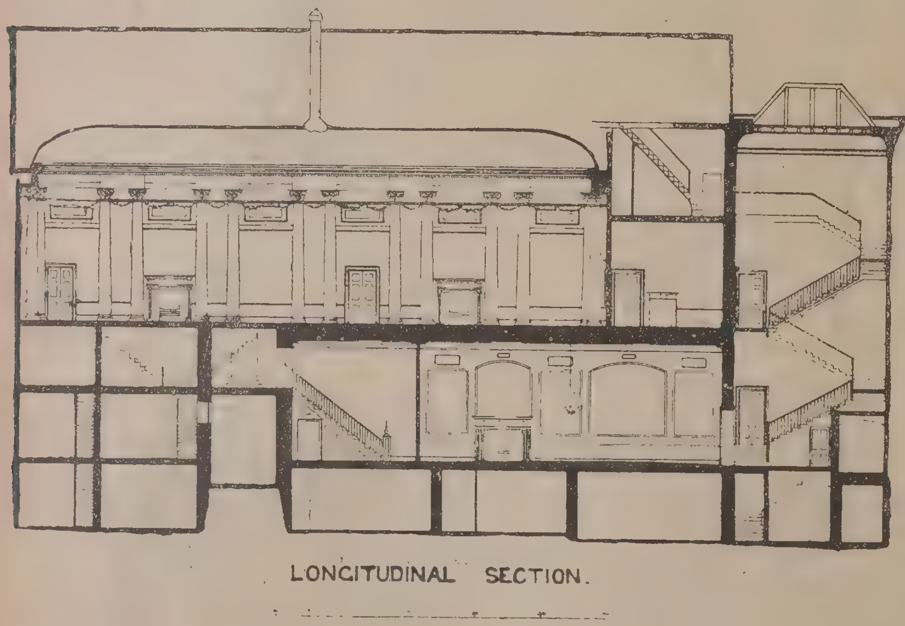


Fig. 2.

On the ground floor below, as seen on the section, was a large supper-room, entered from the vestibule of the grand staircase.

The basement was occupied by extensive kitchens and wine-cellars, fully adapted to meet the requirements of the business carried on in this building, for not only did dances take place here, but dinners, banquets, and meetings were frequently held within the walls.

The ventilation of the dancing-room was obtained by the windows overlooking King-street. The room was lit by means of large gaseliers hung with lustres, which were afterwards altered for the fittings of the electric light.

The dancing-floor was nearly 2ft. in thickness, carried on wrought iron girders, and when the floor was fully loaded with dancers the spring in the floor was such that the deflection in the centre was as much as 4in. The floor is said to have been an excellent one for dancing, and much in favour with the dancers on account of its smoothness and elasticity.

Another form of dancing-room existing in London is that which is attached to the dancing school, which is used in the daytime for tuition, and at night for public dances, as well as dances among the pupils, and for private parties. It is perhaps this class of dancing-room which, from the point of public safety, is the worst kind of existing room used for dancing in London. There are very few of these rooms which are licensed by the authorities, as the owners protect themselves by pleading that the dances given at their establishments are not public dances, but only for the tuition and practice of their pupils; yet, from the architect's point of view this should make no difference; the danger, if it exists, being as great for the pupils as for the general public.

It is a sure proof that these rooms, as a rule, are not structurally fit for the assemblage of large numbers of people, when one finds how very few have been licensed by the authorities, and how many the authorities have taken proceedings against for being opened to the public without a certificate of safety. In some cases the owners of the premises have been fined for using their rooms for the public; in other cases they have been let off.

Now there is no difficulty in obtaining the certificate of the London County Council for a building, when that building is deemed safe by the Council's architect, and yet we find, although an attack was made upon these dancing-rooms, and although the magistrates advised the owners to apply for this certificate, but very few hold such a certificate, and why? Because they are not structurally in such a condition as to justify the Council granting it.

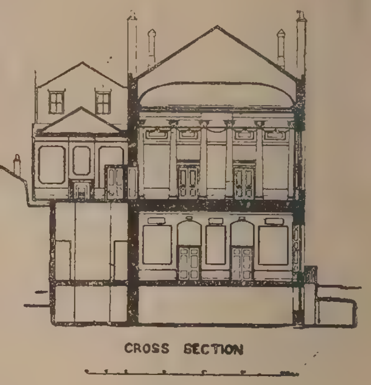


Fig. 3.

All this points to the fact that, whether used by public or private individuals, the dancing-rooms of this class in London still lack much that is desirable in their arrangements for the prevention of fire and panic. Many dancing-rooms are connected in the same fire risk as the private residence of the instructor; some are built out, in the form of a temporary structure, over the garden ground in the rear of a house, with no other escape except through the house; others are connected with premises in different occupation, such as shops; while others are equally unfit for any assemblage of people by being situated at a level above the street, and approached by only one narrow wooden staircase.

In connection with most of these dancing-rooms are supper-rooms where smoking is allowed; smoking also takes place in the passages—all adding to the danger from fire. The construction is generally very bad, and consists of alterations and additions to old premises carried out in the cheapest manner, with no regard to prevention of fire, or the escape of the occupants of the room.

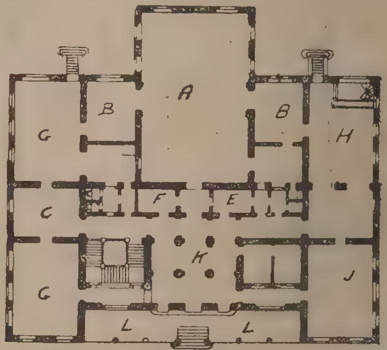


Fig. 4.—A, hall; B B, drawing-room; E, ladies' cloak-room; F, gentlemen's cloak-room; G, supper-room; H, buffet; J, billiard-room; K, vestibule; L, terrace.

I can only repeat here what I said with regard to parish rooms: it cannot matter to the architect how a room is used, whether by public or private parties: the lives are equally valuable, and the risk of fire and panic equally great. The same argument applies whether the premises are licensed or not. It is clearly the duty of the architect designing a dancing academy to look upon it as an assembly hall, and to consider all the requirements in his planning for the quick escape of the dancers by good exits, as well as to

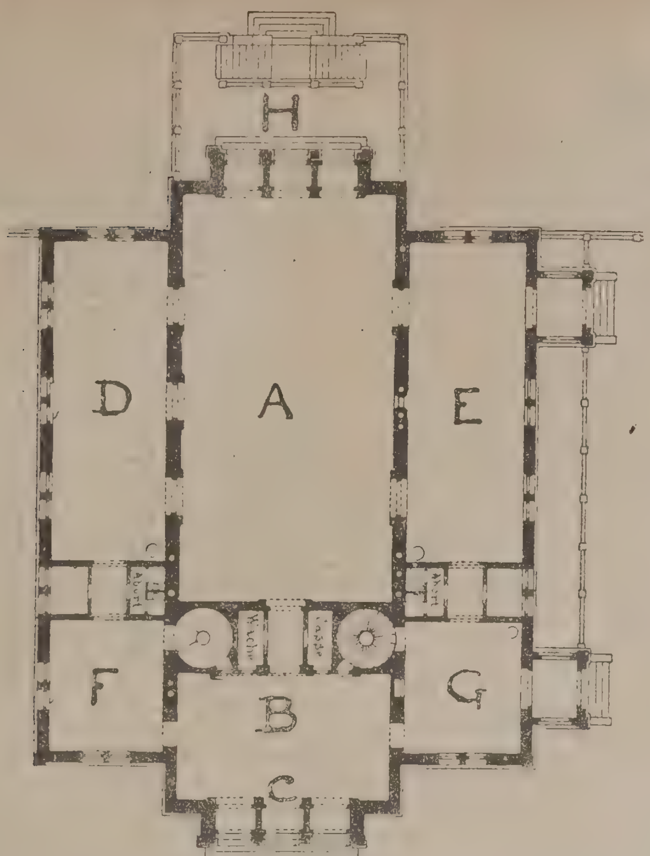


Fig. 6.—A, hall or dancing-room; B, vestibule; C, entrances; D, refreshment-room; E, drawing-room; F, cloak-room; G, buffet; H, terrace.

construct his building and arrange his plan so as to minimise the risk from fire therein, or from any adjacent building, or even from the adjuncts of the building itself.

The sanitary accommodation of the dancing-room of this class is too frequently sadly deficient; large cloak-rooms are much needed, and, as I have already said, supper-rooms and smoking-rooms are required, but these should be planned with due regard to safety. There should never be open fireplaces in a dancing-room, as the danger of a light ball-dress catching fire from such a source is very great. High iron wire guards should be placed in front of all fireplaces, where they exist; but it is better under any circumstances to heat the room by other methods than by an open fireplace.

The construction of the dancing-floor will undoubtedly cause the proprietor more interest than the arrangements of safety. This is, of course, an essential feature in the design; a small minstrel gallery is also a requisite in the dancing-room. The proprietor or instructor will need an office for the transaction of his business near the entrance.

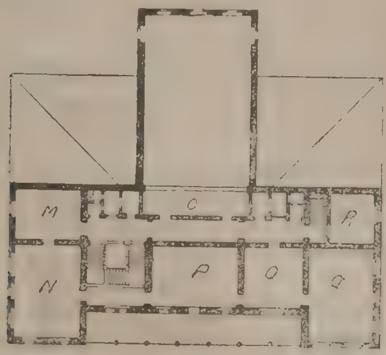


Fig. 5.—M, library; N, reading-room; O, orchestra; P, drawing-room; Q Q, supper-rooms; R, committee-rooms.

There are some large dancing-rooms devoted entirely to the teaching of stage dancing, and they are of such a size that the whole *corps de ballet* can be instructed and trained for the stage. These rooms are used where no stage floor in a theatre is available, and where the performances are rehearsed for the provinces. Even these buildings should have equal structural care devoted to them, although they are never used by the public.

Strictly speaking, there are very few, if any, casinos in London which can be looked upon in the same light as the word "casino" conveys when referring to the buildings of the Continent which go under this name. By a casino is meant, I presume, in London a place of public dancing, where the public can enter promiscuously to dance without invitation or introduction—a place kept open constantly for public dancing. Of such places there are few in the Metropolis. The public dances which are given are generally under the auspices of some individual or society, and are held in a public assembly room hired for the night or for a series of evenings during the season.

The casinos of the Continent are very different buildings, and used in a very different way. They are more like clubhouses, replete with every comfort and for every form of amusement. Rooms are provided not only for dancing, but there are billiard-rooms, card-rooms, libraries, reading-rooms, supper-rooms, conversation-rooms, &c.

I propose in this and the next chapter drawing attention to one or two plans showing the development of these buildings as a contrast to the dancing-rooms which the general run of the public have to put up with in London. It must not be thought that I mean there are no good rooms in London where dances can be held; on the contrary, there are. But what I particularly refer to is the lack of rooms devoted primarily and exclusively to dancing only.

In Figs. 4 and 5 are seen the plans of the Marine Casino at Pola, which is a building standing in a splendid position in the middle of a great park. Wide steps lead to a terrace, into which the vestibule opens by three doors. To the right is the porter's room; to the left, the grand staircase. From the vestibule an ante-room is reached through an arched staircase; on either side are the ladies' and gentlemen's cloak-rooms, while there is a separate entrance from the hall leading directly into the ladies' retiring-room. The hall is 60ft. long by 37ft. wide, and has dining-rooms on either side. One side of the building is occupied by a series of supper-rooms, used also as drawing-rooms for resting between the dances, while on the other are placed the buffet and billiard-room. Both the wings are connected with the garden. The orchestra is placed in a musicians' gallery at one end of the hall on the first-floor level. On this floor are situated library, reading-rooms, drawing-room, and small supper-rooms.

In Fig. 6 is a plan of the Casino at Brünn, which holds 1,000 persons. This is also situated in a large park, and has four entrances, one at each end and two on one of the sides of the building. The difference in the height of the ground allowed for the formation of a terrace with steps leading to the garden. The large or dancing-room is 69ft. long, by 36ft. wide, and 36ft. high. The orchestra is placed in a gallery at one end.

CHIPS.

A lecture on "Lights, Ancient and Modern," was delivered on Thursday night in last week by Mr. Ivison Macadam, F.R.S.E., in the Philosophical Institution, Edinburgh, under the auspices of the local branch of the National Society for the Registration of Plumbers. Mr. John Allan presided.

According to the statistics of the Labour Department, there is a distinct improvement in employment in principal industries, the percentage of unemployed being lower than for any month since November, 1894. A further slight seasonal decline in employment is observable in the building trades, which, however, continue to be well employed. The percentage of unemployed in November in unions making returns is 1·1, compared with 1·9 in October, the November figure being considerably below the percentage (4·2) in November, 1894. A slight failing-off in employment has taken place in the furnishing and woodworking trades. The percentage of unemployed in November in unions making returns is 2·9, compared with 2·6 in October, and with 2·5 in November, 1894.

The city council of Sheffield, after a long discussion, decided at their last meeting to promote a Water Supply Bill in Parliament next session to protect the Little Don waters, and also a Bill to take over the existing tramways in the main streets of the city.

The Northern Lighthouse Commissioners have resolved to proceed without delay with the erection of a new lighthouse at the Tud Head, on the farm of Hallhill, near Bervie, Kincardineshire. Several contractors have visited the site during the past few days with the view of giving in estimates for the work. The proposed lighthouse will be midway between the existing ones at Girdleness and Montroseness.

It is a noteworthy illustration of the ever-increasing demand for typewriters that the Yost Typewriter Company have felt it necessary to manufacture writing machines fitted with Hindustani characters. Her Gracious Majesty has been pleased to inspect and commend this unique machine, which, in the opinion of its manufacturers, will give an impetus to the typewriter business in the "far East."

An entirely new system of drainage and sewage disposal has recently been carried out at Road Ashton, Wilts, the seat of the Right Honourable W. H. Long, M.P., from plans prepared by, and under the superintendence of, Mr. W. H. Stanley, A.M.Inst.C.E., of Trowbridge. The works, costing over £1,400, have been executed by Mr. John Smith, of Chippenham, builder, and Messrs. Gowan and Stevens, of Trowbridge, plumbers, Mr. H. Hillier, of Marlborough, being resident engineer.

The Southend Town Council have decided to extend the pier seawards, at a cost of over £20,000. It is hoped the work will be completed for next season.

The contract for the remaining portion of the Buxton and Ashbourne Railway, from Parsley Hey to Ashbourne, has this week been let to Messrs. Naylor Brothers, Leeds, who constructed the Buxton and Parsley Hey section of the line, and are at present engaged upon the Buxton District Council's new reservoir at Burbage.

The Lands Committee of the City Corporation has commissioned Mr. F. J. Williamson, of Esher, to execute a bust in marble of the Duke of Cambridge, to be placed in the Guildhall.

The Wath and North Rotherham Joint Hospital Board have decided to invite competitive plans for a building of twenty beds, limited to architects practising within a radius of fourteen miles of the district.

Plans by Mr. Bennett, of Coventry, for a Shakespeare theatre to be built at Clapham have been passed by the London County Council.

Mr. George Clinch, of the British Museum library, has been appointed clerk and librarian to the Society of Antiquaries, in succession to Mr. E. C. Ireland.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to The Strand Newspaper Company, Limited.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front-page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No Front-page or Paragraph Advertisement inserted for less than 5s.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page Advertisements and alterations in serial advertisements must reach the office by Tuesday morning to secure insertion.

Situations.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

CHRISTMAS DAY.

Next week the Building News will be published on the usual day; but, in order to complete arrangements before the holidays, it will go to press on TUESDAY, and all advertisements for the next issue must reach the Office

BEFORE FIVE P.M. ON TUESDAY, DEC. 24.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., LI., LIII., LIV., LVIII., LIX., LX., LXI., LXII., LXIII., LXIV., and LXV. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Received. — E. L. Maclaren. — J. W. P.—Civ. Eng.—E. W. and Co.—Traveller.—W. B. (Salford).—F. R. and E. R. Co.—C. W. L.

"BUILDING NEWS" DESIGNING CLUB.

Drawings Received.—"Ilex," "Cygnette," "Venus," "Owl," "Moor," "Dunelm" (no name and address), "T-Square," "Kaffir," "Puff-Puff," "Black-beetle," "Mandalay," "Once More," "Country Cousin," "Dessinateur," "E.," "Red Lion."

Correspondence.

SHOREDITCH BATHS AND LIBRARY COMPETITION.

To the Editor of the Building News.

Sir,—I am informed, on good authority, that the award of the referee, Mr. Rowland Plumbe, was only confirmed ultimately by a majority of *one*, so that Mr. Hare may be said to have really secured the work by merely a hair's-breadth. Things in the mean time are not going very smoothly, I hear, as the Library Commissioners feel that they have been sacrificed to the requirements of the Baths Commissioners, and in any case, even if the Vestry grants the necessary precept, very material alterations in the plans for both departments will be necessary.—I am, &c.,

One in the Crowd.

JERRY-WORKED STONE.

Sir,—Occasionally I read in your journal of the doings of jerry builders. I now wish to call the attention of architects and builders who get their stone worked ready for fixing at the quarry to the way in which some jerry stone-working is done by machinery in some of the quarries in the south-west of England. In some cases the machine cuts the weatherings of the sills the whole length of the stone, and masons have then to put in the seats of jambs, &c. Under-cut mouldings in return pieces of cornices and string-courses are cut through in the same way, and pieces put in, and in some cases the pieces are not dovetailed. If this is not jerry stone-working, I do not know what other name to call it. What would a gentleman say if, passing by a well-known London theatre, a piece of stone several pounds in weight dropped on his new hat. or where could he get redress for a broken head? I write this hoping architects, &c., will see that none of their stonework is scamped in this way in the future.—I am, &c.,

A Mason who has Put in Some of these Pieces.

P.S.—It is not because the stone is sold at a cheaper rate by working it thus, for I see the firm wanted £1,000 more for their stone than the builder could get the best of the Bath stone for a job near Taunton only a few weeks ago.

Intercommunication.

QUESTIONS.

[11466.]—**Lecterns**.—In a pleasantly-written brochure by Mr. Walter Money, F.S.A., of Newbury, entitled "An Old Berkshire Village," a very old lectern is referred to. It exists in the Church of St. Augustine of Canterbury at East Hendred, and is thus mentioned by the accomplished author: "The oak lectern is a remarkable one, being of 13th-century date, and in good preservation." I have always assumed that the one at Bury and the 14th-century carved oak eagle lectern now in use at St. Thomas's Church, Exeter, and formerly in Exeter Cathedral, were two of the oldest oak lecterns in England. Surely the lectern at East Hendred is not Early English workmanship?—Harry Hems.

[11467.]—**Fumigated Oak.** — Will some reader kindly describe the method of fumigating oak?—Old Crow.

[11468.]—**Account.**—A. and B. are partners in a small building business, and have been in business nine months. The plant belongs to A. What would be a fair percentage for A. to charge for use of plant? Please also state if percentage should be charged on total amounts of bills rendered to customers, or on profits.—Gale and Page.

[11469.]—**Advertising.**—Would it be considered a breach of etiquette and unprofessional for an A.R.I.B A. to insert a notice of practice in a local paper? If so, how is a man to build up a practice?—Enterprise.

CHIPS.

The site at Llandudno granted by Lord Mostyn for the pavilion in which the Eistedfodd of 1896 will be held has been entered upon by the committee, the land, which is in the immediate vicinity of the railway station, being plotted out by Mr. Humphreys, the local agent of the Mostyn estate. Messrs. Darbyshire and Smith, Manchester, are the architects.

A new savings bank is about to be built at Gateshead. Mr. Stephen Piper, Westgate-road, Newcastle-on-Tyne, is the architect.

The Stowmarket Charity Trustees are building premises at Stowmarket from the designs of Mr. Henry Geo. Bishop, M.S.A. Messrs. Andrews and Murray are the contractors. The floors are to be fireproof, on the "Mark Fawcett" system. The constructional iron and steel work is being supplied and fixed by Messrs. Mark Fawcett and Co., of Westminster.

New Board schools have been erected at Peterborough, and special consideration has been given to ventilation, which has been carried out on the Boyle system, the latest improved form of the patent self-acting air-pump ventilator being adopted for the extraction of vitiated air, and their latest improved air inlets for the admission of fresh air.

Dr. Vaughan, Dean of Llandaff and late Master of the Temple, was presented with a portrait of himself on the 12th inst. at the studio of Mr. Ouless, R.A., by whom the portrait has been painted. The picture, which represents the dean in gown and hood, has been subscribed for by the clergy who have, during the last 35 years, successively studied under Dr. Vaughan in preparation for holy orders.

The trustees of the National Portrait Gallery have accepted from Mr. W. M. Rossetti a pencil drawing, head and shoulders, of the Pre-Raphaelite painter, Ford Madox Brown, done by Dante G. Rossetti in 1852.

In recognition of faithful services rendered by Mr. John R. Brown, for 25 years assistant-master at the Liverpool School of Art, the past and present students have presented him with a purse of gold and an illuminated address.

The Great Eastern Railway Company proposes to construct a short railway from their station at North Walsham on the Norwich and Cromer line to form a junction with the authorised Mundesley branch of the Midland and Great Northern Railway Companies. This junction will enable it to run to Mundesley, a rising watering-place on the Norfolk coast, midway between Yarmouth and Cromer.

The result of last week's sales at the Estate Auction Mart, Tokenhouse-yard, was £86,511, a very good figure for the time of the year.

Legal.

RAILWAY SUPERFLUOUS LANDS.

When a railway company has to take land for the purpose of its undertaking, it frequently happens that it has to take more than is actually required. These superfluous lands are dealt with by the Lands Clauses Act, 1845, under which it is provided that the promoters of every such undertaking shall sell those lands they do not require within a specified period; but before doing so they must offer them to the owner of the lands from which they were originally severed. This right of pre-emption in the former owner may sometimes be of value, and it has occasionally given rise to litigation. The latest case upon this subject is that of the North-Eastern Railway Company (*Times*, 7th Dec.). In this case the railway company had, under their special Act, purchased from the plaintiff's predecessors in title, as long ago as 1863, about 57 acres of land in the neighbourhood of Goole in Yorkshire. They did not use all this land in their own undertaking; but in 1883 the Lancashire and Yorkshire Railway, by their special Act, were authorised to take by compulsion or agreement a portion of this land for their new line, and they did so accordingly. The plaintiff now claimed that this land came within the scope of the statute as superfluous land, and should have been first offered to him, and he sued for damages for breach of his right of pre-emption.

Mr. Justice Kekewich was of opinion that the fact of the North-Eastern Railway having sold this land to the other railway proved it to be superfluous land, and gave judgment for the plaintiff. But on appeal this ruling has been altogether reversed. The Court of Appeal held that the sale of this land to the Lancashire and Yorkshire Railway under the compulsory powers of the special Act of that company was no proof whatever that the land was superfluous within the meaning of the statute. It was shown also that if the new railway had not wanted and obtained the lands the defendants would themselves have used them. Still, the case may be of service in calling attention to the right of pre-emption possessed by the former owner of superfluous land, of which there is no doubt a great deal lying more or less idle nowadays.

Fred. Wetherfield, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

T. R.—Road.—Wall.—Repair.—Probably A can be compelled to repair the whole length of the road in front of his houses; but he should request the local board to serve notice on the ground landlord as an adjoining owner. As to the wall, A does not appear to me to be liable, and the owner should be made to repair it.

Formality.—Drains.—Notice.—The sanitary authority ought to give a certificate showing that the work ordered had been done to their satisfaction and passed by their surveyor.

D. F.—Lease.—Drains.—Liability.—This point would turn not only upon the covenant to repair, but also upon the other covenant by the lessee as to paying all "assessments, charges, outgoings," &c., imposed upon the house. The making of new drains does not come within an ordinary repairing clause; and as to the rest, I am not informed.

W. S. D. — Local Board. — Wall. — Thickness. — I think the board may be held right, as your walls do "comprise"—that is to say, carry-three stories, one being in the roof; and if so, then they should be 13½in. throughout, as they end "below the topmost story." If the walls went higher, then 9in. would be enough for that portion, which you do without altogether.

C. W. S.—Lease.—Fabric.—Floor.—I should say the lessee was not liable under his covenant, as this would come in under the exception as to "timbers" by analogy.

LEGAL INTELLIGENCE.

Restrictions on Alterations to Flats.—Hudson v. Cripps.—In the Chancery Division on Friday, before Mr. Justice North, a motion was made on the part of Mrs. Hudson, a tenant of a flat on the second floor of Oxford-mansions, to restrain the landlord, the defendant in the action, till trial, from going on with certain alterations in his premises, which have been commenced, with a view of providing accommodation for a new Cavendish Club. Oxford-mansions stands on the site of Oxford Market, near Oxford-circus, and was erected some 20 years ago for the purpose of being let in flats. It is a quadrangular building, with a court in the middle, having one common entrance and staircase for all the tenants, the premises on each floor having access by verandahs with the general staircase. Mrs. Hudson held her flat (a suite of five rooms) under a printed agreement which contained various stipulations and conditions, in effect limiting the use of the premises to the purposes of a residential flat, and made for the mutual protection of the tenants of all the flats. Till recently the whole of the premises had been used as residential flats, with the exception of certain rooms on the ground floor looking on the street, which had been used as offices. The defendant's own evidence showed that he was turning the whole of the two lower floors into a club, and that he was inclosing the courtyard in the middle up to the top of the first floor with a glass roof. The plaintiff's evidence, filed recently, went to show that it was intended to turn the rooms on the higher floors into bedrooms for the club, and that the kitchen ranges on those floors had been removed. Mr. Justice North was of opinion that, looking at the fact that the agreement was in printed form, that the premises were occupied when the agreement was made, and had been for many years occupied, as residential flats, and at the various provisions contained in the agreement and incorporated regulations, it was clear that the provisions contained in it were intended to be applied to all the flats for the mutual protection of all the tenants. It seemed a case that came within the principles laid down by Lord Macnaghten in the case of "Spicer v. Martin," and acquiesced in by the other Lords, and always since accepted as law—a case in which a lessor was restrained from letting houses in a block of buildings for purposes inconsistent with restrictions imposed on the lessees generally. He therefore granted an injunction.

The Aquisition of London Tramways.—The question of the right of the London County Council to acquire the tramways in North London came, on Friday, before the Court of Appeal by way of appeal from a decision of Mr. Justice Romer in favour of the Council. The North Metropolitan Tramways Company claimed that the Council could not exercise their statutory powers until the expiration of twenty-one years from the passing of the company's last Act of Parliament in 1887; but the County Council maintained that it should date from 1871. The Master of the Rolls said the appeal must be dismissed, on the ground that a private Act could not overrule an existing public Act, unless the private Act by express words overruled it. Lord Herschell and Lord Justice Kay concurred.

Manchester Canal Contract Arbitration.—The arbitrator, Mr. Harrison Hayter, has published his award in the matter of the claim of Sir John Jackson against the Manchester Ship Canal Company. The claimant was the contractor for sections 1 and 2 of the canal, and also for some minor works, and the present claim was for extras only. The arbitrator sat in the Westminster Palace Hotel for 14 days, and the number of witnesses on either side was limited to four. A novel feature in arbitration of this magnitude was that the conduct of the case was placed by the respective parties in the hands of their solicitors, no counsel being retained. The amount claimed by Sir John Jackson was £107,601, and the amount awarded by the arbitrator is £36,650, including a sum of £10,370 for interest up to September 30, 1895.

Charge against an Architect and his Assistant.—Before Sir John Bridge, at Bow-street, on Thursday and Saturday, Kent Pinchbeck, described as an architect, York-buildings, Adelphi, and Alexander Martin, architect's assistant, of the same address, were charged on remand with conspiring to defraud by means of false pretences. The prosecutor was Mr. George Wilkinson, of the firm of Wilkinson and Sons, builders, Clarendon-road, Notting-hill. In consequence of an advertisement, he saw Pinchbeck on March 13 of this year, and was requested to give a price for erecting a pair of villas at Northwood, Middlesex. He said the houses were wanted by a rich client of his, Mr. Miles Atkinson, of Blackheath, and was corroborated by Martin, who appeared to be the manager of Pinchbeck's business. Believing these statements to be true, Mr. Wilkinson entered into a contract with "Miles Atkinson, Esq., of Blackheath," and erected the villas. He never saw Mr. Atkinson, but received two payments on account from Pinchbeck—a cheque for £200 in June, and one for £50 in September. He roofed in the houses and connected them with the drains, and there was about £445 due to him. He pressed for payment, but could get no more money, and ultimately refused to proceed with the contract. Prosecutor made inquiries at the police-station and post-office at Blackheath, but could find no Miles Atkinson there. A short time ago the case of "Rollett v. Pinchbeck" came on in the High Court before Mr. Justice Mathew. The plaintiff was a builder, and sued Pinchbeck for money. Pinchbeck said he was only an architect, and that, if anyone was to be sued, it should be Miles Atkinson, his principal. Martin gave similar evidence. Prisoners had obtained money from three other builders on identically the same representations, the total sum amounting to £1,500. The land on which the houses were built was purchased in 1894 by Pinchbeck, and they had been unable to trace any Miles Atkinson. Pinchbeck mortgaged the deeds, and gave out contracts in the name of Atkinson. He granted building leases to Marian Pinchbeck, his wife. He sold the ground rents for £1,530, and his wife mortgaged the leasehold interest for sums amounting to upwards of £2,000. Mr. Miles Atkinson was now called by the solicitor for the defence. He said that he signed the building contracts referred to, and at that time was in a position to fulfil their conditions. The prisoners were again remanded, without bail.—In connection with this charge, Mr. J. B. Pinckbeck, architect and surveyor, of 92, Hampstead-road, N.W., has written to the daily Press explaining that he is in no way connected with Kent Pinchbeck.

Conversion of Exempted Buildings.—At Lambeth Police-court, on Tuesday, William Robert Green, the owner of the premises, No. 98, Hollydale-road, Peckham, was summoned by Mr. Ellis Marsland, M.S.A., district surveyor for Camberwell, "for converting a building—to wit, a greenhouse, which, when originally erected, was legally exempt from the operation of the Building Act, into a workshop and store." Mr. Williams said the summons was taken out for a contravention of the 211th section of the new Building Act. The offence complained of was one which was very much on the increase. Mr. Marsland said on December 7 he visited the premises, No. 98, Hollydale-road, and found a greenhouse used for the storage of paint, turpentine, wall-papers, and other combustible materials. A portion of the roof was covered with corrugated iron, and two of the sides were boarded up. By his Worship: The building was originally a greenhouse. Under the new Act a builder could put up a greenhouse without notice to the district surveyor. Builders were finding that out, and were putting up greenhouses, and then converting them for use for other purposes. For the defence, Charles Malthouse, the tenant of the premises, said he entered into occupation in September last, and the greenhouse was erected by the defendant for his (Malthouse's) convenience. It was now in exactly the same condition as when it was originally constructed. Witness had been repairing the house, and during the progress of the work he put some paint-pots and other articles in the greenhouse out of the way. He intended to use the building as a greenhouse when a stove had been fixed. Mr. Hopkins adjourned the summons *sine die.*—Mr. Samuel Morrison, of The Gables, Alleyn Park, was summoned for converting a greenhouse into a billiard-room. In this case the offence was admitted, and Mr. Hopkins fined the defendant 20s., with 42s. costs.

WATER SUPPLY AND SANITARY MATTERS.

The Prevention of Lead-Poisoning.—At Monday's meeting of the Association of Yorkshire Students, connected with the Institution of Civil Engineers, Mr. O. J. Kirby, Batley Waterworks Engineer, read a paper on "Waste of Water due to Lead Contamination and the means of Preventing such Contamination." He mentioned that a newspaper correspondence on the subject of lead-poisoning had led to an increase in the consumption of water at Batley of over 100 per cent., the people allowing taps to run before drawing water. The author dealt with the various means of preventing the presence of peat in the water, which was said to be the chief cause of the action upon lead, and described his method (with that object in view) of preventing the first rush of storm-water into the reservoir by means of self-closing flood-gates. Mr. Thomas Hewson, M.Inst.C.E., vice-president, who was in the chair, said that the Leeds water, though containing a certain quantity of peat, was reported to have no action upon lead, and hence no special measures were considered necessary. Mr. M. Patterson, M.Inst.C.E., referred to the objections to the use of other materials than lead for service pipes, and said that English-made lead, containing a small proportion of silver, was far less readily acted upon than foreign lead. He also mentioned cases where, owing to the arrangements of the reservoirs, the author's method was inapplicable. In the case of Loch Katrine water, six months' exposure was found to stop all deleterious action upon lead. Messrs. C. C. Smith, A. E. Nicholls, George Carter, and F. L. Watson also took part in the discussion, to which Mr. Kirby replied.

* * *

At their meeting on Thursday morning last (Dec. 12th) the Fulham Board of Guardians confirmed their building committee's recommendation to appoint Mr. Walter Herring, of Trafalgar-buildings, Northumberland-avenue, W.C., to prepare the quantities for the additions to the workhouse in Fulham Palace-road, the designs for which are being prepared by Mr. Alfred Saxon Snell, architect, Southampton-buildings, Chancery-lane, E.C.

Our Office Table.

The authenticity or otherwise of a hitherto unknown portrait of Shakespeare formed the subject of an interesting discussion at the meeting of the Society of Antiquaries on Friday evening, inaugurated by Mr. Lionel Cust, the director of the National Portrait Gallery. The picture, which was exhibited at the meeting, is one recently discovered by Mr. Edgar Flower, of Stratford-on-Avon, and presented by him to the Shakespeare Memorial Institute of that town. In illustration of Mr. Cust's paper, a number of other portraits, a cast of the celebrated Stratford bust of Shakespeare, &c., were exhibited, and he announced that in his opinion (and he is supported by Mr. Sidney Colvin) the new portrait is the only one known to be in existence that was painted during the lifetime of the dramatist. A close comparison between it and the well-known engraved portrait by Martin Droeshout, the frontispiece to the first folio edition, 1623, and the bust in Stratford Church, which have hitherto been the only two avowed likenesses of Shakespeare known, suggests to Mr. Cust that the portrait now shown is the original from which the engraving was taken. The picture bears an inscription, "William Shakespeare, 1609," which would indicate that it was painted in the closing year of the poet's life. As a work of art it possesses no merit, but the interest of the portrait is considerable. Sir Charles Robinson was not able to go so far as Mr. Cust in assigning the picture to Shakespeare's lifetime, but he had no doubt that it was a genuine portrait of the early part of the 17th century, and certainly the earliest, if not the only authentic, portrait in oils of the poet in existence. That the picture has no pedigree was, in the opinion of several speakers, in its favour.

At Carpenters' Hall, London-wall, on Wednesday night, the Rev. Dr. Wace, the Principal of King's College, presided at a distribution of prizes and certificates to students attending the Trades Training School, Great Titchfield-street, W., a technical education centre conducted by the Carpenters', Tylers' and Bricklayers', Wheelwrights', Painter-Stainers', Plasterers', and Joiners' Companies, in conjunction with the Institute of British Wood Carvers. The prizes were presented by Mrs. Bird, the wife of Colonel Stanley G. Bird. Professor Banister Fletcher, the chairman of the education committee, in describing the work of the school, stated that 185 students were being educated there in all the trades associated with the building trade. In referring to the value of that instruction, he pointed to the testimony which had been given in regard to it by Mr. F. C. Penrose, the President of the Royal Institute of British Architects, who, after a visit to the school and an examination of the work, had said that the education given at the school could not fail to be of great service to those engaged in the building and kindred trades. Professor Fletcher mentioned the fact that all the tools at the school were made by the students, under the guidance of inspectors. Mr. A. Preston having spoken of the character and scope of the work carried on at the Carpenters' Company's Science School and Workshops at Stratford, the prizes to the successful students there, and the certificates gained at the Company's recent examination in sanitary building construction, were awarded. Dr. Wace, in his closing address, descanted upon the vital importance of the allied trades the labours of the students represented.

The City Commissioners of Sewers discussed at great length on Tuesday a report from the Streets Committee relative to the Central London railways and subways, and submitting for approval amended plans of the staircases at the corner of Princes-street (by the Union Bank), Queen Victoria-street (near the Poultry), and by the Mansion-house, subject to the works being carried out to the satisfaction of the Commissioners and without prejudice to the rights reserved generally by the Commission in 1893 to alter the position of any staircase or to modify the details in any particular. The committee recommended that before commencing the works for the purpose of the central station, subways, and approaches, the Central London Railway Company be required to deposit a sum equal to the estimated total cost of the works to insure their due completion. The effect of the alterations was that there would be separate staircases for up and down traffic at Princes-street and the Mansion-house corners, and at the Poultry corner the staircase would be partitioned in the middle so that the traffic would be divided. The changes would involve the projection of the present foot pavement at Princes-street by over 6ft., but the refuge in the roadway would be reduced considerably. The roadway itself would still be 26ft. wide. Mr. David Ross, the engineer to the Commissioners, said the land at this corner was estimated to be worth between £30 and £40 per foot. Eventually the adoption of the report was carried.

The Bill for the proposed London and South Wales Railway has been duly deposited in the Private Bill Office of the House of Lords. The measure differs materially from the plans and book of reference placed in the Private Bill Office of the House of Commons on November 30. According to the plans and book of reference, two alternative entrances into London were provided for. It was proposed, in the first place, to enter London by running powers over the new Manchester, Sheffield, and Lincolnshire Railway at Great Missenden and the Metropolitan Railway, while an alternative route was provided for by an independent line through Lisson-grove and St. John's Wood. In the Bill as finally deposited the latter route finds no place. The proposed new line will, if sanctioned, cross the Severn at Chepstow, where a bridge is to be built at a cost of close on £600,000. The line will pass through a rich agricultural country. The Great Western Railway Company have a competing scheme from Wootton Bassett to Chipping Sodbury, thence by one fork to Patchway, joining the main line by way of the Severn Tunnel, and another fork from Chipping Sodbury to Wickwar, and by way of the Midland over the existing Severn Bridge.

A course of twelve lectures has just been delivered at Darlington on "Mediæval Architecture," by Mr. D. H. S. Cranage, M.A., of Cambridge, under the University Extension scheme. Excursions were also made to neighbouring buildings to illustrate by examples the teaching of the lectures. At Durham Mr. Cranage lectured in the cathedral, and the same was done in the castle by Mr. J. P. Pritchett, of Darlington, who also, on Mr. Cranage's behalf, conducted the class to the churches at Aycliffe, Heighington, and Staindrop, explaining the various styles of architecture in each building. The closing lecture was given last Wednesday twice, to a class of about 100 each time, in St. Cuthbert's Church, Darlington, after which the class was divided into two parties of about 50 each, and whilst Mr. Cranage conducted one half over the beautiful chancel, Mr. Pritchett did the same with the other half over the grand transepts and nave, after which the parties exchanged places, and so every one had each part of this glorious building explained in detail.

The clerk to the Metropolitan Asylums Board, in a report to the board, states that during the past four years the managers have purchased five large sites for new fever hospitals—namely, Tottenham, Tooting (temporary hospital), ditto (permanent hospital), Lewisham, Shooter's-hill. On the first two of these sites they have already erected hospitals, the one in 1892 and the other in 1893. On the Shooter's-hill site a permanent hospital is approaching completion. On the Lewisham site a somewhat larger hospital is in course of erection, and is to be finished in 1897; and plans have been approved, and it is hoped that before long the building of a permanent hospital on the Tooting (permanent) site will be commenced. A site for the proposed southern convalescent hospital has not yet been secured. The managers have also during the same period been actively pushing on with most important and much-needed alterations, additions, and improvements in their existing hospitals, and have within the past two years taken important steps for the extension of their ambulance service. At two of the three ambulance stations enlargements and extensions have been carried out. They are also building a new ambulance station at Shooter's-hill, which is nearing completion. They have acquired sites for a new ambulance station adjoining the South-Western Hospital, and for a third new ambulance station adjoining the North-Western Hospital—plans for which have been already approved, and the building of which will shortly be commenced. For small-pox the managers have raised the permanent convalescent accommodation at Gore Farm from 600 to 1,000 beds, and have purchased a site for a new acute hospital. For imbeciles they have purchased a site at Tooting, on which a new asylum infirmary is to be erected.

Opinion was very evenly divided at the meeting of the Cumberland County Council on Saturday on the proposal for dismissing Mr. George J. Bell, the county surveyor. That official got himself into trouble over the proposed Sty Head Pass-road in a newspaper correspondence with Canon Rawnsley. In consequence of that the various chairmen of committees met, and decided that the offence was one that could only be met by dismissal from office. At the meeting of the County Council opinions were, however, very closely divided, and it was discovered as the meeting proceeded that there was just a probability that the motion would be lost. The county surveyor had influential backing from the west of the county, where the feeling in favour of the Sty Head-road was the strongest, and many councillors declared that the punishment proposed was in excess of the offence, and ultimately it was agreed that an apology would meet the deserts of the case, and this was accordingly given. The Sty Head-road question will now in effect be allowed to proceed, as the motion for delay was only postponed for a month by a majority of one or two, on account of this incident.

A distribution of medals and prizes gained by the students of the Glasgow and West of Scotland Technical College architectural classes (conducted by Professor Gourlay) at the Science and Art and the City and Guilds of London Institute examinations took place in the Andersonian Buildings of the College on the 10th inst. Mr. Thomas Russell, of Ascog, presided. Professor Gourlay said that in the honours stage of building construction 500 came up from all parts of the United Kingdom. Of that number 53 passed, and only three took first-class honours. Of the latter, who receive bronze medals, two were students at the College classes, and the other was a student in the classes a few years ago. Of the 50 second-class eight had been taken by the student of the College. In the advanced class 277 took first-class, and 19 were taken by their College students; while as regarded Queen's prizes of £2 each, he was informed that day that James Mather and John B. Robertson had been successful. In the City and Guilds examinations Mr. Thos. Brownlee had gained the silver medal and £3 in carpentry and joinery. Mr. John Honeyman, A.R.S.A., advised the students not to attach too much importance to theoretical knowledge gained in classes, as the knowledge gathered from their own experience produced the greatest results. The prizes were afterwards distributed, and speeches were delivered by Mr. David Thomson, late president of the Glasgow Institute of Architects, and Mr. T. L. Watson, F.R.I.B.A., of the same city.

The Lord Provost of Glasgow has issued his *résumé* of the new work of the Corporation of Glasgow during the year 1894-95. In Glasgow, with a population of 684,148, and a gross annual valuation of £4,218,580, the assessment per head is £6 8s. 3·88d.; while in Edinburgh, with a population of 276,297, and a gross annual valuation of £2,218,696, the assessment per head was £8 0s. 7·28d. The rate in the large English towns was as follows:—Liverpool, £6 13s. 1·41d.; Manchester, £5 9s. 1·40d.; Birmingham, £4 10s. 0·98d.; Leeds, £3 11s. 2·21d.; and Sheffield, £3 8s. 9·14d. Operations have been commenced in connection with the erection of a weir or tidal dam across the Clyde at Glasgow, and the corporation have also made additions to the open spaces of the city, the most important of which have been the acquiring of a new park at Bellahouston, 178 acres in extent, at a cost of £50,000; while Burnhouse Recreation Ground has been purchased for £30,000. The City Improvement Department have erected new tenements at a cost of £47,394 during the past year. In connection with the water-works, the Loch Katrine tunnel contract, the last of the seven sections into which the new aqueduct from Loch Katrine is divided, has now been let, the total cost of the aqueduct works to date being £631,000. Hydraulic power works were opened during the year in the city, and a new police establishment for the South side of the city was erected at a cost of £37,000. Sewer construction and Clyde purification have also engaged the attention of the corporation during the year. The statement concludes with a reference to the erection of new sanitary chambers at a cost of £30,000, and the erection of Ruchill Hospital at a cost of £170,000.

Trade News.

WAGES MOVEMENTS.

Stirling Painters.—The master painters of Stirling have agreed to the demand of the men for a nine hours' instead of a ten hours' day, and an increased wage of 7½d. per hour instead of 7d.

CHIPS.

An application to the Local Government Board by the urban district council of Stockbridge, near Sheffield, to borrow £11,668 for works of sewerage, was the subject of a Local Government Board inquiry on Tuesday.

The Arts and Crafts Exhibition Society announce that an exhibition will be held at the New Gallery in the autumn of 1896.

Col. Ducat, R.E., held an inquiry on Friday into the application of the corporation of Southend-on-Sea to borrow £1,600, £950, and £2,630 for purchase of land for erecting a depot, &c., for the construction of public conveniences on the Pier Hill, and for sewerage works in Leigh-road respectively.

At the Court of the Worshipful Company of Fishmongers, held at their Hall at London Bridge on the 12th inst., Mr. Howard Chatfeild Clarke, of 63, Bishopsgate-street Within, E.C., was elected surveyor to the Company.

HAM HILL STONE.
The attention of Architects is specially invited to the Durability and beautiful Colour of this material.
Quarries Well Opened; Quick Despatch Guaranteed; Stonework Delivered and Fixed Complete. Samples and Estimates Free.
Address:—
THE HAM HILL STONE COMPANY,
NORTON, STOKE-UNDER-HAM, SOMERSET.
London Agent:—
Mr. E. A. WILLIAMS, 16, Craven-street, Strand, W.C.

W. H. LASCELLES and Co.,
121, Bunhill Row, London, E.C.
TELEPHONE No. 270.
HIGH-CLASS JOINERY.
LASCELLES' CONCRETE.
Conservatories & Greenhouses.
WOODEN BUILDINGS.
BANK, OFFICE, & SHOP FITTINGS.
CHURCH BENCHES & PULPITS.
ESTIMATES GIVEN ON APPLICATION.

WM. OLIVER & SONS,
MAHOGANY, WAINSCOT, WALNUT, TEAK, VENEER, and FANCYWOOD MERCHANTS,
120, BUNHILL ROW, LONDON, E.C.
The most extensive Stock of every kind of Wood in Planks and Boards, dry and fit for immediate use.

TENDERS.

***** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender; it adds to the value of the information.**

Ashbourne, Derbyshire.—For the construction of the last section of the Buxton and Ashbourne Railway, that from Parsley Hey to Ashbourne:—

Naylor Bros., Leeds (accepted).

Beeston.—For two pairs of semi-detached villas, Beeston, Notts. Mr. C. Nelson Holloway, Newcastle Chambers, Nottingham, architect. Quantities by the architect:—

Cooper, J.	£1,705	0	0
Bell, A. G.	1,670	0	0
Hutchinson, J....	1,600	0	0
Cuthbert, T.	1,597	0	0
Donnelly, W., Kimberley	1,550	0	0
Fletcher, W., Beeston	1,500	0	0
Oscroft, J. (accepted)	1,500	0	0

Rest of Nottingham.

Cambridge.—For the erection of a villa in Cavendish-avenue, Cambridge, for Mrs. W. Varco Williams. Mr. Sidney French, M.S.A., Llandaff Chambers, Regent-street, Cambridge, architect:—

Thoday and Co., Limited (accepted)	£1,230	0	0

Chard.—For new premises, for Mr. E. Gawler, wholesale grocer. Mr. E. J. Symes, architect:—

Poole, A., Ilminster (accepted) ...	£550	0	0

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXIX.—No. 2138.

FRIDAY, DECEMBER 27, 1895.

BOARD-SCHOOL ARCHITECTURE.

ABOUT Board-school planning we have heard a great deal, and we noticed last week a recent contribution to the literature of the subject by the clerk to the Manchester School Board, Mr. C. H. Wyatt. About Board-school architecture we hear much less. A word or two, tending rather to suppress it than to improve it, generally comes in at the fag-end of the planner's address, for the average Englishman cannot clear his mind of the delusion that to put down art is to promote utility. He thinks art means ornament, and he knows that ornament implies expense. There is no driving it into his head that good architecture is possible in plain buildings. The architect, to him, is simply a man who plasters on finery, and this finery often interferes with convenience, and always raises the rates. It is natural enough, therefore, that he should object to the architect and all his works, and do his utmost to keep him under.

That is one reason for the rampant ugliness of so many Board schools; the school boards love to have them so. But there are other causes besides. There is a tradition—less dominant by far than it was a century ago, but still dear to many minds—that, to educate children, they should be made as dismal as possible. At this moment, for instance, a majority of the London School Board is in favour of beating little girls, though, fortunately, the higher authorities prevent it from putting its principles into practice. But this is only an extreme example of the vulgar belief about the right way of training the young. The thing to aim at everywhere, on this theory, is to repress their instincts—to "break their wills"—and, generally, to surround them with all that is lowering and depressing. If they have any natural taste for the beautiful, that taste must be destroyed; if they have any favourite studies, those studies must be discouraged. Every child is to be turned out, at the end of his course, as much as possible like every other child. He must be taught the same things, and be left ignorant of the same things, and he must acquire his knowledge and preserve his ignorance in the same repellent sort of soul-factory or mind-mill.

We all know the London type of soul-factory. It towers, every quarter of a mile or less, above the smoky streets and squalid homes which supply it with its raw material. We know the stock-brick facings and its red quoins, and its little bits of "Queen Anne," or worse than "Queen Anne" detail, tacked on at random here and there. We know its utter lack of general composition—of grouping—of all that produces unity and individuality. We see at a glance that it was devised in the happy-go-lucky way so pompously enforced in the preface to the Education Department's Rules. "The school architect is recommended first to perfect his plan. His own skill should then enable him to clothe it with form, proportion, character, and colour." This is not the way of the real architect in any age or country: it is simply the way of the planner, who has never discerned what architecture is. The planner arranges his plan, without a thought as to what he is going to do with it. How he is going to roof it, how its various parts will group, what sort of a whole it will make, or whether it is possible to make it into a whole at all, are things that never trouble him. He fancies, perhaps, that he can "clothe it with form," as the Rules encourage him to do, after its shape is practically settled. But he finds that form depends quite as much on plan as on elevation. He made his plan without considering "form," and form will not come to him afterwards, just because he wants it. As to "proportion," the Department's other rules do not leave him much choice. His rooms must not be too high or too low; and he must not add needless features to break up his skyline. "Colour" does not count for much in smoky towns, where a very few years bring most colours to the same tone; and the end of it is, that in "character," one school is so much like another, that nobody knows, or cares, whether he has or has not seen it half-a-dozen times before.

This is what most London Schools, and those of the more crowded suburbs, have generally come to. There are some exceptions, of course, which possess individuality of character. They may be found amongst the schools which were built by the London Board before it set up an architect of its own, and gave him more to design and superintend than any mortal man could design and superintend satisfactorily. We all know how it reaped the reward of its folly in failing foundations, choking drains, and cracking walls; and, in money alone, probably lost more than it had saved. In arrangement and practical fitness the harm it did has not ended yet, nor will end for generations. We heard, little more than a year ago, from the present architect to the London School Board, that a multitude of its structures had been arranged in ways now recognised as highly objectionable. They cannot be pulled down; they can seldom be much improved. They are built, once for all, and teachers and scholars must make the best of them. It was not any want of ability, nor, we may venture to say, any want of care, on the part of the Board's former architect which produced this unfortunate result. It was simply that he and his clerks were kept, year after year, working against time, and turning out school drawings wholesale, so that they had no leisure to think or ascertain whether their stock type of school was a great success or a partial failure. The same cause must be largely responsible for the poverty of their designs, looked at architecturally. They are not as good as their maker could have designed—far from it, though some of them do bear traces of his skill; but, broadly speaking, they are only as good as he could do at high pressure. Taking them all together, they are an illustration of building in haste and repenting at leisure—an object-lesson on the effects of being penny wise and pound foolish.

It does not trouble the public how bad a thing is, provided it gets into fashion, and is upheld by authority. Therefore it is a matter of course that the typical London Board school, raising itself unabashed all over the Metropolis, and tacitly asserting itself to be the crowning result of time, should be taken by many people at its own valuation. Dingy stocks and red-brick quoins have in this way been recognised by country Boards as the only correct wall facings, and have been imported at considerable expense into villages whose local materials were incomparably better. With them have come broken cornices, gable copings, parapets, and lead gutters, and a variety of other costly and useless details, without which no board school seems to be considered complete. All these things, along with the rigid, unadaptable rules of the Department, swell the expense, in rural neighbourhoods, to a perfectly needless point. The country board school, often enough, is a manifest exotic; something imposed by outsiders on the district, and no natural product of the soil. So it happens that though it is commonly lower and less box-like than the town one, and is, therefore, more amenable to really architectural treatment, it becomes an eyesore, and not an ornament. There are numerous exceptions; but this in the general tendency, and the man who opposes it is looked upon as an enemy to education, and a person altogether behind the times he lives in.

In this way it comes to pass that one great part of our annual taxation goes to nullify the good which is being done by another part. We have a Science and Art Department doing its best to cultivate popular taste, and to restore to our country the faculties and perceptions which, for a great part of the last three centuries, it made almost a religion of repressing. This is an uphill task at the best, and it is made immensely harder by the fact that the Education Department, in reality, if not in form, is fighting against it. An artistic training means a training amongst all that is natural and beautiful and free. A Board-school training very often means a training amongst all that is ugly and mechanical and discordant. It is as if one department existed to teach music, and another department seized on the students and compelled them for five or six hours a day to live amongst steam-whistles and saw-sharpeners. For the typical Board school is seldom more lovely inside than out. It is an "education Bastille," to adopt Carlyle's phrase, and a place of durance in which, as a building, there is nothing to delight the eye or to elevate the mind. Physically and materially it may have its merits. Light and warming and ventilation are carefully provided for, as it is right and necessary that they should be. In points like these the modern Board school is far in advance of public schools like Eton and Winchester, whose desks and forms would be looked on with contempt by the London street-boy, and whose wildest dreams—at any rate, a generation ago—did not rise so high as having "hot and cold water laid on." The Education Department and the Boards can appreciate the mechanical, the physical—the things of the body. What they ignore are the things of the mind, and, above all, the higher things which cannot be taught in classes or comprised in standards. There is no communicating them in words; but they teach themselves by the influence of beautiful and refined surroundings. There are places, to have lived in which is a liberal education. A Board school should do its best to be one of them; but how many of such schools have as yet even imagined this as a possibility?

There was a story—probably apochryphal—in the newspapers last week, of a little girl ten years old, who was asked what subject she was then studying at the Board school. She replied: "Seismology," the science of earthquakes. It is, or—when more is known about it—may become, a very useful and interesting thing to learn about for pupils in Japan, and in some parts of South America; but, in any case, it can hardly be taken up with advantage at the age of ten. Yet long before that period, as every observer knows, external impressions do much to shape a child's tastes and preferences—so much that the result of its early surroundings is generally traceable through life. What a child becomes depends more largely than most people think on what sort of place it grows up in, and refined and beautiful schools may do as much for education in one of its aspects as masters, mistresses, and inspectors can ever do for it in another.

AMBIGUITIES IN THE LONDON BUILDING ACT.

THE paper read by Mr. Ellis Marsland under the title of "A Year's Work under the London Building Act of 1894" before the Society of Architects is interesting to those who have been watching the operation of the new Act to buildings in the Metropolis. The amendments incorporated in the new Act have not all been desirable; many of them were proposed at the last moment by opponents to the Bill, and by others having large interests as building owners, and the consequence is that what might have been a useful measure of consolidation has been narrowed and watered down to meet a number of conflicting interests. There are a great many ambiguities in the Act as it stands which will sooner or later have to be expunged. The courts of law have already dealt with a few of them, and we may expect many more legal interpretations to be given before the Act is put in working order and Parliament is asked to revise it.

The concessions made by the framers of the Bill at the time of its drafting to opponents and vested interests have, it must be confessed, greatly impaired the integrity and definite wording of the clauses of the present Act, and the recent questions which have come before the law and police courts show how imperfect and equivocal some of the sections are. To take, for example, the first section cited by Mr. Marsland, the 212th, referring to buildings in progress at the commencement of the Act, it is obvious, as we have before said in referring to cases brought before the magistrate, that the clause does not clearly define the two kinds of contract. The section as it is now worded is ambiguous. It says: "Notwithstanding anything contained in this Act, a building, structure, or work which has been commenced before, and is in progress at the commencement of this Act, or which is to be carried out *under any contract* entered into before the passing of this Act, may be completed subject to, and in accordance with, the provisions of the Acts relating thereto as in force immediately previous to the passing of this Act." The italicised words "under any contract" are vague, and, as the decisions have shown, may apply to ordinary building agreements to build so many houses on a given site. No doubt the framers of the section had in view a contract entered into by a builder to erect a specified building. The law courts have put another interpretation upon the clause: they allow houses to be erected under the old Act if only an agreement for their erection has been executed before the 25th of August, 1894. Professor Banister Fletcher said he pointed out, at the time the Bill was in committee, the confusion that would arise; but counsel's opinion was adopted. Any unnecessary interference with the arrangements of owners and those who had taken land under the former law would be unjust. The recent appeal case, "Tanner v. Oldham" may be cited. An agreement in writing dated Jan. 3, 1894, was entered into between the Haberdashers' Company and a builder, the latter agreeing to erect upon certain plots of ground several houses, six of which were to be completed before 25th of March last. Due notice of building was served on the district surveyor, but the latter decided it would be contrary to the Act as to thickness of walls, and gave notice of objection. The respondent appealed to magistrate, and relied on Section 212. The appellant contended that the section applied only to a contract for the erection of a specific building at a given price; but the magistrate was of opinion that the agreement was a contract within the meaning of the section, and disallowed the objection. The Court decided that the magistrate was right. The section related to a "building, structure, or work" carried out under a contract, and the word "contract" could not be narrowed down to a specification, though it might be part of a contract.

The discussion on Section 13, clause 5, referred to in the paper, also points to a defect in the framing of this clause. As our readers will see if they turn to the above subsection, the Act permits the re-erection of a building that is within the prescribed distance from centre of roadway (when the evidence of the position of the old building or the plans and extent of the forecourt, &c., have been found to be accurate by the district surveyor and certified as correct), but "so that no land within the prescribed distance shall be occupied by the re-erected building or the forecourt," &c., except that which was occupied by the previous building or forecourt. But, as pointed out by Mr. Marsland, there is no restriction as to the height of the re-erected building, which may be built presumably to the full height of 80ft. We can imagine an old building of one or two stories re-erected under this section to such a height as to make it objectionable to the adjoining owners, who apparently would be powerless to interfere. The discussion on this point elicited the opinion of Prof. B. Fletcher that when the street was 40ft. wide the new building could not be raised higher than the old one, but there is nothing in the Act, as far as one can see, to indicate any restriction as to height.

Referring to Section 40, the author of the paper drew attention to the unsatisfactory wording of the clause. The section provides for light and air to habitable basements; but it practically says nothing more than that there shall be in the rear of the building an open space of not less than 100sq.ft., which "need not adjoin the rear boundary of the premises." The area, too, is small. In the next section (41), relating to space at the rear of domestic buildings abutting on new streets, the remark made by Mr. Lovegrove is to the point. It enabled the owner to build over the space at the back to a height of 16ft. above the pavement (see sub-clause i.) when the ground story is not inhabited. We have spoken before of the effect and inadequate provision of this important and lengthy section, and we agree with Mr. Marsland in thinking it is a pity that the same condition should not apply to a new site on an old road instead of permitting the diagonal line to be drawn at the level of 16ft. above the pavement, and the open space to be provided at this level. The provision is not sufficient, and we cannot see that the rule will afford buildings under certain conditions any greater advantage in respect of air and light than was originally given.

In the next section (42) the wording is also vague as to open space to be provided for dwellings for the working classes not abutting on a street. Why a stable abutting on a street is deemed a domestic building is beyond comprehension. Where, as one speaker said, the stable did not abut upon a street, a difficulty would arise as to space in the rear. What is the definition also of "working classes" in this section? Section 43, which relates to re-erection of a domestic building on old site, is not very explicit. Plans of the previously existing building have to be certified by the surveyor, and if he is satisfied with their correctness the person may erect the domestic building, but so that no more land shall be occupied by it than was occupied by the previous domestic building; but as to height there is nothing stated, though in the draft Bill the height was not to exceed that of the old building.

Section 45, relating to courts within a building, must have caused some difficulty to architects as to how the communication between the lower end of the court and the outer air is to be effected, except by a space left over the ceiling of the ground floor in one of the rooms. A diagram explaining how this can be managed would have saved much trouble. As to another important section, 74, the new Act has not simplified the question of the separation of buildings used in part for purposes of trade and in part as a dwelling-house. We refer to Mr. Marsland's remarks and the discussion thereon. As Mr. Lovegrove said, the section was a very difficult one to work under in the case of alterations. In the first place, the section only applies when the new building exceeds 10 squares (1,000sq.ft.); but it also applies where two buildings are united and used for dual purposes. A small addition to any old building of this area may bring this clause into operation, as we find clearly stated in Section 77, 2. Not even by dividing the building into sections of not more than 1,000ft square, and placing iron doors to the openings between them, can this section be complied with. The difficulty, therefore, is to make united buildings comply with the Act, and for this purpose walls and floors of fire-resisting material are to be used; but the thicknesses of these party-walls and floors are not stated. Then what interpretation is to be put on the words "all passages, staircases, and other means of approach to the part used as a dwelling-house shall be constructed throughout of fire-resisting materials" in the case of two old buildings united? We can understand a new building with these arrangements; but to make united buildings comply would mean a very extensive reconstruction and outlay. Then the part used for trade, if exceeding 250,000c.ft., is to be subject to the provisions relating to buildings of the warehouse class. It appears to us that the whole of this section requires remodelling. It is quite obvious that the framers intended that the passages, staircases, and other means of approach to the dwelling portion of the premises should be of fireproof construction. Mr. Marsland refers to other defects in the description of the doors in the vertical walls of separation, which will cause considerable difficulty to owners and district surveyors, and give the Courts much trouble where any case of disagreement arises about the kind and thickness of walls and floors separating the two parts of such buildings; and the question of joists is doubtful. The next section (75) has a new clause which makes it impossible for any warehouse to be enlarged so as to make the cubical contents exceed the statutory limits of 250,000c.ft., and the mode of division is by party-walls only. We cannot see why the old maximum limit of 216,000c.ft. was raised.

We have no space to examine other points. Section 80, as to rules for staircases in churches and chapels, &c., is a considerable improvement upon the old; but the remark was made that no width for entrances and exits is given. Attention was called to the exemptions from the Act (Section 201), and the general opinion of district surveyors is that a mistake was committed in exempting greenhouses not attached to other buildings, although the rule agrees with the decision in "Hibbert v. Acton" that ordinary greenhouses are not buildings within Section 157 of the Public Health Act, 1875; it is also objected that anyone can erect a greenhouse close to his neighbour's boundary. These and other points are unsatisfactory.

RIGID RESTRICTIONS.

COMPLIANCE with the narrow demands of building promoters cannot be very conducive to that freedom of design which a competition by its very nature presupposes. Every restriction puts a limitation on the design, and fetters the thought and imagination of the architect. The old saying that "The letter killeth, but the spirit giveth life" is particularly applicable to those rigid instructions and conditions which committees sometimes impose on the profession. That certain desiderata in the plan should be fixed no one will dispute. The accommodation, the size of certain rooms, the number of offices required in particular departments, and the demand for entrances and exits are absolute requirements. Even a rough programme or sketch is tolerable when it does not go so far as to hamper the ideas of the competitor; but when it restricts the architect to one mode of planning, or preclude him from exercising his own skill in accomplishing the same ends, it is inimical. An assessor, for example, by enforcing a particular condition of the instructions, may do the same wrong to competitors. He may, for instance, take a too literal interpretation of a condition by insisting that the public hall be placed in a particular position, thus throwing out a design which shows a better position for it in reference to entrances and exits. To the expert designer of a particular class of buildings, this rigid enforcement of conditions is positively distasteful, for it often positively debars him from exercising his own skill, and introducing features and arrangements which long experience has proved to be desirable. Thus, recently in the case of certain baths and washhouses, a very able set of designs failed to obtain the first place because its author boldly introduced a feature which was not contemplated by the promoters who drew up the conditions, and ventured to make a few deviations from the schedule of accommodation. Though these departures would have been a distinct gain to the convenient approach to the baths, they were considered by the assessor as unnecessary.

Broadly, the question of competition conditions resolves itself into: Is the object to obtain the best design practically and artistically that can be made for a given site and at a given cost?—or is it to select a design on paper which complies with a set of conditions which do not pretend to be perfect, which are, in fact, drawn up by a few of the committee with the aid of their surveyor and clerk, or with the aid of an assessor who is not an expert in the class of buildings contemplated? If the latter, then the rigid observance of the conditions, however imperfect, is a *sine quâ non* of all architectural competitions, and the idea of obtaining the best design or the highest talent procurable is a mere subterfuge? But surely no set of promoters of a competition desire to do anything else but to procure the best design.

The history of not a few recent competitions has shown that promoters expect architects to compete under severe and often unreasonable conditions, which they do not guarantee to maintain themselves. How often have committees accepted designs which have violated one or more of the leading conditions, or have selected a design which they know quite well will cost a great deal more than the amount they have stipulated! The King's Lynn Municipal Buildings competition, the award of which dissatisfied a few, and which called forth remarks in our Correspondence column, may be mentioned; also the Durham County Council offices competition, in which the assessor's award was practically set aside. Into the merits of these competitions we do not say anything further than that the question of cost was made paramount by the council, and a good internal arrangement has been selected in the latter instance. There are many instances of architects wilfully or unknowingly transgressing the conditions of competition, for which no excuse can be pleaded, and which fairly disqualifies their designs, as when they go beyond the limits of the site; when they exceed the dimensions unnecessarily, or do not give the required accommodation; when they place offices or departments on the wrong floor; do not provide the required entrances or exits; introduce corridors or halls that cannot be lighted; when they exceed the cost, or do many other things contrary to the express or implied meaning of the instructions. In these instances the committee or the assessor are justified in rejecting their designs. A competitor places himself out of court by not complying with the terms of the competition, and he cannot justify his neglect when the conditions are clear and definite, and other competitors have fulfilled them. On the other hand, there is a free interpretation of the conditions which every professional man is justified in exercising. If a competitor does not violate any essential point, but, in the exercise of his judgment, introduces a modification which gives the same result in another way, it seems to us the assessor is bound to consider it upon its merits. It may be a better or a worse way of doing something, and as such it ought to be examined.

Let us take a few cases that have occurred in actual competitions, in which competitors have exercised their own judgment in interpreting the conditions. The promoters propose that the whole area of a given site is to be covered by the building, except certain small areas for light; but they do not make the condition absolute. One of the competitors, instead of conforming rigidly to the instruction, introduces a quadrangle for light and air, which absorbs a considerable space in his plan. To obtain the necessary accommodation, he places some of his inferior rooms in a third story or a mezzanine. Is such a proceeding a violation of the instructions? A better and more architectural plan is obtained at the cost of putting a few of the minor offices on another story than that scheduled. It will scarcely be maintained that, if his design is made better by such a modification, this plan should be disqualified, although other competitors who have followed closely the instructions may regard it as an infringement. In another competition, designs were invited for a building on a site the building frontages of which were laid down, but nothing was said to restrict the architects. One or two designs submitted showed the building kept considerably within the boundaries; on one side a large area was left, and the authors added a story. We think the design was rejected on these grounds, though the authors complied with the general conditions as to accommodation. Frequently we find the following:—The plan of site has irregular angles and boundaries, which are supposed to be built up to; but a few of the competitors venture to set back their main frontages, and to design a square-angled building. What is more reasonable? Are these designs to be rejected on this account?

Again, A. is a design submitted which in all main essentials complies with the conditions; the departments are well grouped and located, and the entrances are sufficient and well studied, but the accommodation in one department is not given as asked for. Another competitor, B., supplies the accommodation asked for, but his entrances are cramped, and his corridors badly lighted. Which should be selected? A.'s design is in every respect better as a plan, and his elevations are suitable; B.'s design blindly follows the schedule, but his plan is inferior, and his external design elaborate, but not adapted to the buildings. Then take another and not uncommon case. The conditions lay down that the architect of the successful design is to obtain at his own cost a *bonâ-fide* tender from a well-known contractor approved by the commitee to carry out the work for the amount of his estimate. The author of the best design fails to obtain such a tender. In the Durham County Council Competition one clause stated "that if the estimate exceeds £22,000, the design will not be eligible for a premium, and special consideration will be given to plans which can be carried out at the lowest cost." Many competitors accept such a condition with reserve. They can call to mind numerous cases when the promoters have disregarded this stipulation when a really good design has been selected; they look upon the clause merely as a kind of loophole, or as a means of keeping down unnecessary expense, and not one that will be seriously acted upon when the cost is not extravagantly in excess of the amount. As a matter of fact, a very large percentage of competitive designs selected exceed the stipulated sum. When it is intended to adhere to the amount, a statement to this effect would save many disappointments and unnecessary labour. All the above cases, except the last, are instances of a free interpretation of the conditions, in which the authors have shown skill and artistic ability. As to the clause now so often inserted, that the successful competitor is, at his own cost, to obtain a *bonâ fide* tender from a builder to carry out the work at the architect's estimate, nothing can be more derogatory to the artistic and professional minds, as it practically converts the architect into a contractor. The effect of this restriction is to tie the designer's hands and prevent him from fully developing his scheme; his design must suffer in the long run—details are cut down or spoiled. For, in most cases, the sum put down is far from being adequate, and has been fixed without any due consideration of the requirements. Such has been the case with the sum put down by the Shoreditch commissioners for their baths and library. Why should an able design be hampered by an ill-considered estimate, which, in nine cases out of ten, has to be increased? Mr. Penrose, in his presidential address at the Institute, observed that it can hardly ever happen that "any set of conditions and instructions issued by a committee can supply competing architects with all the information required for forming a successful plan, at all comparable to the free intercourse of an appointed architect with his employers." We may go further, and say that a set of conditions prepared by a committee, or an assessor, is insufficient to supply a competing architect with any information beyond the barest requirements, and even these may be often unattainable or impracticable, and that the fuller and more detailed they are, the more irksome they become. Every competitor knows how hampering and restricting the effect is of a large number of conditions and a long schedule, and at almost every step in the planning, a question occurs which must be answered. The list of questions and answers often published as an additional sheet of information after the plans are far advanced, show how imperfect the conditions generally are, and how much less friction, and more freedom of thought would be insured by leaving all unessential points to the competitors. No doubt, to some of the inexperienced and incompetent competitors of complex buildings, very full and definite instructions are helpful; but they are just the men who are most hampered and restricted by them, and they stumble and fall over points which their better informed brethren avoid. While one gropes his way in the dark, following, as far as he can, the instructions, the other makes rapid strides, and is more impeded than otherwise, by a number of restrictions which may turn out to be impracticable, or inconsistent with other conditions. The question remains, Is the most compliant fulfilment of the conditions, or the best building which architectural talent can produce, the chief consideration? So far as our experience goes, the two things are irreconcilable. The most perfect fulfilment of conditions as generally framed by committees, does not insure the best plan or the most effective design. All the former can do is to lay down a minima of requirements; whenever more is attempted, the highest skill in planning and the dearest artistic discernment are placed at a decided disadvantage, or are absolutely thrown away.

◆

CAST IRON IN BUILDER'S AND CONTRACTOR'S WORK.—XI.

By Joseph Horner.

I HAVE made frequent allusions to the important differences between the upper and lower portions of castings, and have explained the reasons for these differences. A practical man would always, when inspecting work, try to locate each before making detailed observation. The upper and lower parts of a casting may almost always be distinguished, even after it is fettled, in the following way:—

The runners generally come down somewhere on the top, and then the marks where they have been chipped off can always be distinguished from the untouched skin of the casting adjacent. If, however, the runners have been brought in at the side of the casting, then marks of chipped off risers can be distinguished, and these are invariably on the upper surfaces of castings. The sectional forms of these are either circular or rectangular. These signs are sufficient. But a practical eye can often tell the top from the bottom by slight differences in the appearances of the surfaces. The top is seldom quite so smooth and even as the bottom. But the runners and risers are sufficient indication.

The parts where the mould has been jointed can almost always be detected by the signs of minute overlapping, and of fins chipped or ground off. It is often useful to note this in determining which is the top and which is the bottom side of a casting.

Where a casting has been poured on end—that is, cast vertically—the runners will be brought in either at top or bottom, and their marks will be detected accordingly. Even if the ends of such a casting have been machined, the way in which it was cast will still be evident by the absence of the marks of chipped-off runners and risers on the sides.

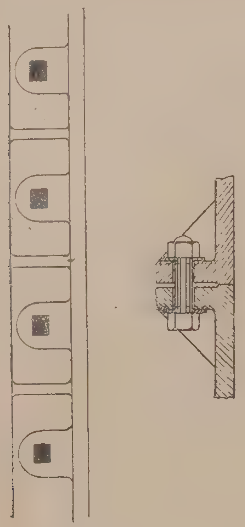


FIG. 45.

I will now give some selected illustrations which will show the importance and the practical applications of some of the principles and facts which have formed the subject-matter of foregoing articles.

To take first a piece of history, terribly memorable in the annals of engineering:—

On the evening of Sunday, December 28, 1879, the most terrible railway bridge accident ever recorded in this country occurred. On that night a portion of the first Tay Bridge went over into the river with a train of about 70 passengers, who had left Edinburgh for Dundee. The bridge had been erected at a cost of about £350,000 by Messrs. C. De Bergue and Co. and Messrs. Hopkins, Gilkes, and Co., of Middlesbrough, and it had been opened only on the May twelvemonth previous. The bridge was 10,350ft. long, and carried a single line of rails. The columns of the Tay Bridge at the piers which failed were in groups of six, arranged at the corners of an irregular hexagon, each column being made of seven lengths 10ft. 10in. long, united by flanges. Four were 15in. diameter, two 18in. diameter, filled with Portland-cement concrete. They were braced with horizontal and diagonal bracings, the latter being attached to cast-iron lugs or snugs, with bolts. The bolts were $1\frac{1}{8}$in. diameter, the snugs 1in. thick, $1\frac{1}{2}$in. apart, and the holes in the snugs were $1\frac{3}{8}$in. diameter. The columns were about as bad as castings could possibly be. They were made of bad iron, badly moulded, cores out of centre, no chaplets being used, scabbed lugs were imperfectly burnt on, cracking the columns, and there were cold shuts. Cracks were filled up with putty, and holes with Roman cement. The bolts in the lugs for securing the bracing were slack in their holes, and the salt-water had corroded them seriously, half-way through in some cases. It came out in evidence taken in connection with the failure, that some columns were only from $\frac{3}{8}$in. to $\frac{1}{2}$in. thick on one side, and $1\frac{1}{4}$in. to $1\frac{3}{8}$in. on the other. Also, that lugs were sometimes burned-on, when it was known from the quality of the metal that the job could not be solidly done. That in cooling, the lugs sometimes came away from the flange, but adhered to the column. It was a miserable history of a bridge badly designed, badly built, and badly maintained, and it created a prejudice against the use of cast iron which the material, if employed under suitable precautions, does not deserve.

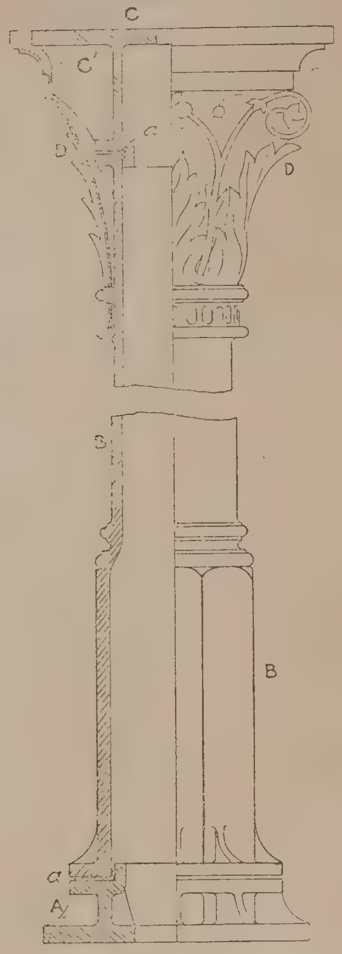


FIG. 46.

From many of the remarks in foregoing articles relative to shrinkage stresses, the reason is explained why it is the practice to build up some heavy masses of cast iron in several pieces bolted together, rather than to attempt to cast them in one. Some disproportioned castings would become torn asunder by their own shrinkage; others, if not actually fractured, would be within an ace of being so. Besides this, too, the cost of moulding is increased by casting large masses of metal in which great differences in dimensions occur. The moulding flasks, with their contained sand, are more awkward to handle, and the risk of wasters is increased.

In cast-iron tanks, for example, the plates are seldom larger than 4ft. square, being then easily cast and handled about. Large columns with broad bases and caps are cast in several parts and bolted together—the shafts sometimes in several lengths, and the bases and caps distinct. Heavy mouldings are not cast, but screwed on. The joints between the different parts are not necessarily faced right across. It saves expense, and makes practically as good a job to have narrow facings only and fill up spaces with iron cement, as in tank plates.

Fig. 45 shows the regulation method of making the bracketed flanges for cast-iron plates of all kinds, whether for tanks, buckle-plates, or other broad surfaces in cast iron. The flanges are bracketed strongly to resist the cross breaking stresses due to the pull of the bolts. A small radius, too, fills up the angle. The bolt-holes are either square or oblong—the proper form being oblong, as shown. The excess of length over breadth may range from $\frac{1}{16}$in. to $\frac{1}{8}$in; but, though apparently small in amount, it is always well to make this difference. The reason is, that the coring of the holes to exact centres cannot be relied on, and if the holes overlap slightly, the chances are that the bolts cannot be got in without some time wasted in enlarging the holes by chipping. Casting the holes oblong gives a slight excess of clearance in the direction in which the holes are most likely to be out of truth—that is, lengthwise. In the other direction, that of depth, the holes are usually from $\frac{1}{16}$in. to $\frac{1}{8}$in. larger than the bolts—no more. It is customary to cast square holes and to use round bolts with square necks. It is not necessary to cast square holes in both flanges; but it is convenient to make all flanges alike. Thin facings are, or ought to be, cast around the bolt-holes for the bolt-heads, or nuts, or washers, to bear against. There is generally quite $\frac{1}{16}$in. of taper on the inner faces of the flanges, and this prevents the nuts or heads from bearing all over their surfaces.

When facings are cast on, less taper is given to their faces than to the faces of the flanges, and the bolts have a better bearing. Washers are, or should be, always inserted between the nuts and the facings. If the job is a water-tank, gromet washers are used under the heads and nuts, consisting of a strand of tar twine rolled round into a ring to encircle the bolt.

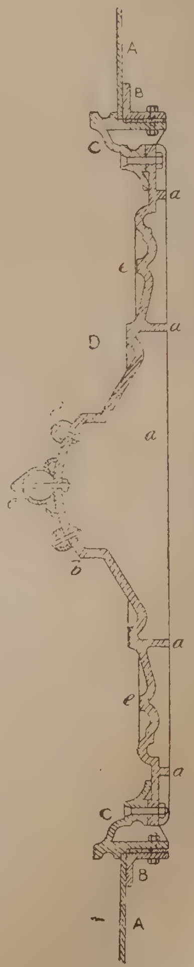


FIG. 47.

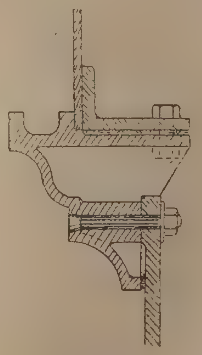


FIG. 48.

A fillet is always cast round plates of this kind, and ought to be planed. In casting the narrow fillet, there is a space left between adjacent flanges, usually from $\frac{3}{8}$in. to $\frac{1}{2}$in., and this is filled up with iron cement, consisting of fine borings and sal-ammoniac moistened with water. This soon sets nearly as hard as the iron itself.

Fig. 46 represents one of the columns of the Liverpool Central Station in half-elevation, and half-sectional elevation. It is selected as affording a good illustration of the manner in which heavy cast-iron columns are built up. The upper circular part of the shaft tapers from 1ft. 9in. to

PORTICO OF ST. PAUL'S CHURCH, COVENT GARDEN.

1ft. 6in., and the lower hexagonal part is 2ft. 3in. across, and the total length over base and capital is 27ft. A column of this type cast in one would be costly to mould, and would possess several elements of weakness, due mainly to the shrinkage stresses already enumerated in previous articles. This, therefore, affords a good object-lesson of the manner in which large columns are built up in order to minimise the evils incidental to work cast in iron. The base A, shaft B, and capital C are made separately, because of the great disproportion in the dimensions of each, and the foliage D round the capital is cast in separate pieces and screwed on. When heavy foliated work is cast on a capital of large dimensions, there are two evils to contend with: one is the shrinkage stresses and draws which occur, due to the unequal massing of metal; the other is the increased difficulty of constructing the pattern and withdrawing its various sections from the mould. With regard to the first, it is well-nigh impracticable to make cores to follow the outlines of the foliage, and so preserve that approximate uniformity of thickness of metal which is so necessary to insure equal cooling and shrinkage. With respect to the second, the task of constructing a pattern for easy withdrawal is often a most troublesome one. In a large ornate capital the number of separate pieces, large and small, will often number two, three, or four dozen. These all have to be jointed before the carving is done, so that the pattern-maker must needs see, mentally, the moulding of everything clearly before he commences working. And even then some of the details often have to be modified, and some sharpness of outline sacrificed to the exigences of delivery. Then there are the moulder's joints, which show to a greater or less extent in the casting, and have to be trimmed and smoothed. But by casting the foliage in iron or brass, and screwing it round the cap, much of this trouble is avoided, and the metal is maintained of approximately equal thickness. Ribs, it will be noticed, are cast on at C^1 to form suitable projections for the attachment of the sections of foliage. The joints between the main parts of the column at *a*, *a*, are usually made good with iron cement.

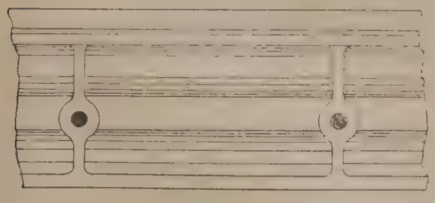


Fig. 49.

Fig. 47 gives a vertical section through one of the ornamental spandrels of Battersea new bridge, selected to illustrate the way in which large areas of ornamental work and heavy mouldings are built up. The section is taken through the shield at the centre span, representing, therefore, nearly the deepest section of the cast work. The outline of each spandrel is, but for the rise and curvature of the spans, that of a right-angled triangle, the length of the upper side of which measures about four times as much as that of the perpendicular, and each is made of four cast-iron plates flanged, bolted, and cemented, and strongly ribbed. It is not necessary to illustrate this. In Fig. 47 A A are steel plates which serve as a connection between the spandrels and the top and bottom main girders of the bridge. Angle-irons, B B, are riveted to these. The cast-iron mouldings C C are bolted to the angles with iron cement joints, and the spandrels D are bolted behind the mouldings. *a a* are stiffening ribs cast on the backs of the spandrels, *b* is the shield having bosses, *c d d*, bolted to it, *e e* are sections through ornamental scroll-work.

The noteworthy points about this design are the way in which equal thicknesses of metal are preserved throughout, and the method adopted of casting parts separately. To attempt to cast the mouldings on the spandrel would give infinite trouble in cooling. To cast the bosses *c d d* on the shield would give trouble in moulding, and draw the casting there. By adopting the method shown, the shape and strength of each section is preserved intact. A moulding is shown in detail in Figs. 48 and 49, in section and back view. Always, when mouldings are bolted to other work, bosses and ribs are used for the bolts, so that there shall be no important excess of metal in any one section. The joints are made with iron cement.

CLASSIC DETAILS AND THEIR APPLICATION.*

By G. A. T. Middleton.

XXII.—ENGLISH RENAISSANCE.—THE WORK OF INIGO JONES AND WREN.

THE true Renaissance was introduced into England so entirely by two men only, and these two of such high genius, that it is necessary to treat their works separately from all else.

First of these came Wynw (or Inigo) Jones, the Welshman, who lived during the reigns of the first James and the first Charles, and who imported into England, almost in their purity, the characteristics of the Venetian School, which he had learned to love when travelling in Italy; and he was followed, after the interval occupied by the Civil War, by Wren, the astronomer, whose extraordinary genius enabled him to produce works of the highest order and magnitude with little or no training in architecture.

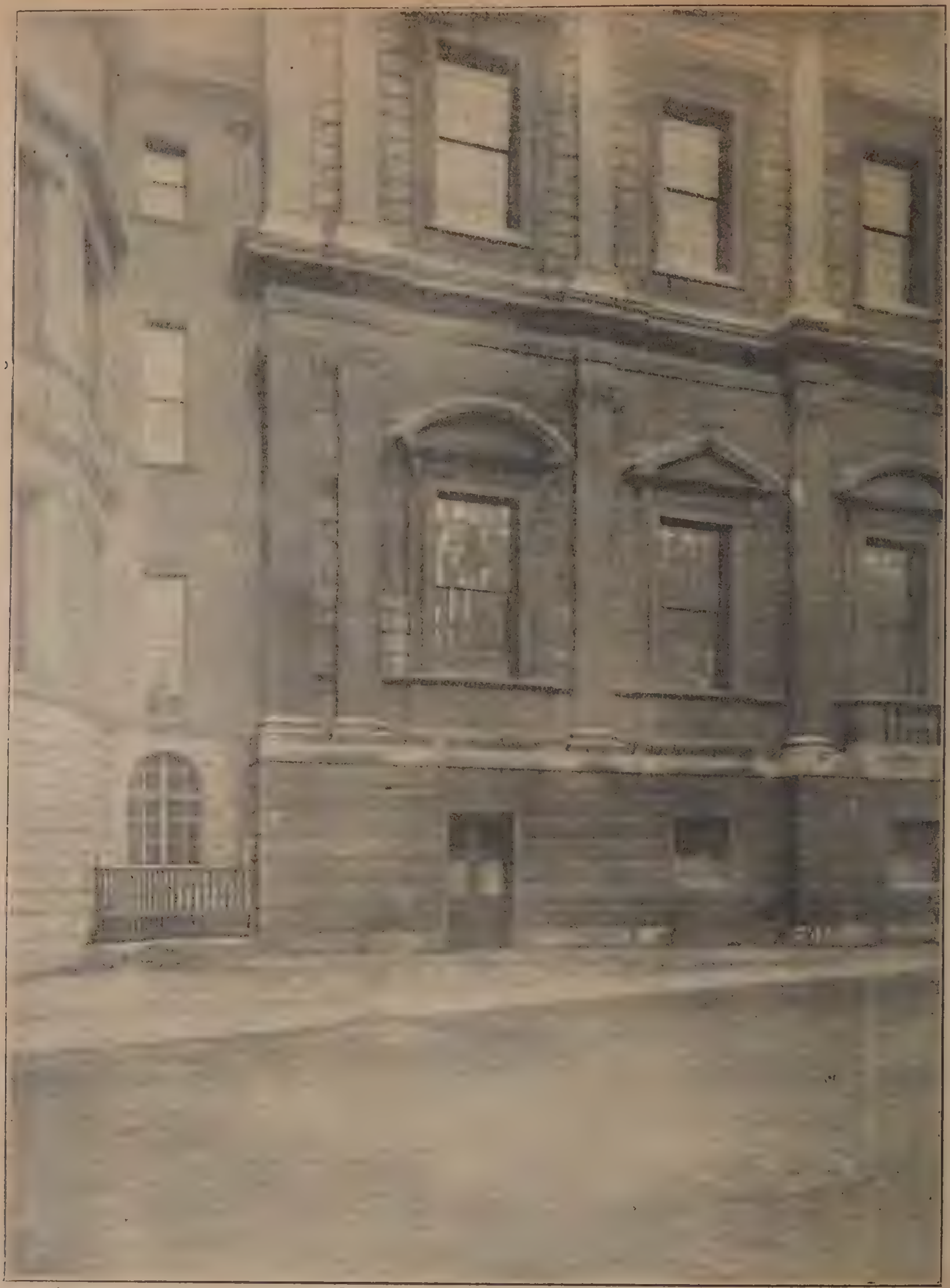
Of Inigo Jones's buildings, there is no question as to the projected palace at Whitehall having been the most important, as the portion of it erected, and now forming part of the home of the United Service Institution, is undoubtedly the most noble and most characteristic piece of his work still left to us—for the villa at Chiswick, often ascribed to him, was not even projected till long after his death.

In the Whitehall example there is a plain basement, then an Ionic, and over that a Corinthian Order, the columns being sufficiently widely spaced to allow of windows being introduced between, the four in the centre being true columns with the entablatures breaking round them, and the others being pilasters of no great projection, those at the corners being coupled in order to give a greater idea of support.

The most unusual feature, and consequently that which most deserves attention here, is the treatment of the Ionic capitals, with all the volutes projecting diagonally from the face, and without drums, faces or fronts being thus formed on all three exposed sides. To find a precedent one has to go back to the Temple of Apollo Epicurius at Bassæ, built by Ictinus about 438 B C., with which Jones could scarcely have been acquainted. Where a similar treatment has been adopted to the coupled pilasters at the

---

* All rights reserved.



OLD BANQUETING HALL, WHITEHALL.

angles, the effect is not altogether pleasing, though doubtless it was necessary for the sake of consistency.

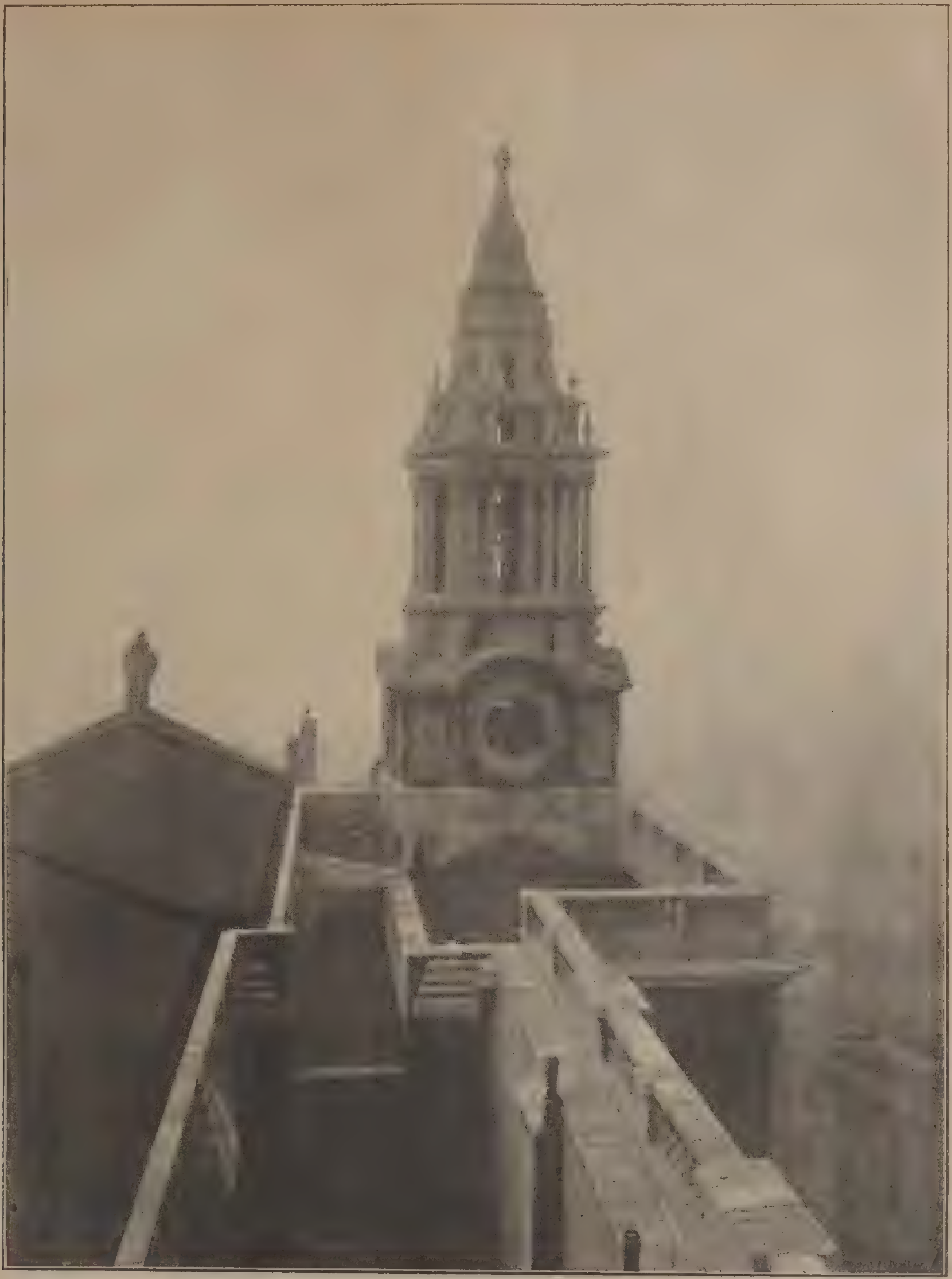
The swelling of the frieze, and, more particularly, the simple yet altogether noble treatment of the windows are also noticeable; and, in fact, the whole building forms a wonderful lesson in proportion and in dignity.

When necessity called for it, Jones was something more than a mere copyist of Italian forms, as is evidenced by his church of St. Paul, Covent Garden, in which most extreme simplicity was demanded, there being no money to expend upon ornament. The result was a building of extraordinary dignity, showing what can be achieved by means of good proportions and honest workmanship alone, but not an example to be strictly followed where there are funds available for something less bare. It displays its poverty boldly and proudly, as if symbolical of manly bearing in adversity.

Wren, less trammelled by tradition, through having seen but little of the Renaissance work of other lands, dared to be more original. His spires alone mark a new epoch, rising, as they frequently do, order above order, in tiers of diminishing size, until a terminal is reached of varying design, all elegant, all commanding admiration, and all illustrative of an entirely new phase of Classical design, and a new application of Classic detail, to give Classic form and Classic feeling, too (not a mere Classic dress), to the essentially Gothic feature of the spire.

The one illustrated is that crowning the north-western tower of St. Paul's Cathedral, and the opportunity has been taken to show at the same time the deep well which exists over the aisle between the wall of the nave and the much-criticised blank wall, carrying the order, and seen from the outside. Unfortunately, the fine main order of the building is in shadow. A point worthy of attention in the lower part of the photograph is the construction of the coping. Another of Wren's great characteristics was the free use which he made of cherubs as architectural ornaments. Appearing in the form of winged heads, vigorously carved, they frequently group round openings in the guise of a company of angels welcoming the worshipper. The idea was—a beautiful one, and, carried out with restraint, as was usual with Wren and his immediate followers, capable of most admirable results; but it was just one of those things which were most easily vulgarised. The tombs in Westminster Abbey are many of them fearful examples of what a depth of degradation in art a cherub's head could typify.

A memorial brass by Messrs. Thomason and Co., of Birmingham, has been placed in Llanthony Church, in memory of the late Rev. Lewis Lewis, for nearly forty years vicar of the parish.



NORTH-WEST TOWER, ST. PAUL'S CATHEDRAL.

SIZE OF GRAINS OF SAND IN CEMENT.

Mr. A. S. COOPER, United States assistant engineer, has recently made a series of tests to compare fine beach sand with the coarser varieties, which have a considerable bearing on the question of the strength of mortar as influenced by the size of the particles of sand used in mixing. During the construction of a mining casemate at Fort Pulaski last year, the question arose as to the advisability of using fine beach sand instead of coarse river sand, on account of the greater cost in obtaining the latter. Mr. Cooper considered that the fine sand would be nearly as good—in fact, good enough—and as its employment was estimated to save at least £200 sterling in the total cost of the work, a short series of experiments was made, which, to the astonishment of all connected with the work, proved the fine sand to be slightly stronger than the coarse. These results were spoken of as being opposed to those obtained by all previous experimenters, and this fact induced the author to investigate the question in a more thorough and scientific manner.

The method of working was so devised as to eliminate as many uncertainties as possible. The sand was first graded by means of thirteen sieves, ranging from 8 to 140 wires to the lineal inch, and the grades indicated by the two sieves used. The grade 8 = 12, for example, means that the sand in this grade passed a sieve with eight wires to the inch, and was held by one with twelve wires. It was concluded to mix the mortar rather dry, about the consistency of moist snow, so as to be able to handle the briquettes immediately after moulding them. It was also believed that a dry mortar would give more even results under uniform pressure than a wet one. The sand and cement were first carefully weighed, then they were mixed dry by means of a square box with a rod run through the corners. The water was measured with a graduated glass, and mixed into the cement and sand on a stone table with a trowel. If the mortar appeared too dry, more water was added; and if too wet, note was made of the fact, and the set proceeded with. In nearly all cases, enough mortar was made at one mixing to make eight briquettes. Four of these were broken at the end of a week, and the remainder in eight weeks. As a difference of 1 per cent. of water in the finished mortar could not in all cases be detected, a series of tests was made to determine the effect of such variations. The results proved conclusively that slight variations in the amount of water might cause considerable differences.

Some cements and some sands of the same size require more water than others to yield a mortar of the same consistency. Generally speaking, fine sand requires more water than coarse, and natural cements more than Portlands. The briquettes were moulded in brass moulds; but were not pressed in by hand. The method used by Prof. Charles D. Jameson was adopted. Professor Jameson put his mortar into the moulds under a uniform pressure of 150lb. per square inch, while in this work 200lb. were used. The press consisted of a simple lever arranged in such a manner that when pressure was applied nothing but vertical pressure would be transmitted to the briquette. Generally speaking, the coarser the sand, the stronger the mortar made from it; but the difference between the grades below 30—40 are so slight that, as far as sizes are concerned, they might be considered in one class. There seemed to be a tendency towards an increase in strength with grades below 100-120; but so few samples of these grades were obtained that this slight increase may be put down as accidental. There is an unmistakable indication of weakness in the upper grade, 8—12. The specific gravities of all of the various kinds and grades of sand tried are not materially different, and therefore the difference found between the weights of equal volumes are principally due to the different percentages of voids. It is further apparent that the smaller the grade the greater the percentage of voids in loose sand, and *vice versâ;* while in well packed sand there is practically no difference in percentage of voids. These results indicate that uniformity of mortar briquettes for tests can be obtained only by either measuring the sand while well packed or by weighing.

The conclusions arrived at were: (1) Other things being equal, coarse sands are better than fine sands for cement mortar up to the grade 12—16, or about $\frac{1}{12}$in. in diameter. (2) Below the grade 40—50, or about $\frac{1}{60}$in. in diameter, there is no practical difference in the value of the different sands, as far as the size is concerned. (3) The shape and condition of the surfaces of the grains of different sands has as much to do with their value for cement mortar as the size.

◆

ARCHITECTURAL ASSOCIATION.

THE fortnightly meeting of this Association was held on Friday evening, the President, Mr. W. D. Caröe, in the chair. Messrs. W. J. Devlin and A. Hendy were elected as members.

BRICKWORK.

Mr. John Toomey read a paper on this subject, illustrated by a number of samples. The author explained that he proposed to confine himself to the consideration of the materials used by bricklayers, with a few remarks on methods of using them. He had often found that the quality of the sand used for building purposes did not receive the attention it deserved. A clean, sharp sand was essential to the making of good mortar, whether mixed with lime or cement. The many impurities to be found in sand certainly acted injuriously, and tended to detract from the strength of the mortar. The best way to avoid this was to wash the sand; but the expense attaching to this process prevented its general adoption. But the lecturer had used a Medway sand, and one from the neighbourhood of Hatfield, which were both good in quality, being sharp and clean. Where a mortar-mill was used, the clinkers from a dust-destructor mixed in reasonable quantities with sand and lime or cement made a good mortar. But it was always an important point to see that a proper proportion of lime or cement was used, which was not always done. The question of the qualities of bricks was such a large one that he only proposed to speak of a few kinds. The numerous kinds of bricks that were now in the market showed that greater attention was being paid to their production, chiefly in facing bricks for external use. They might be divided into two classes—viz., the "sand" brick and the "pressed" brick. The different processes of manufacture of the two bricks were very different: the sand brick being moulded while the materials were of a dough-like consistency, and the other being pressed while the ingredients were nearly dry; this difference of manufacture tended to make the pressed brick squarer and more regular in shape and size. But a brick, like terracotta, needed to be well burnt to be durable, and in burning it lost in shapeliness what it gained in durability. The author of the paper then referred to and commented upon various specimens of bricks in ordinary use, which were exhibited. In regard to malms, he remarked that they had gone out of use very much as facing bricks, in consequence of the competition of cheaper external facers. The small holes which appeared on them when rubbed were caused by the method of burning, and he thought some means might be devised to avoid this objectionable feature. Shippers, next alluded to, were described as similar to malms, but harder burnt; they were used as the facing to the London Board schools, and were the most durable for that purpose in the market, although the dull colour was objected to by many persons. Stocks were included in the same class, and were somewhat inferior in quality, and, of course, also in price. These three bricks he considered unequalled for durability and cohesion; he had experienced much greater labour in cutting through walls built with them than was found to be the case when cutting through pressed or wire-cut bricks. The red sand brick had the advantage of retaining its warmth of colour and even improving with age; many were apparently soft, but they hardened with age. Red pressed brick had an advantage in uniformity of size, but in exposed situations he had seen the surface peel off under the influence of damp, exposing the rough interior. These bricks had long been the kind chiefly used in the Midlands, and were coming more into fashion in London. The Leicestershire bricks were, he thought, the best of this class, and much better than those from Tunbridge Wells. Comparing the last two classes of brick, the red sand and red pressed, the makers of the latter had recognised the demand for a brick regular in size and with a clean sharp arris, while little effort had been made to improve the former type. The latter, however, had the advantage in colour. The wire-cut brick, though used for cheapness for internal facing, was inferior to the common stock; one great fault was that when cut with the trowel, it had a tendency to fly to pieces all over. The principal point in favour of the Fletton brick was its squareness, and that it could be delivered in London cheaper than a stock brick in many cases. Glazed bricks included many inferior kinds with which it was impossible to do good work, owing to the variation in size, and to make a satisfactory job with even the best quality it was necessary that those laid on each course should be gauged before being laid, or joints of uneven thicknesses would result. Salt-glazed bricks made serviceable work for dados, &c. Their faults were variation of tint and many small blisters on the surface. A second and much worse blistered specimen was exhibited, the lecturer drily observing that the first was the sample submitted by manufacturers or merchants, the second was the kind sent on to the job. It was possible to obtain them with these faults reduced to a minimum, but care should be taken to insure that the external and internal facing-bricks were the same thickness. Passing on to consider the methods of bedding bricks, Mr. Toomey said he thought it was essential (except during the winter months) that bricks should be well wetted before being laid. This was all the more necessary where cement-mortar was used, or the materials would not adhere to each other. The only possible way to secure strong work was to grout each course of brickwork, and this was where the advantage of washed or well-screened sharp sand was seen, as it would more readily fill the open joints of the brickwork. The plastering of mortar on the top of each course would not do. But the fact that wet bricks made bricklayers' fingers sore might have something to do with the frequent neglect of wetting bricks. In work that was to be pointed after the building was erected, the joints should be raked out at least $\frac{1}{2}$in. deep, and well brushed off with a hard broom, so as to clear away all loose mortar, and the pointing should be well pressed or ironed into the joints. In glazed or enamelled work it might be often noticed that after a time the glaze flaked off, and the defective part appeared black. This was very often due to using chipped or defective bricks, but it also sometimes resulted from another cause—viz., the mode of bedding them. The bricks had two deep frogs, and generally being laid in a close joint, care was not always taken that sufficient mortar was spread to insure the frogs of the brick being solidly filled, so that when the weight came on the wall the pressure was largely on the outer edge of the brick, and caused the glaze to fly. One way to obviate this was to fill the frogs with mortar before laying the bricks. Another way was to joggle either the end or side of the brick before bedding, and to fill or grout them up with liquid mortar. In concluding his short but practical paper, the lecturer remarked that the conditions of the present-day building often compelled builders and others to carry on their works in sections. Very often party-walls were built with a vertical toothing, and when the second building was added there was no proper bond between the two, and when the later work settled the toothings were broken off. If the delay in building could not be avoided, the toothing had better be omitted. He thought the connection of making good to such toothing should be done with cement.

Mr. W. Howard Seth-Smith proposed a vote of thanks to the lecturer for his eminently practical and useful and, indeed, exhaustive paper, in which he had dealt both with broad principles and details. The suggestion that toothings should be filled up with cement was one which ought to be generally adopted.

Mr. Francis G. F. Hooper, in seconding the vote, said that experience had taught him that scamped work was not usually the fault of the bricklayer—there were other unseen influences at work. He was a member of a committee of the Institute of Architects, who were carrying out a series of practical experiments at the West India Docks in the testing of brickwork. A series of piers built four months ago were now being tested, and it was proposed to carry out a second series on other piers eight months hence, when ample time would have been allowed for settlement.

Mr. F. T. W. Goldsmith asked as to the custom of the craft in building a 9in. wall.

Mr. B. Flight Fletcher urged that it was as necessary to wet bricks in winter as in summer, for if laid dry the mortar would not adhere to them. He asked as to the relative value of mill-made and hand-made mortar. The latter was a better colour, but in the former broken bricks could be ground up, and this made the substance, according to many practical men, stronger. In Tudor brickwork the joints were very wide, whereas in that of Queen Anne's time they were as close as possible, and modern architects generally followed the latter practice. Most engineers objected to toothing new work into old, and preferred to let each building settle its own way.

Mr. F. Walker, as a practical man, thought mill-made mortar had its advantages and defects. It was true that the ingredients were thoroughly incorporated in a mill, but there was the risk that they would be overground, so that they became mere dust, and the mortar had no cohesive strength. It was very usual to see in specifications that no more mortar should be made than could be used during the day; but this was altogether wrong. So long as the mortar was not allowed to get dry, the more often it was tempered and retempered, the stronger would be the work. He did not think sand-faced bricks were so much to be condemned. If well burnt, they were frequently more durable than pressed bricks. The latter were often deteriorated by the machine-oil used in oiling the moulds. He should not use malms for external work, as they were absorbent, and therefore soon became dirty. He endorsed the lecturer's remarks that shippers were about the best brick for use in London. In shippers one got a variety of colour which was more pleasing than the dull, dead yellow tone possessed by a malm brick front. His experience of all bricks was emphatically that it was most difficult to get bricks delivered on the works equal to sample. To secure a thoroughly good durable red brick one should seek for a dark colour, with great density and weight. Leicestershire yielded very good red bricks, and, in fact the clays over the whole of the coal-measures gave very good bricks; but in Staffordsire the materials became more refractory, and produced the well-known firebricks. All sand bricks, and especially those from the Fareham district, improved with time; in fact, he thought no better bricks for colour could be had than the Farehams. The only good point about wire-cut bricks was the readiness with which they took mortar. The Fletton bricks were very friable. In glazed bricks sufficient joint was frequently not allowed for bedding, so that good solid work could not be turned out. At the very least $\frac{3}{16}$th of an inch should be allowed for bedding glazed bricks. A very grave objection to this class of goods was its susceptibility to craze. The salt-glazed brick was not, as many architects seemed to suppose, a dipped brick, but was treated by salt thrown into the kiln during firing. The faint blur often seen on bricks was due to insufficient space being left between the bricks while in the kiln. It was very dangerous to wet stocks during frosty weather; but it was certainly needed in the summer, as the surfaces of the bricks were coated with dust, which prevented the adhesion of the mortar. In the United States bricklayers never thought of flushing up or wetting brickwork during the winter, the frosts being much more severe than in this country. They carried out their work with heated bricks and heated mortar. There was no question that struck brickwork was far better than pointed work. Every practical man realised the evils and risks of toothing old work to new, and where possible it should be avoided on account of the unequal settlement. Mill-made mortar was fatter and more plastic, but for external work hand-made mortar was preferable.

Mr. Owen Fleming preferred mill-made mortar to hand made, except that the colour was not pleasant. The architect for the sake of uniformity was tempted to ignore theory, and specify that his brickwork should be pointed, and not struck, on account of the improved appearance. Fletton bricks had their use, but not for exterior work in London. Just now, owing to the fluctuations of the market, red facings were a little cheaper than stocks if a good class was specified.

Mr. H. H. Statham preferred the appearance of wide mortar joints to narrow ones.

Alderman H. R. Taylor, L.C.C., referred to the fact that architects often specified the openings and piers of sizes which could not be carried out in brickwork, except with an unnecessary amount of broken bond. Struck brickwork, as done everywhere till within the last quarter of a century, was far preferable, and stood better than the pointed work now universal; and in his early days, when working with his father, he always struck his brickwork as he went along. It was said that struck work could not now be done; but if it were specified, the demand for good work would soon produce a supply. As to building a 9in. wall, bricks were not, as a rule, quite true on all faces, and therefore a good wide joint should be made, and the bricks humoured in laying so as to get a level surface. Milled mortar was not, he had found, so pleasant to use as hand-made, and some of it seemed to have been sifted through a ladder, it was so coarse. It was very good material, however, so long as it was not ground too finely, and no mould was allowed to be thrown into the mill. He was glad to see architects and artisans in friendly conference, and if some members of the profession would come down to a meeting of the trade, he could promise them a lively time. If architects would draw up intelligible and practical specifications, plenty of men could be had to carry out the works satisfactorily.

Mr. E. Woodthorpe said there was a prejudice against hollow walls; but in bricks made in sandy districts, walls could not be built to keep the weather out unless they were hollow, or slated. The most frequent fault was carelessness as to placing the ties in hollow walls.

The President, in putting the vote of thanks, said his advice to young architects would be to avoid the use of the mortar-mill as far as possible, for its evils outweighed its advantages, the chief being the risk of over-grinding. One of the greatest evils of the bricklaying trade in the present day was that bricklayers knew the work would be pointed down by another man, and so did not trouble to execute the work so well as when they had to strike it down as they went along. The only difficulty—and that, he admitted, was a great one—was the occurrence of frost while work was being struck. In Scandinavia the practice during severe weather was to mix with the mortar some unslaked lime. As it slaked it evolved such heat as to protect the brickwork. He had tried to adopt the practice on many occasions, but had failed to get men to do it successfully in this country. He believed in wide joints and small bricks, for with small bricks the scale of the building was increased, and the pattern of the brickwork bond was not observable. With the large bricks used in Manchester and Liverpool the effect of the pattern of the courses was very obtrusive, and the work looked coarse. If Flettons were used for internal wall, the joints should be kept well back, as their surfaces were exceedingly difficult to plaster upon.

The vote of thanks having been passed by acclammation, Mr. Toomey replied. He admitted that it was possible to grind mortar in mills too much, but the usual error of builders was in the other direction. If the ingredients were good, mill-made mortar was excellent. The common item in specifications that only as much mortar should be made as could be worked up in the day should only apply to hydraulic mortars—in other cases it was quite needless. Care should be taken in using blue lias lime mortar, as it often fractured off the arrises and corners of the bricks. There were no better bricks than Fareham reds, but they were expensive in the labour of cutting. The common faults in hollow-built walls were, first, that no provision was made by leaving out a few courses at the bottom of work for raking out any mortar that fell down between the walls, and next that the ties were not V-shaped, nor put in level. As the President had said, Fletton bricks would not take mortar well, and therefore the joints should be thoroughly raked out. There was no greater evil in the craft than the subdivision of trades, and one of the worst was that work was so generally pointed instead of being struck. If the latter course were adopted the work would be sounder, look better, and last far longer.

* * *

NOTES ON APPROXIMATE ESTIMATES.*

CIVIL BUILDINGS, WORKS, &c.—(*Continued.*)

	Average Cost.		
	Per foot cube.	Per square of 100ft. super.	Per unit.
288. Walls, Stone, Extra only to. For each chimney-flue, including digging, concrete footings, lead flashings, ashlar stone chimney-stack, &c., but exclusive of chimneypiece, grate, or kitchener	—	—	£10 each
289. Walls, Stone, Extra only to. For each bay window, including digging, concrete footings, roof, lead flashings, sashes, frames, and finishings of ordinary description	—	—	£16 each
290. Warehouses. Iron. For canal, docks, or railway goods. Comprising iron columns and roof trusses, corrugated-iron covering to roof and walls, with timber framing to walls. Concrete floors. Height 14ft. to eaves	2½d.	£24 0 0	—
291. Warehouses. Plain	6d.	—	—
292. Warming, by means of hot-water pipes and coils. Houses or mansions	—	—	£4 per 1,000 cubic feet
293. Warming. Ditto, ditto. Churches	—	—	£1 per 1,000 cubic feet
294. Warming. Ditto, ditto. Factories	—	—	£2 per 1,000 cubic feet
295. Warming. Ditto, ditto. Hospitals	—	—	£3 per 1,000 cubic feet
296. Washhouse. (See "Laundry")	—	—	—
297. Water-Closets. As for private houses, complete with soil and ventilating-pipe, pan, mahogany seat, water-waste preventer, &c., but exclusive of water supply	—	—	£18 each
298. Water Mains, laid complete, including coating with Dr. A. Smith's process, lead joints, digging, filling, &c., in common ground, clay, or gravel. The trenches to be deep enough to allow tops of pipes to be 2ft. below surface of ground. (See Table)	—	—	—

Analytical Table of Average Cost of Cast-Iron Water-Mains per Yard Run, laid Complete.

Diameter of main.	Cost of mains, including bends.	Cost of lead for joints.	Cost of laying and jointing mains, including digging, cartage, &c.	Total cost per yard run.
Inches.	s. d.	s. d.	s. d.	s. d.
2	1 9	0 1½	0 11½	2 10
3	2 8	0 2	1 2	4 0
4	3 9	0 2½	1 3½	5 3
5	5 0	0 3	1 5	6 8
6	6 3	0 4	1 6	8 1
8	9 4	0 5	1 7	11 4
10	12 9	0 7	1 9	15 1
12	16 3	0 11	2 1	19 3
15	23 6	1 3	2 10	27 7
18	33 0	1 6	4 0	38 6
24	49 0	1 10	5 8	56 6

	Average Cost.		
	Per foot cube.	Per square of 100ft. super.	Per unit.
299. Water-Supply, General, as for large towns	—	—	£3 per head of population.
300. Water-Supply, for private houses, including taps, service-pipes, digging, &c., but exclusive of supply-cisterns and cast-iron water mains	—	—	£3 per tap
301. Water Towers	7½d.	—	—
302. Weigh-Bridge and House, for five tons	—	—	£130 each
303. Weirs. As for waste waters of canals	—	—	£1,500 each
304. Wells, Artesian, not exceeding 100ft. deep, including boring, providing and inserting wrought-iron flush screwed lining tube, complete except pump (see table)	—	—	—

Table of Average Cost per Foot in Depth of Artesian Wells not Exceeding 100ft. Deep. (Complete Except Pump.)

Description of Material bored through.	External diameter of tubes.	Cost of boring only.	Cost of wrought-iron flush-screwed lining tubes.	Labour, fixing tubes, &c.	Total cost, per foot in depth.
	in.	£ s. d.	£ s. d.	s. d.	£ s. d.
Earth, sand, and similar formations	3	0 8 0	0 4 0	1 0	0 13 0
	4	0 8 6	0 5 6	1 0	0 15 0
	5	0 9 0	0 7 0	1 3	0 17 3
	6	0 9 6	0 9 0	1 6	1 0 0
	9	0 12 0	0 19 0	2 0	1 13 0
Stiff clay, gravel soft chalk, and similar formations	3	0 12 6	0 4 0	1 3	0 17 9
	4	0 13 0	0 5 6	1 6	1 0 0
	5	0 13 6	0 7 0	1 9	1 2 3
	6	0 14 0	0 9 0	2 0	1 5 0
	9	0 18 0	0 19 0	3 0	2 0 0
Soft rock, stone, and similar formations	3	0 18 6	0 4 0	1 6	1 4 0
	4	0 19 0	0 5 6	2 0	1 6 6
	5	0 19 6	0 7 0	2 6	1 9 0
	6	1 0 0	0 9 0	3 0	1 12 0
	9	1 5 0	0 19 0	4 0	2 8 0
Hard rock and similar formations	3	1 11 0	0 4 0	1 6	1 16 6
	4	1 12 6	0 5 0	2 0	2 0 0
	5	1 13 6	0 7 0	2 6	2 3 0
	6	1 15 0	0 9 0	3 0	2 7 0
	9	2 0 0	0 19 0	4 0	3 3 0

Note.—For every additional 100ft. in depth add 20 per cent. extra to the prices of the preceding 100ft.

305. Wells, Brick Lined. Sunk in ordinary ground, not exceeding 30ft. deep, including steining with brickwork in cement, clay puddling at back, &c., but exclusive of pump. (See Table)	—	—	—

Analytical Table of Average Cost of Wells per Foot in Depth. Complete Except Pump.

Internal diameter of well.		Labour digging, puddling, &c., including all tackle.	Cost of brickwork in cement.	Total cost of per foot in depth.
	ft. in	£ s. d.	£ s. d.	£ s. d.
Half brick sides	3 6	0 4 0	0 5 0	0 9 0
	4 6	0 5 0	0 6 6	0 11 6
	5 6	0 6 0	0 8 0	0 14 0
One brick sides	6 0	0 10 0	0 17 0	1 7 0
	7 0	0 13 0	0 19 0	1 12 0
	8 0	0 17 0	1 1 6	1 18 6
	9 0	1 1 0	1 4 0	2 5 0
	10 0	1 6 0	1 7 0	2 13 0

306. Wells, Driven Tube. In ordinary ground, 30ft. deep, including wrought-iron tubes, perforated driving-point, and driving complete (exclusive of cost of pump). Internal diameter of tube 1½in.	—	—	£8 each
307. Wells. Ditto, ditto, ditto, 2in.	—	—	£12 each
308. Wells. Ditto, ditto, ditto, 3in.	—	—	£22 each
309. Wells. Ditto, ditto, ditto, 4in.	—	—	£28 each
310. Wells. For waters impregnated with iron, add *extra* to driven tube wells, for tough yellow metal point to prevent corrosion..	—	—	£2 per point
311. Workhouses, for destitute poor	—	—	£50 per inmate
312. Workshops. General artificers', complete with benches, racks, &c.	6½d.	—	—

---

* All rights reserved.

THE MANCHESTER BUILDING TRADES EXHIBITION.

THE Manchester Building Trades Exhibition, which is to be held in St. James's Hall, Manchester, in April and May next, promises to be a great success. Mr. Albert P. Baker, of 57, Deansgate, Manchester, is the general manager, and he is organising matters thoroughly well.

In order to help exhibitors in showing off their class of goods to the very best advantage with effect, at the least possible expense, the management have decided to call in the assistance of one of the leading firms of architects in Manchester, Messrs. Darbyshire and Smith, who, after receiving particulars of class of goods to be shown, will supply a plan under special terms giving the desired effect so much needed to catch the eye of the Press, the architect, the builder, and the general public. The utility and effect of many excellent inventions are overlooked for want of display. It will serve for other exhibitions, and wood blocks will be made and supplied to the various building trades publications before the opening of the exhibition. This in itself would more than compensate for the little expense attached to same. Full particulars may be had on application to the general manager.

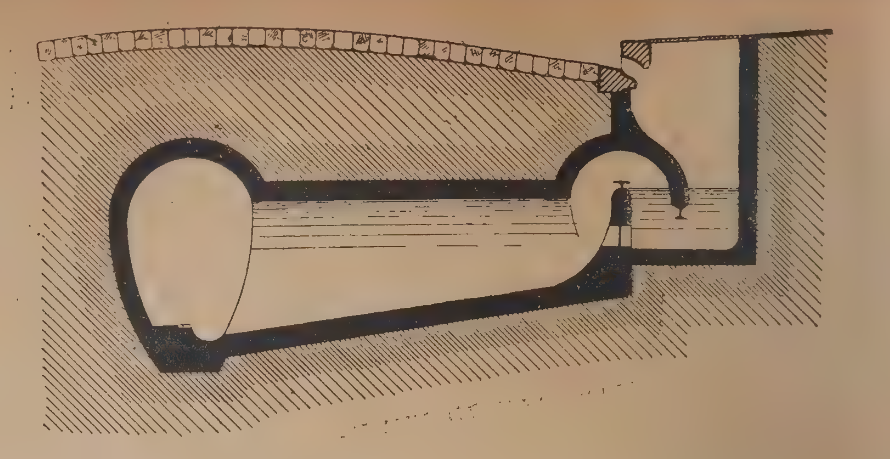
The exhibits will include construction, engineering and machinery, decoration, kitchen appliances, workshops, plumbers' work, mining and mining appliances, furniture, smoke abatement, electricity, paints and colours, sanitation and ventilation, fuel, gas, &c. The *locale* of the exhibition is a most eligible one, and it may be confidently expected that the public of the Midlands will visit it in considerable numbers. We shall give fuller particulars shortly, and meanwhile advise exhibitors to book space early.

◆

SIPHONED BRANCHES FOR STREET GULLIES.

AN interesting report was made at a recent meeting of the Society of Sanitary Engineers and Architects of France, concerning a new system of siphoned gully branch proposed by M. Freret, secretary of the Paris syndicate of paving and drainage. This system, which will in all probability be employed to a large extent at Paris, is worthy of report for the consideration of English sanitary engineers. It is intended to prevent the return of noxious gases from gullies connected with the sewers, and is especially useful for those situated near the large markets and slaughter-houses, and also places such as omnibus stations, where the public are obliged to remain for a certain length of time.

It is a certain and disagreeable fact that Paris, during certain hours of the day, and more especially at evening time and during the warm weather, is infected with evil odours, the cause of which is still a matter for discussion. According to M. Bechmann, chief sanitary engineer of Paris, the causes may be numbered at four. The smells from the works outside the city, classed as unhealthy establishments; the carrying through the town of residues from butchers' shops, slaughter-houses, and dairies; the chimney-stacks of various manufactories; and the Bondy night-soil depot. The remedy would be the disinfection of the residues by means of chloride of zinc, the improvement of the apparatus destined to destroy the disagreeable properties of emanations from unwholesome manufactories and work-stacks, and the suppression of the Bondy depot. According to M. Besançon, chief inspector of unwholesome manufactories, the drains are the chief causes of the unwholesome odours; and M. Freret ranges his opinion with that of M. Besançon. The water-supply of Paris is absolutely insufficient for the needs of the population; the more so that now the excellent system of the "tout à l'egout" drainage is being installed in all the new houses built at Paris (the system becoming obligatory for all dwellings at the end of three years from now), a large quantity of soil and matter is sent into the sewers, and for the proper dilution and expulsion of the drain matter a considerable supply of water is necessary. In spite of flushing reservoirs in dwellings and sewers, it is certain that the drains and sewers are not sufficiently water-swept, especially during the hot weather, when the periodical flushing should be much more frequent. The drains, however, should not be cleansed with water, which, even for drinking purposes and toilet necessities, is in too small a supply; still something should be devised to counteract as far as possible, the inconveniences arising from lack of sufficient water; for it must be remembered that the present exigencies are at a minimum: they will increase day by day in considerable proportions.



A certain number of siphoned gullies already exist in some of the private streets. In these cases the siphon is formed by the kerbstone and gutter, but as the water trap is thus perfectly open to the air, a slight frost only is necessary to stop its proper working; again, in the case of the siphon basket gulley the same objections holds good. In the opinion of M. Freret the siphon, if any, should not be arranged at the gully mouth, but in the lower branch connection with the sewers. Besides the siphon arrangement, which he opines is most necessary for gullies in much crowded streets, he proposes to adopt therewith a trap for reception of all refuse carried into the gullies from the streets, this trap being more convenient than the system of basket trap, and specially suitable in places near markets, &c., where a quantity of waste and refuse is thrown aside on the roadway, and carried by the first rainfall into the gullies. He has himself employed a somewhat similar system in a scheme of drainage for a street containing metal founders' works and modelling workshops. In this special case the fall of the existing sewers being very slight and the amount of heavy sand from the founders' and modellers' workshops carried into the sewers being very considerable, the complete obstruction of the sewers, and therefore continual flooding of the streets was a speedy matter. As it was not possible to give a greater fall to the new sewers it was necessary to devise a new system which would obviate a return to the old state of affairs, the result being an arrangement of traps to receive and hold all sand and mud entering the sewers by the connecting drains, and a system of siphons preventing the return of foul odours. An improvement on this idea is what M. Freret proposes for the Paris streets for at least during the time that the supply of water is not sufficient for proper flushing purposes. It consists of a branch connecting gully similar to those now existing, differing only by the well and its cover being placed beneath the pavement on the inner side of the kerb. Exactly under the gully mouth and crossing the gully, a small wall is built, the height of which would vary according to the necessities and the desired level of the water-trap. Over this wall, and parallel to it, is built a small semicircular vault, one end being supported by the masonry of the gully, the other end resting on an iron bar placed below the level of the water trap. The height of the water-trap, and the strength of the iron rail should, of course, be calculated according to circumstances and necessities. An iron sluice placed in the cross wall would permit the periodical cleansing of the gully cess-pit from the sewer end, and the carrying away of the accumulated refuse. The siphon would act as a periodical flush, and at the same time prevent all return of foul gases from the sewers. The siphon may be applied at very little cost to existing gullies, and in new constructions the extra cost would only be that of a few extra feet of masonry, a little extra cement, and an iron rail.

A single objection, and one which is not without value, may be made to this system of siphon. This is the suppression of the ventilation of the sewers. But, as M. Freret says, the question of ventilating the sewers by means of the gullies is a much-discussed matter—in any case, the remark may be made that the effect of such ventilation is lost at 300ft. from the outset, owing to the connecting drains.

In putting his idea before the meeting, he urged its adoption, if not in all cases on account of the supposed danger of loss of ventilation, at least in the cases above mentioned, where much refuse carried or thrown into the gullies remaining there for a certain length of time, and becoming putrefied, is a great source of danger to the public health.

It would be interesting to know the opinion of English sanitary engineers concerning this system of siphoned gully branches.

Arthur Vye Parminter.

◆

SOME CONDITIONS OF CONTRACTS.

THE second of a series of monthly meetings of the Glasgow Building Trades Exchange was held on Thursday in last week, when Mr. Robert Scott, measurer, Glasgow, delivered a paper on "Some Conditions of Contracts." Colonel Bennett presided. Mr. Scott said the conditions he proposed to deal with were those relating to the extent and character of the work in the contract, the variations, the extras, and the appointment of arbiter. The extent and character of the work was usually determined by the plans and estimate, and it was necessary that plans should be carefully prepared, so as to give a true indication of the nature and extent of the work to be contracted for. The detailed drawings furnished during the progress of the works should only be developments of the original plans. The estimate should contain an accurate representation of the nature, quality, and measurement of the material and labour, each part being measured on a well-defined principle. In some cases such complete plans were not forthcoming, consequently proper estimates were not supplied, and when the work came to be executed details were found to have little or no relation to the original drawings, and disputes arose as to the prices for altered work. Mr. Scott proceeded to deal with the clause empowering architects to make alterations. He quoted the usual clause, commented on its elasticity, and advocated that the powers it contained should be as little taken advantage of as possible, so that the contractors might only be called upon to execute work truly contracted for. In dealing with extras, Mr. Scott pointed out that many items arose where contract rates did not apply, and that these should be priced at fair and reasonable rates. With regard to the question of appointing an arbiter, he said that in ordinary contracts it seemed to be the custom for the architect to appoint himself to the post. As the architect was really agent for the proprietor, this was naturally objected to by the contractor. He stated that the general opinion was that in all cases the abiter should be some properly qualified person mutually chosen, and in the event of parties failing to agree on an arbiter, the arbiter should be appointed by the sheriff of the county. A discussion followed, in which Mr. Goldie, Mr. Howatt, Mr. Young, Mr. Muirhead, Mr. M'Gilvray, Mr. M'Culloch, and Mr. Murdoch took part.

◆

The demolition of the old East Pile Pier at the entrance to Calais Harbour, and the excavations necessitated thereby, have led to the unearthing of several interesting relics. Amongst the most interesting are part of the hull of an old man-of-war, and a bronze cannon 9ft. in length.

CONTENTS.

Board-School Architecture... 911
Ambiguities in the London Building Act 911
Rigid Restrictions 912
Cast Iron in Builder's and Contractor's Work.—XI. ... 913
Classic Details and their Application 915
Size of Grains of Sand in Cement 917
Architectural Association 918
Notes on Approximate Estimates 919
The Manchester Building Trades Exhibition 920
Siphoned Branches for Street Gullies 920
Some Conditions of Contracts 920
The Building News Directory... ... ... xi.
Our Illustrations 921
Building Intelligence 940
Engineering Notes... 940
Architectural and Archæological Societies 940
County Lunatic Asylums.—XXXVI. 941
A Mixture of Roman and Gothic 942
London County Council Bills 942
Durability of Iron 942
The "Nyphos" Closet... 943
Books Received 943
Obituary 943
Competitions 943
Correspondence 944
Intercommunication 944
Legal 945
Legal Intelligence 945
Water Supply and Sanitary Matters 946
Our Office Table 946
Tenders 948

ILLUSTRATIONS.

MILAN CATHEDRAL.—THIRD PREMIATED AND OTHER DESIGNS FOR THE PROPOSED SHOREDITCH FREE LIBRARY.—DESIGN FOR A CABINET.—A CAST BRONZE LOCK.—NEW PREMISES, BRIGGATE, LEEDS.—NEW HOUSE ON HIND HEAD.

Our Illustrations.

MILAN CATHEDRAL.

The Duomo at Milan, one of the architectural wonders of the world for vastness of size and its ornate elaboration, needs no special descriptive account on this occasion, particularly as we have in more than one instance, when giving other illustrations of the church, accompanied our plates with such particulars. Owing to the darkness of the nave inside, it has hitherto been impossible to obtain satisfactory photographs of the cathedral, and the best views from the camera have been more or less impaired by the effect of halation from the great lantern surmounting the crossing. Our present illustration, therefore, is of special interest. When its author, Mr. J. T. Sandell, applied to the authorities for permission to photograph the interior, he was told that he might try what he could do; but the official pointed out the uselessness of the attempt, as so many had tried—only to fail. Mr. Sandell's plates, however, proved equal to the occasion, with the result that even the tie-bars of the roofing vaults intervening between the camera and the windows are registered without any halation whatever. Moreover, the lights on the altar are clearly defined in the photograph, which is a marvel of definition, while the stereoscopic effect in the silver print is uncommonly well rendered, an advantage largely due to the atmosphere being so clear. In reproduction, it is, of course, beyond the limitations of photo-lithography to adequately represent such delicate excellences; but they are certainly worthy of comment, and we have to add, that in the original photograph all the painted tracery decorations in the spandrels of the vaulting are shown with perfect clearness. We have not hitherto given a general view of the nave of Milan Cathedral, but a drawing showing a cross view inside the building will be found in our issue for July 16, 1886, and on May 7 and 21 of the same year elevations and plans were given. The nave of Milan is 160ft. high by about 55ft. wide. The selected design for the new west front appeared in the Building News for December 21, 1888, from the drawings of the chosen architect, Sig. Giuseppe Brentano, whose unfortunate and early death has caused considerable delay in the execution of his work. Mr. Daniel Brade's design for the same façade figured in our pages for Nov. 16, 1888. The famous flying buttresses, forming the richest part of this world-famed duomo, were illustrated by us on March 30, 1888.

SHOREDITCH PUBLIC BATHS AND LIBRARY.

There is little to add to what has already been said in our pages concerning the third premiated design, by Messrs. Groll and Todd, for these buildings. In a general way, the arrangement of its main parts for the baths department, follows somewhat the lines adopted in the plan awarded the first place, which we illustrated the week before last, the second prize plan being given by us on the 20th inst. We now print the view and plans of this third-placed design. It will be seen that it has in the library building, the initial and very important defect of having the lending library located on the first-floor. The porter's box is too exclusively restricted to the control of the boys' room, with not sufficiently direct supervision to the news-room, magazine-room, or staircase; whereas this official should be able at a glance from his "coigne of vantage," to obtain a view throughout the entire public part of the ground-floor. Accompanying the above illustration, we print copies of the two designs marked No. 2, and No. 31, the first sent in by Mr. Francis J. Smith, F.R.I.B.A., an experienced public bath specialist, and the second-named plan submitted by Messrs. Spalding and Cross, who are also well-known for this class of work. Of these two designs, Mr. A. Hessell Tiltman, the author of the second premiated design, in writing to us last week, made the following pertinent remark: "I think I cannot conclude without drawing attention to the several very excellent sets of designs submitted by my rivals, notably, amongst others, No. 2 and No. 31, and it is a very strange thing that some of these plans did not receive two of the premiums. Of course, I speak of baths; I have no claim to criticise library plans." In No. 2, all the bath accommodation is contrived on one floor, and direct emergency exits are provided from the side of the big hall into the street, with an open-air gallery staircase at one end, and another also immediately leading into Bowling Green-walk at the other. The washhouses, as in the second prize design, are entered from Coronet-street. In No. 31, the hall is placed end on to Coronet-street, with emergency exits towards that thoroughfare, and the waiting halls for men and women are so contrived, as to answer as crush-rooms. Several of the competitors treated the Bowling Green-walk elevations too architecturally, for it is merely a passage less than 10ft. wide, and thus the façades could never be seen. The vestry meeting to consider the referee's report is expected to be held on New Year's Eve.

A CABINET—NATIONAL BRONZE MEDAL DESIGN.

There is not much to add to the copious information so fully furnished by Mr. F. W. C. Gregory's detail drawing, which we are enabled to reproduce to-day, in illustration of his prize design for an oak cabinet for books and china. The plans and elevations are further elucidated by a clearly-drawn perspective sketch, and added to these are portions of the work set out to a larger scale, such as details of the bronze candlestick terminals, and drop handles to the doors. We are indebted to the South Kensington authorities for the loan of the original drawings, which, with the author's consent, were sent us from the recent exhibition of students' work held in the Museum annex, at Brompton.

A CAST BRONZE LOCK—NATIONAL BRONZE MEDAL DESIGN.

The admirable character of this capital design distinctly places it above the level of mere cleverness, for its leading idea is monumental, without being overpowering in scale, and it is unhesitatingly refined, at the same time avoiding any claim to prettiness as a prime consideration. The limitations of the moulder's art, too, are properly observed, and there is nothing in the detail which does not recognise that the work is to be produced by casting. A further merit in the design also is its departure from rigid architectural lines, as in the pediment, which is handled in a sculptor's manner as a decorative accessory rather than a diminutive model of a building's vast façade. The plain reserve of the unornamented pavisors adds considerable breadth to the composition, while the armed figures seem to indicate janitors ready to defend the entry. Mr. Leon V. Solon, of Stoke-on-Trent, is the author of this prize work.

RECONSTRUCTION OF SHOP PREMISES, NOS. LXIX. AND LXX. BRIGGATE, LEEDS.

This work, consisting of the conversion of two shops into one, is now well in course of erection, and is situated in one of the best positions in Briggate. The reconstruction entailed the pulling down and rebuilding of the front elevation, raising the floors and roof, and considerably enlarging and deepening the cellar. The contractors are greatly handicapped owing to the proprietor carrying on his business in the back portion of his present shop, which is the lower one on the passage side, and therefore the work is being carried on in two sections. The front section is to be entirely completed first, when the business will be transferred to this portion, and the back section will then be gone on with. The shop, besides the front and back windows, is to be lighted by means of skylights on the roof, and open wells on the first and second floors. The ashlar in the front is from the Rose Hill Quarries, Shipley, the shop front is treated in Spanish mahogany, and the roof is to be covered with green Westmoreland slates from the Coniston Quarries. Messrs. Craven and Umpleby, of Leeds, are the contractors for the whole of the work, exclusive of the shop front, which is a separate contract let to Mr. Horsman, shopfitter, of Leeds. The work is being carried out from the designs of Mr. Henry Buckley, architect, 5, Park-lane, Leeds.

NEW HOUSE ON HIND HEAD.

This house, with its stables, has been built on the property of Mr. A. W. Williamson, F.R.S., at Hind Head. A compact arrangement of plan has been aimed at, so as to produce a warm interior. The walls of the lower story are built with two facings of brickwork, having the space between filled in with fine cement concrete. The upper story is tile-hung, and the roof is covered with Broseley tiles. Our illustration is from a drawing prepared by the architect, Mr. Arnold S. Tayler; but the design has been somewhat modified in execution.

CHIPS.

Canada sells more lumber to the United States than to Great Britain. Thus the Canadian exports of forest products in 1894 to the United States aggregated in value 13,903,586dol.; to Great Britain, 12,332,726dol.; and to other countries, 1,937,491dol. Grand total of Canadian exports of forest products in 1894, 28,173,813.

A stained-glass window has been erected in Duns Parish Church, in memory of the late Sir Samuel and Lady Home Stirling. The subjects are "Ruth cleaving to Naomi" (Ruth i. 16), and Dorcas, who "was full of good works" (Acts i. 36).

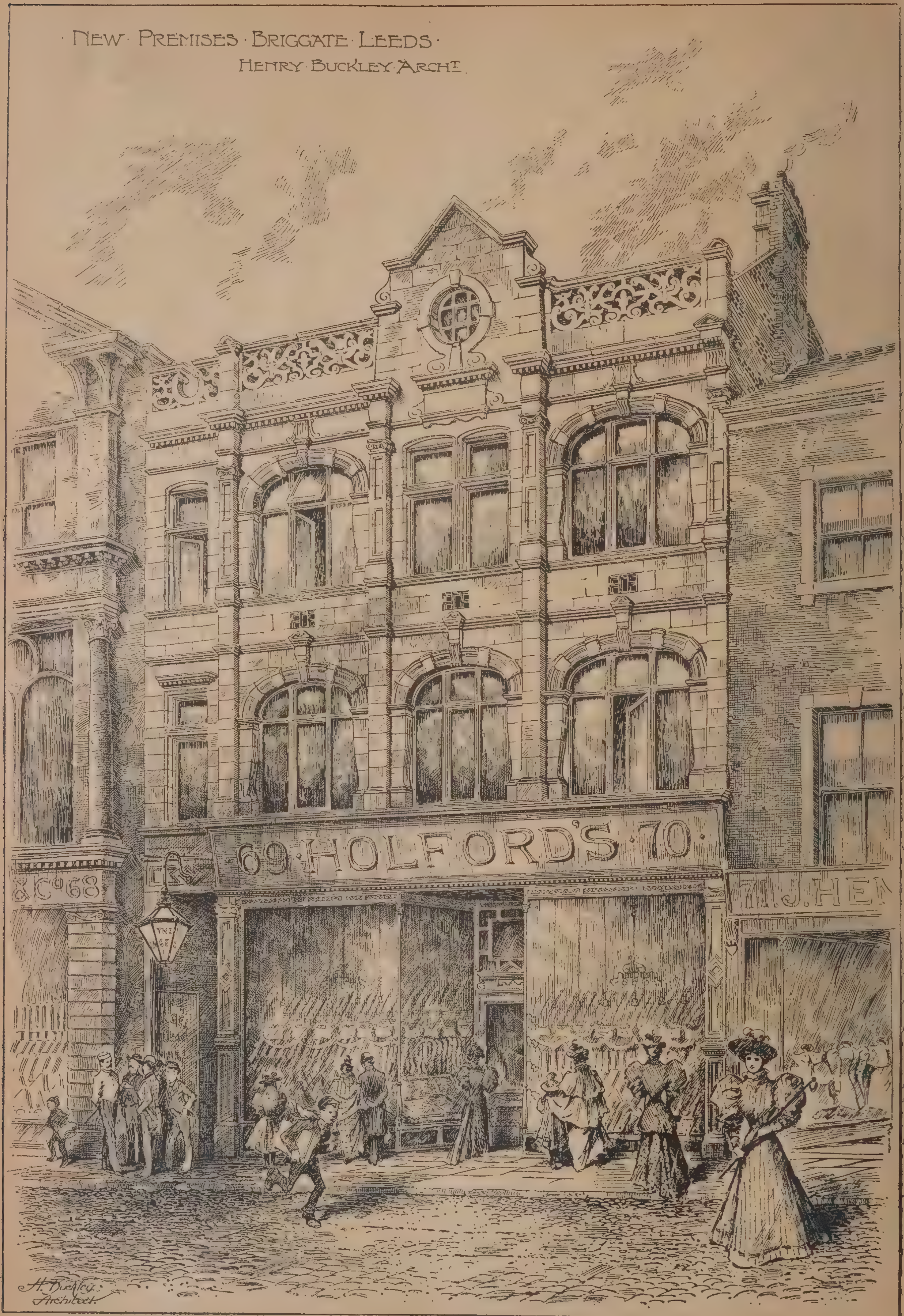
The Bishop of Peterborough, on Thursday afternoon in last week, opened a new church in Leicester, which is dedicated to the patron saint of the shoemakers, St. Crispin. It is in one of the lowest quarters of the borough.

A concession for the construction of a road to join Baghdad with Teheran has just been granted by the Sultan of Persia to Mr. Felix Moral, the representative of a number of German houses. The road will probably become the principal trade route between Persia and the West. The concession is for 75 years, and concedes the right of constructing the road, levying tolls on it, and working a transport service. The work must be completed in 2½ years. Mr. Felix Moral also obtained a concession for the construction and working of a steam or electric tram from Teheran to the villages north of the city, a distance of ten miles. The construction of the cart-road from Resht to Kazvin has been begun.

The Tower Subway Company (who secured themselves by a clause in the Tower Bridge Bill) find their tolls so injuriously affected by the new bridge of the Corporation that they have presented a claim for £30,000. It goes to arbitration immediately.

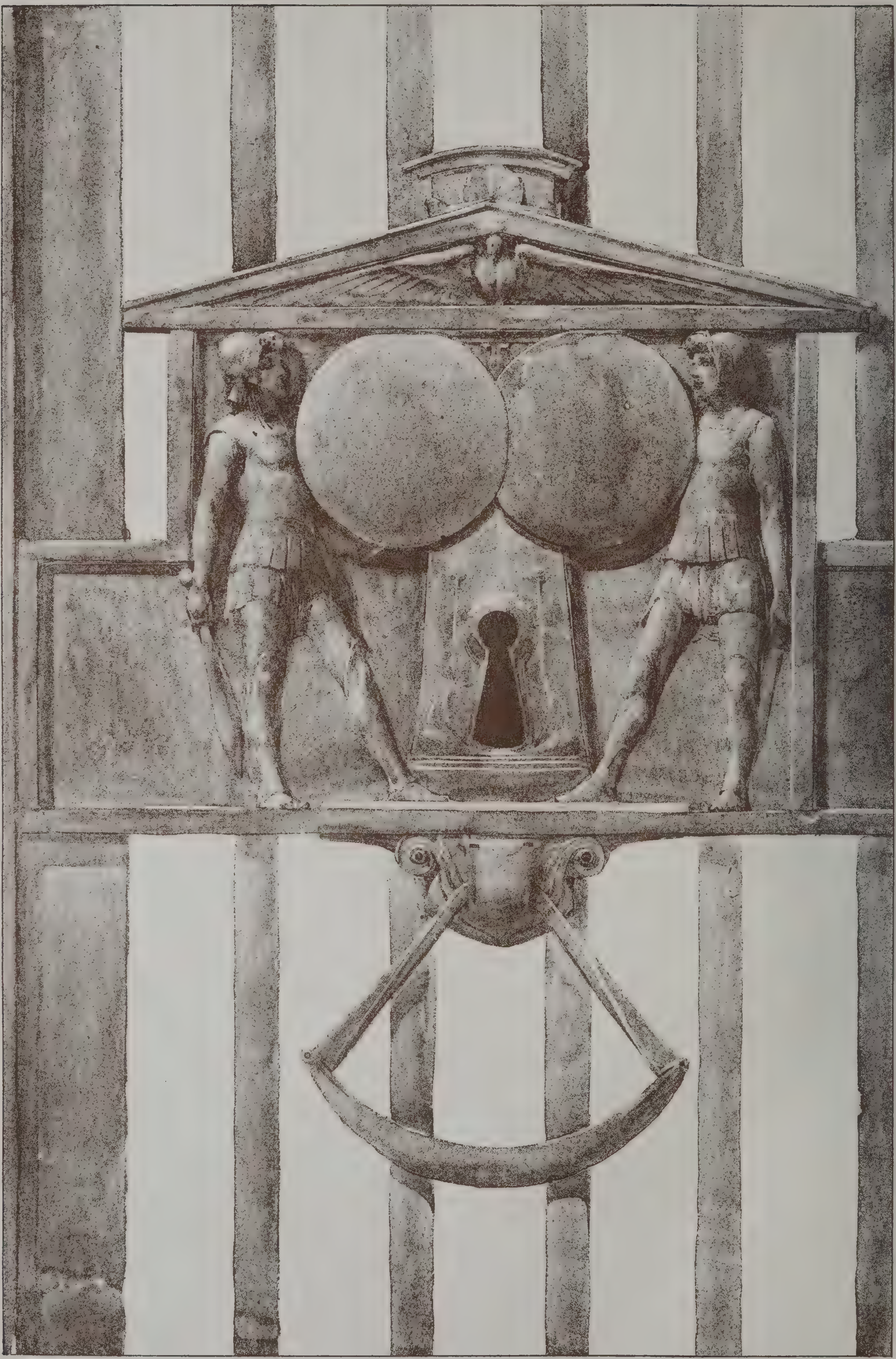
A memorial window has just been erected in the parish church of Crieff in memory of the late Rev. John Cunningham, D.D., LL.D., who was minister of the church from 1845 till 1887, and afterwards the Principal of St. Mary's College, St. Andrew's. The window is placed at the east end of the church, and the subject is the scene in the Temple where Christ is seen disputing with the Jewish doctors and others. The window is the work of Messrs. Camm and Co., Birmingham.

St. Giles's Church, Shrewsbury, was reopened last week after restoration and enlargement. The alterations consist of the removal of the organ from the north transept and placing of new seats therein to accommodate 50 persons, the removal of the screen between the north aisle and transept, the removal of a stained-glass window representing the Annunciation, the Adoration of the Magi, and the Presentation, from the south wall of the chancel to the north wall of the transept. The window formerly in the east wall of the transept is now located in the south wall of the new organ chamber. Another improvement is the addition of new clergy and choir vestries, and the heating apparatus has been readjusted. These works have been carried out by Mr. J. Bowdler, according to plans by Mr. A. E. Lloyd Oswell, architect, Shrewsbury. The south side has been laid with wood block flooring, a work intrusted to Mr. George Bullock. The organ also has been enlarged.



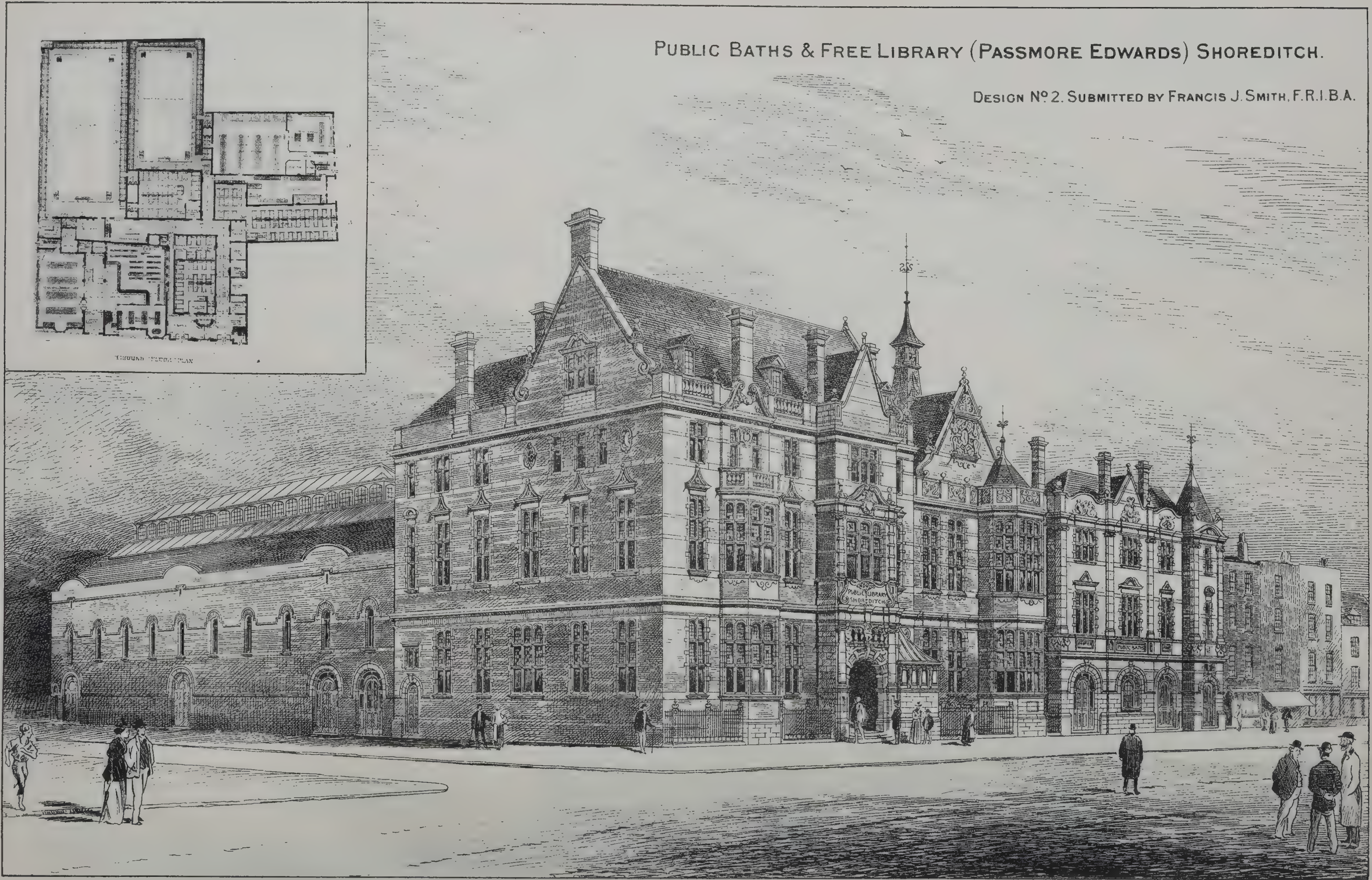
NEW PREMISES BRIGGATE LEEDS
HENRY BUCKLEY ARCHT.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS



"PHOTO-TINT," by James Akerman, 6, Queen Square, London, W.C.

A · CAST · BRONZE · LOCK · BY · LEON · V · SOLON · NATIONAL · BRONZE · MEDAL · AWARDED ·



PUBLIC BATHS & FREE LIBRARY (PASSMORE EDWARDS) SHOREDITCH.

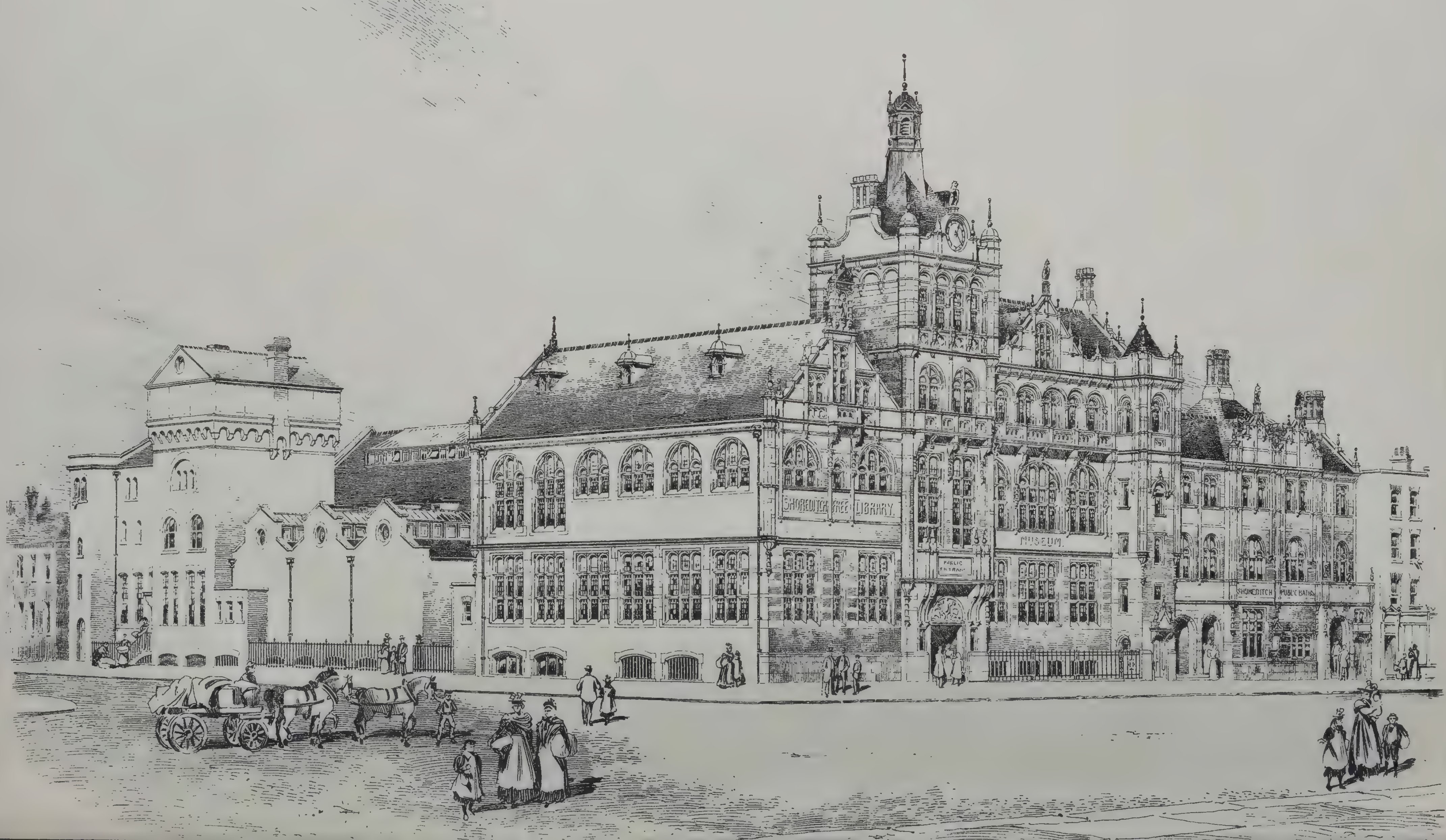
DESIGN Nº 2. SUBMITTED BY FRANCIS J. SMITH, F.R.I.B.A.

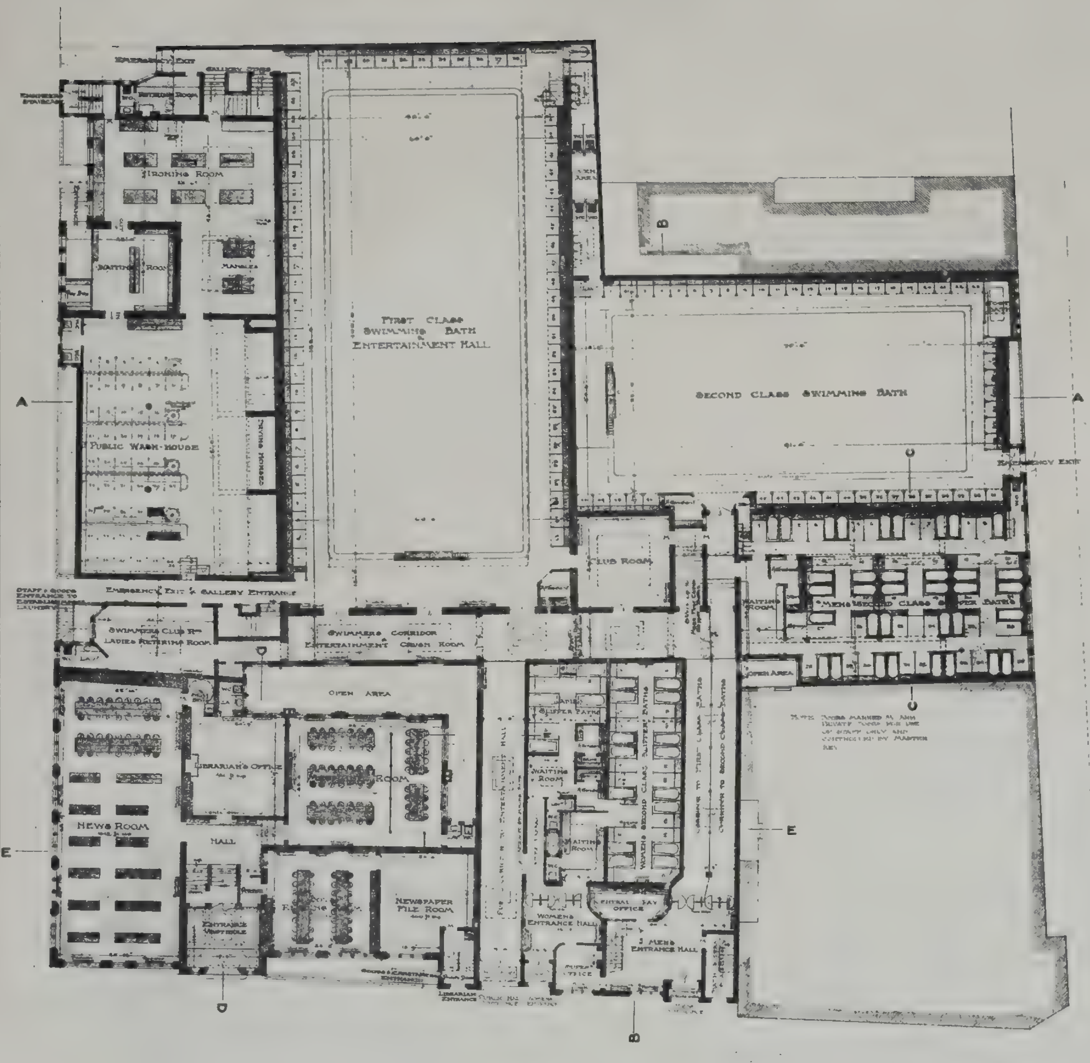
Photo Lithographed & Printed by James Akerman 6 Queen Square, W.C.

UNIVERSITY OF ILLINOIS

PUBLIC BATHS & FREE LIBRARY (PASSMORE EDWARDS) SHOREDITCH.

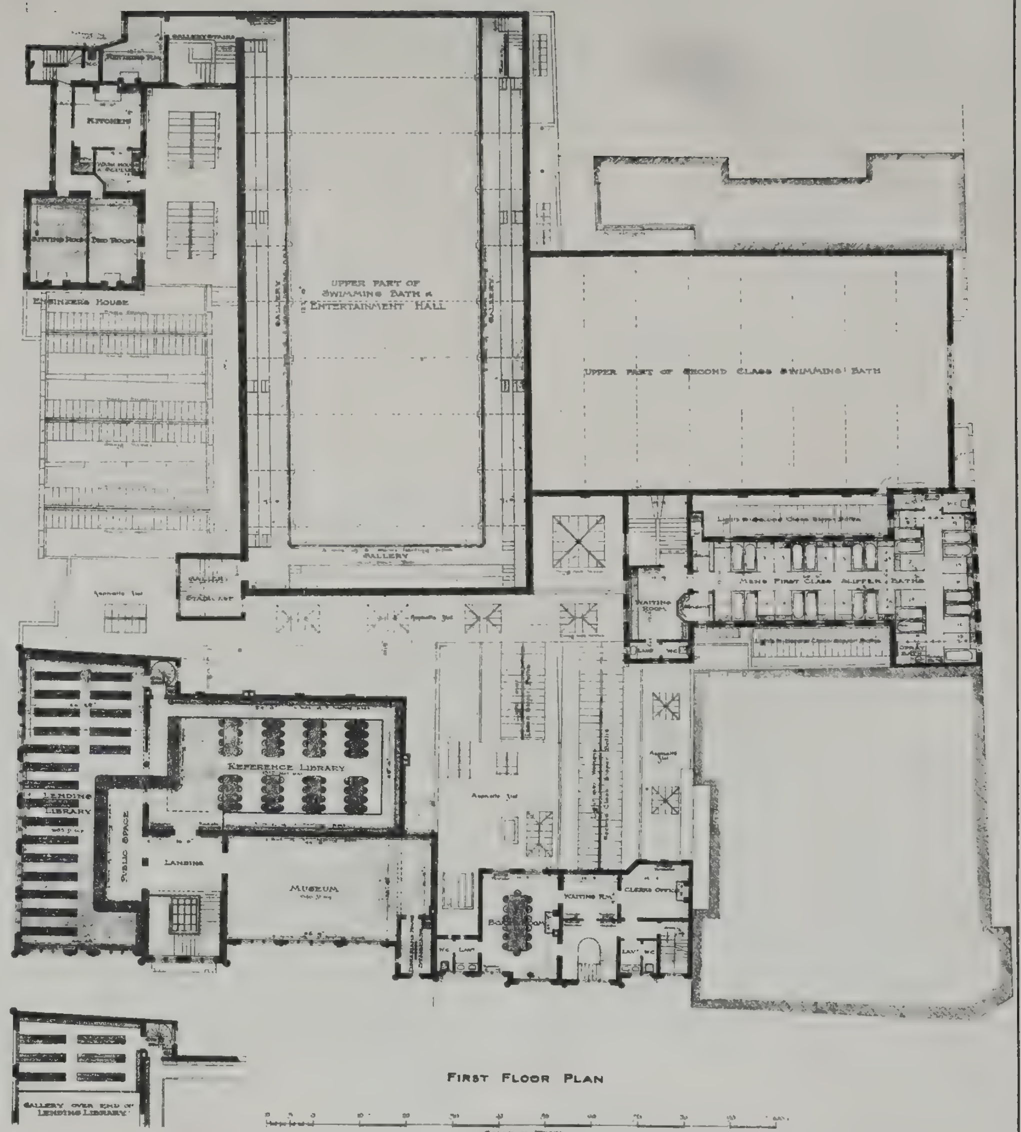
THIRD PREMIATED DESIGN BY MESSRS. GROLL & TODD, ARCHITECTS.





GROUND FLOOR PLAN

SCALE OF FEET



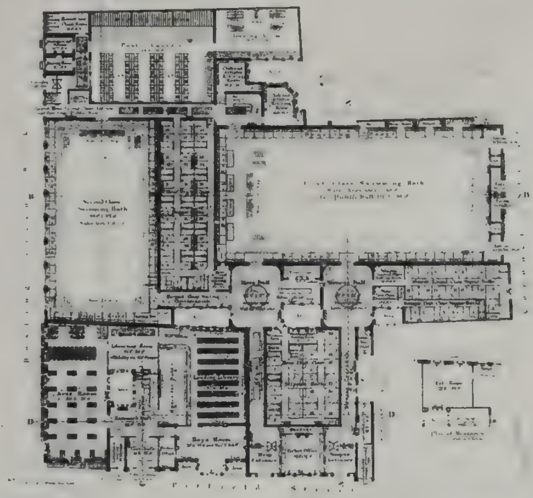
FIRST FLOOR PLAN

SCALE OF FEET

Photo-Lithographed & Printed by James Akerman, 6 Queen Square, W.

PUBLIC BATHS & FREE LIBRARY (PASSMORE EDWARDS) SHOREDITCH.

DESIGN Nº 31. SUBMITTED BY MESSRS SPALDING & CROSS.



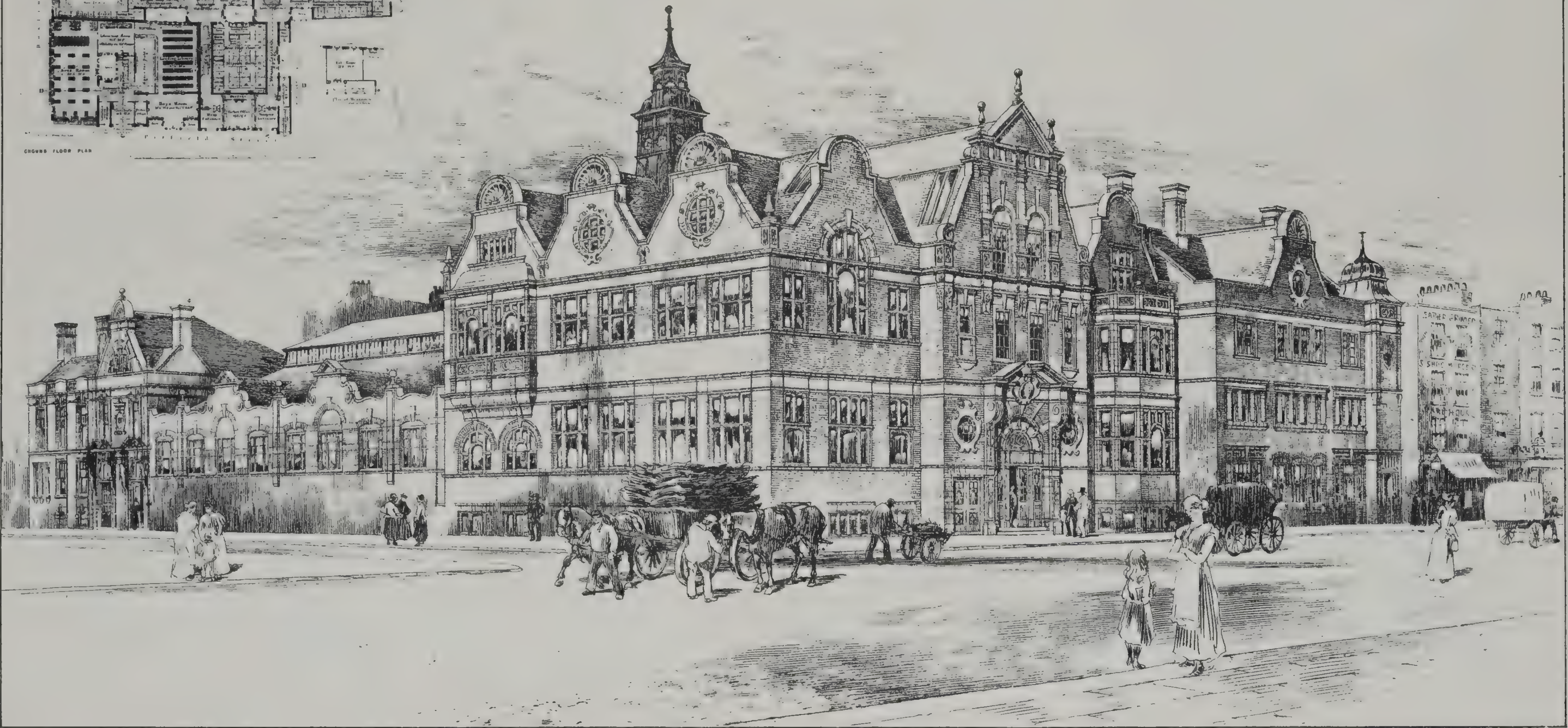
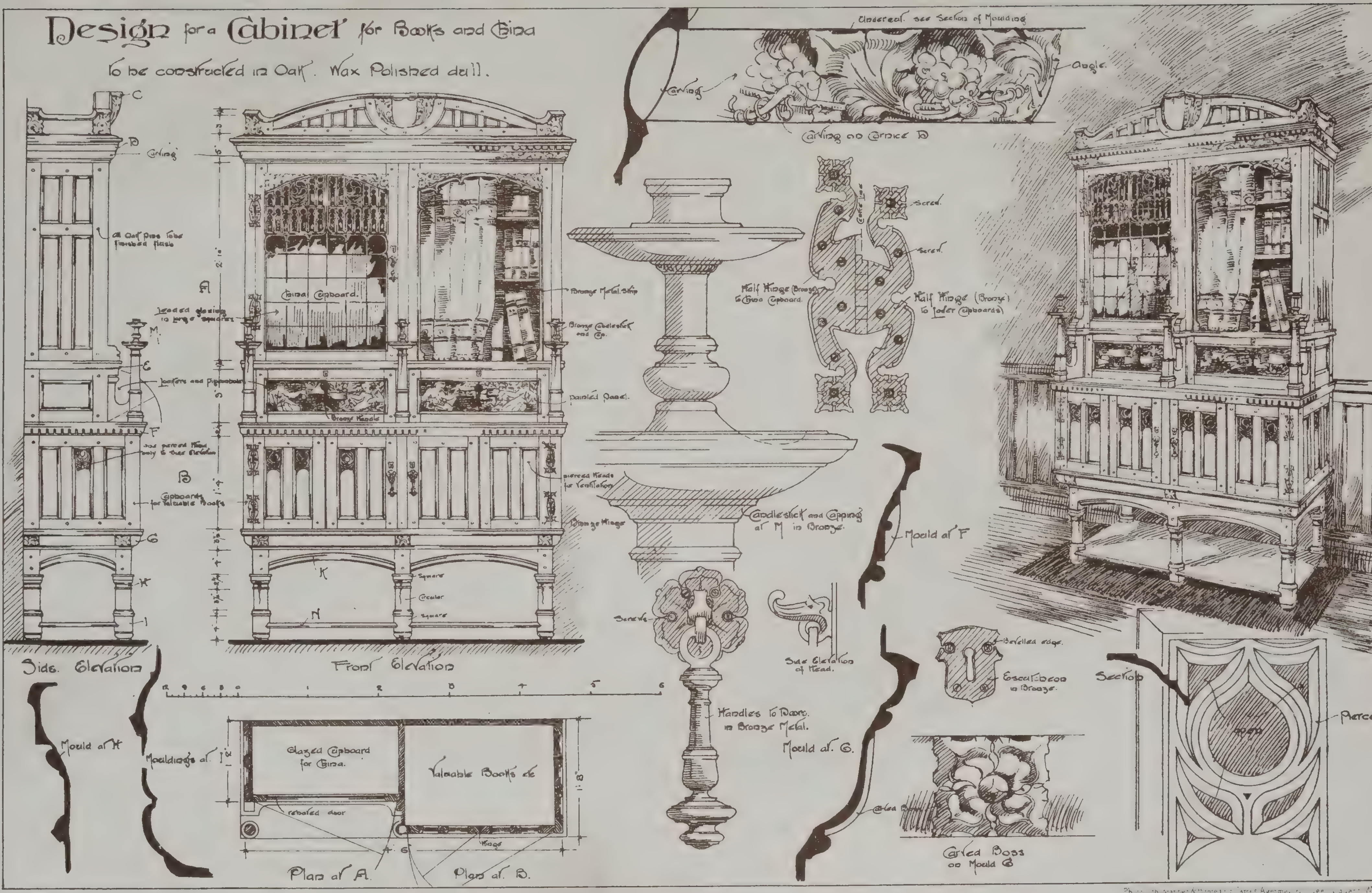
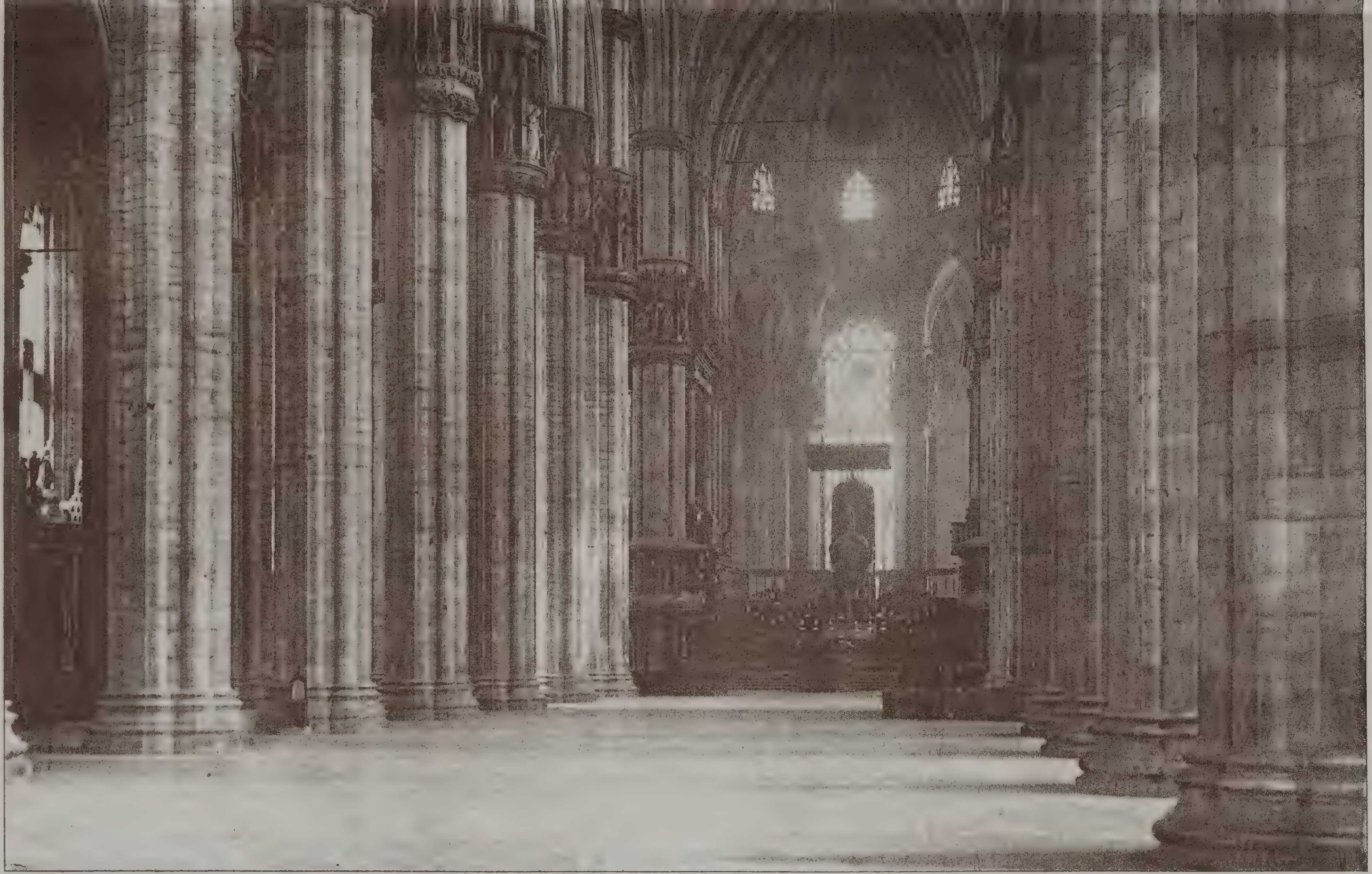


Photo Lithographed & Printed by James Akerman 6 Queen Square W.C.


Design for a Cabinet for Books and China
To be constructed in Oak. Wax Polished dull.
C
D
Carving
All Oak pins to be finished flush
A
Leaded glazing in large squares
M
E
Lockers and Pigeonholes
F
one pierced Panel only to this Elevation
B
Cupboards for valuable Books
G
K
I
Side. Elevation
China Cupboard.
Bronze Metal Strip
Bronze Candlestick and Cap.
painted Panel.
Bronze Handle
pierced Heads for Ventilation
Bronze Hinge
Square
Circular
Square
N
Front Elevation
Mould at K
Mouldings at I & N
Glazed Cupboard for China.
rebated door
Valuable Books &c
Hinge
Plan at A.
Plan at B.
Carving
Undercut. see Section of Moulding
Angle.
Carving on Cornice D
Centre line
Screw.
Screw.
Half Hinge (Bronze) to China Cupboard.
Half Hinge (Bronze) to Lower Cupboards
Candlestick and Capping at M in Bronze.
Mould at F
Screws
Side Elevation of Head.
Handles to Doors in Bronze Metal.
Mould at G.
Bevelled edge.
Escutcheon in Bronze.
Carved Boss on Mould G
Carved Boss
Section
Pierced

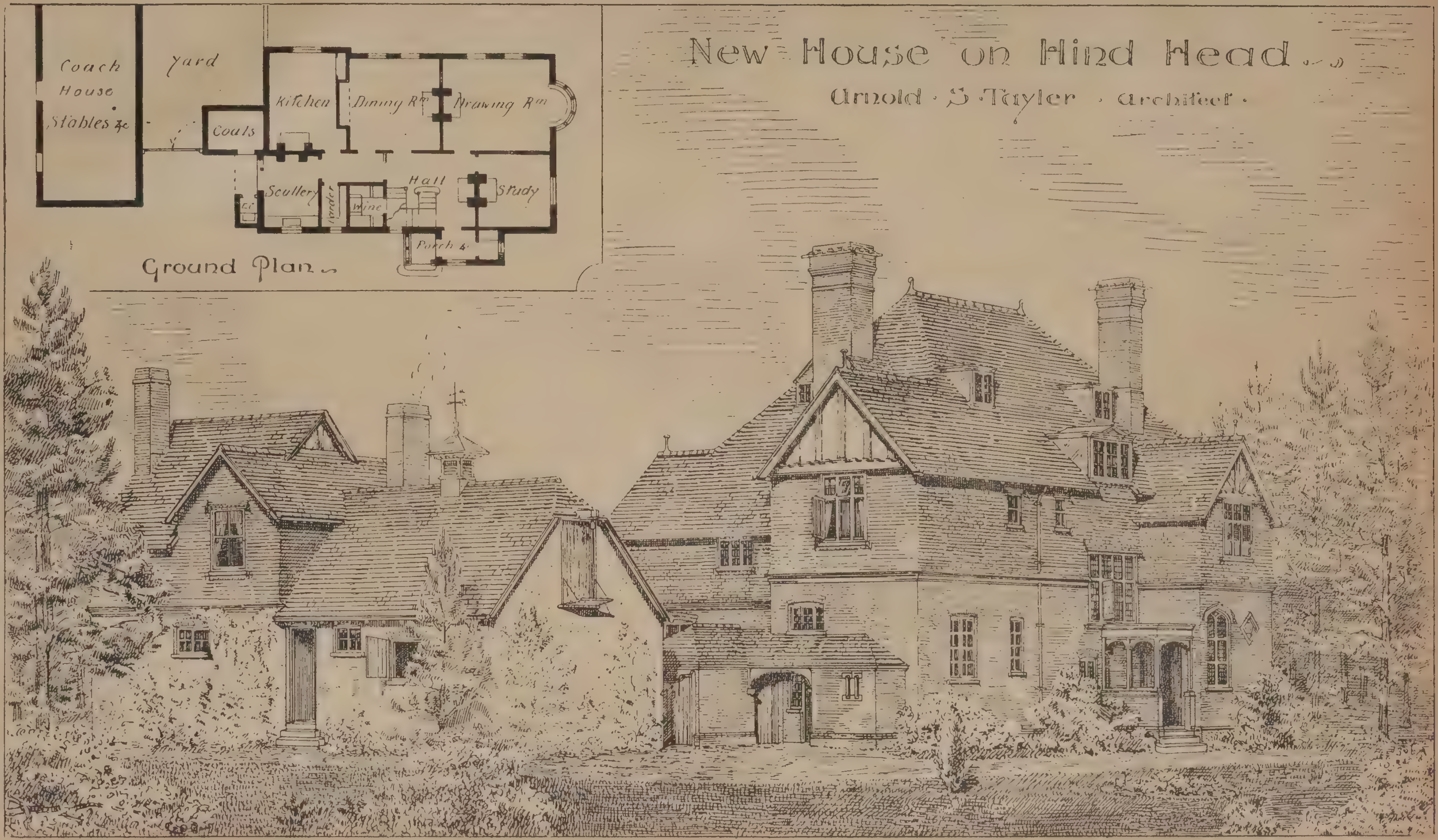
CABINET · BY · F·W·C·GREGORY · NATIONAL BRONZE MEDAL AWARDED



"PHOTO-TINT," by James Akerman, Queen Square, London, W C

INTERIOR · OF · MILAN · CATHEDRAL · PHOTOGRAPHED · BY · J · T SANDELL

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS



New House on Hind Head

Arnold S. Tayler, Architect.

Building Intelligence.

Capel Als.—The old chapel at Capel Als, near Llanelly, has been pulled down, and reconstructed at an expenditure of £4,500. An organ loft, with vestries and lavatories, and external wings for the galleries' stairs, have been added, while the schoolroom has also been altered. The style adopted in the renovation is Classical. The inside joinery work throughout is of pitch-pine, while all the pews have mahogany heads. The gallery front is panelled with curled pitch-pine and carved oak, used alternately. The organ front has been designed by the architects, the panels being carved to represent the harp, the bells, the horn, and the cymbals. The rostrum is of pitch-pine, with oak panellings set in mahogany. Messrs. Brown, Thomas, and John executed the joinery work; Messrs. J. F. Jones and Son, Cowell-street, carried out the decorations, including the new ceiling of fibrous plaster: the ventilators being supplied by Messrs. E. Shorland and Brother, Manchester. The windows in the organ-loft have been fitted with lead lights having musical designs. All the masonry and the plastering was carried out by Mr. David Hopkins and Mr. W. Edwards. The clerk of the works was Mr. W. Edwards. The contract was carried out under the supervision and direction of the architects, Messrs. Owen Morris, Roberts, and Son, of Portmadoc.

Dudley.—Various additions and improvements are about to be carried out at the Guest Hospital. The works will include a new operating-room for women, and two small detached wards for special cases; the extension of the women's ward to hold 31 beds instead of 23, as at present; the rearrangement of the kitchen, and children's ward over; the enlargement of the laundry and improvement of the hot-water supply; and extra sleeping accommodation for nurses and servants. The estimated cost of the structural work is about £2,000, besides fitting and furnishing. Mr. William Henman, architect, Birmingham, is preparing plans, and it is hoped the work will be commenced early next year.

Edinburgh.—The plans for the construction of the new Union Club have now been finally approved. The premises are those formerly occupied as the Albert Hotel in Hanover-street, with two shops on the ground floor. The main features of the present front will be retained, and the new work, will be practically an insertion within the lines of the existing pilasters and entablature of the ground story. The style of this front, and also of the internal finishings, will be a free treatment of Italian Renaissance. From the hall access is obtained to the dining-room, 34ft. by 23ft., and to the smoking-room, an L-shaped room, 34ft. by 16ft. The rooms on the first floor include the reading-room, 34ft. by 18ft., billiard-room. Adjoining the billiard-room will be a small private dining-room, a card-room, a committee-room, and the secretary's room. On the second floor will also be members' bedrooms and bathroom. The building will be entirely lighted by electricity. The total cost is expected to be over £3,000. The architects are Messrs. Dunn and Findlay, 94, George-street, Edinburgh.

Glasgow.—The Corn Exchange, which has been under process of reconstruction since early in the year, is now all but completed. It has been constructed of red sandstone from Locharbriggs Quarries. The frontage to Hope-street and return to Waterloo-street, is four stories in height, yet in effect only looks two. The Hope-street frontage is divided into five divisions by engaged columns, the columns being two orders in height. The central doorway has columns in advance of the plane wall, and lead to the Exchange proper, as also to the upper stories by a staircase 14ft. wide. Surmounting the columns of the door are colossal figures—the only sculpture connected with the building — representing Sowing and Reaping, from the studio of Mr. James Young, sculptor. The lower order is Tuscan, and the upper order is Roman Doric. An entablature of architrave, frieze, and corona surmount the three-quarter columns, the triglyphs and blocks being left out. The Waterloo-street portion of the building is of the same character, but it is of one order of height only. The erection of the buildings has been carried through by Messrs. P. and W. Anderson, Glasgow, and Mr. William F. MacGibbon, of the same city, is the architect. We illustrated the building in our issue of August 2nd last.

Landscove.—The church of St. Matthew at Landscove, in the parish of Staverton, was built in 1851 at a cost of £3,000. It is of Early Decorated character, and has a unique interest in that it was the first church ever built from the designs of Mr. John L. Pearson, R.A. Messrs. Jackson, then large builders in Exeter, were the contractors who carried out the work. It was intended at the time that a carved oak reredos, to Mr. Pearson's design, should be put up; but unforeseen circumstances prevented until now, when by the gift a parishioner it has been added to the furnishings of the church. It is entirely constructed of English oak. There is a retable, and above it a super-altar, and the reredos itself consists of three compartments, the central one gabled. The buttresses on either flank project out the full width of the super-altar, thus making returns, and from the outside faces of these are fixed metal movable brackets, to carry the dossals. Running the whole length of the reredos and up the line of the gable is a pierced and carved cresting, whilst at the apex of the gable is the figure of a dove, with outstretched wings, carved in the round. The triplet of panels, although now quite plain, will ultimately be filled with sculptured figures. The reredos is the work of Messrs. Harry Hems and Sons, of Longbrook-street, Exeter.

Lavender-hill, S.W.—The plans for the new Shakespeare Theatre at Lavender-hill, Clapham-junction, have now received the approval of the London County Council and the Battersea vestry authorities. Mr. W. G. R. Sprague is the architect, and the outlay will be about £25,000. The main frontage of 60ft. to Lavender-hill will be of a Classic character, and will be in stone with a projecting portico and balcony. The theatre will be a two-tier house, with stalls and pit on the ground floor tier, dress-circle and balcony on the first tier, gallery and amphitheatre on the second tier, and the usual private boxes. The approaches for the stalls, dress-circle, balcony, and private boxes will be from Lavender-hill. There will be vestibule and crush-room, and the decorations of the auditorium, vestibule, crush-room, and lounge will be Moorish in style. The electric light will be supplied from the proprietor's own plant. The stage will have a clear width of 70ft. and a depth of 50ft., and a height of 56ft. to the grid. The dressing-rooms will be provided with hot and cold water supplies, and be heated, and will stand as a separate block cut off by brick walls and iron doors from the stage. A complete system of low-pressure hot-water pipes and radiators will be provided throughout the building; and the stage and auditorium will be separated by a fire-proof curtain. The theatre will be opened next August Bank Holiday.

Mayfair, N.B.—The Free church, erected several years ago, from plans by Mr. Hippolyte J. Blanc, has recently received some finishing touches which were left over at the time of the opening. The spire has been added, and internally the church has recently been decorated, and an organ and a new pulpit have been erected at a cost of over £1,500. The organ is placed in the apse at the east end. The case, designed by Messrs. Pearson, architects, Castle-street, Edinburgh, is of oak. Prominent features of it are two square towers rising to a height of 19ft., and finished with an arcading and gablet. The arcading in each tower holds five of the larger pipes, which are made of spotted metal; the other pipes are out of sight. Between the tower is a carved oak screen, the lower half of which is arcaded for three seats. Above, a smaller arcading is carried right across the screen, upon which, and upon the towers, there is a good deal of carving. The organ is by Vincent and Co., of Sunderland. The pulpit, which is also of oak, is octagonal in form, and is panelled and carved.

Rainton.—The church of St. Mary was reopened on Dec. 18, after a complete restoration. The building, though of modern date, had fallen into a state of great dilapidation, both inside and out. The absence of any damp-course over the foundations, and of drains to carry away the rain-water from the down-spouts, had caused a saturation of the walls, disintegration of the stone, and decay of the mortar. The restoration has included the removal of the old slates from the entire roof, and the substitution of green Westmoreland slates, a system of rain-water and subsoil drainage around the building, the cutting and raking out of all external joints in the masonry, and the stopping of these with Portland cement, the removal of all external decayed stonework, and the insertion of new stone, while in the inside the whole of the decayed plaster has been removed, and the substitution therefor of Portland cement. The tints of the chancel tiles are repeated in the spandrels of the nave arches and splays of the aisle windows. The main part of the work has been executed by Mr. Robt. Hudson, contractor, of Millfield, Sunderland, and the cement plaster-work by Messrs. Wilkinson and Co., of Newcastle-upon-Tyne. An entirely new heating apparatus and appliances for lighting were supplied by Messrs. Emley and Sons, of Newcastle; the tile-work was executed by Messrs. Maw and Co., Jackfield, Salop; Messrs. Jos. Potts and Son, of 57, John-street, Sunderland, are the architects.

Engineering Notes.

Dover.—The solid masonry of the new harbour extension works at Dover, now makes its appearance above the highest tides for a distance of over 250ft., nearly 400 lineal feet of the foundations having up to the present time been laid by the divers. About 2,500 concrete blocks, averaging 16 tons each, have been laid since the commencement. As many as 40 of these blocks have been laid in a single day, and a reserve of about 2,000 is kept stacked in the yards on shore ready for use. The open ironwork viaduct, which is to connect the shore with the masonry in deep water, has made great progress, and already over half the distance has been completed. As the viaduct proceeds, the chalk in the bay is found to be harder, and the work of sinking the piles 12ft. below the bed of the sea is rendered more difficult and tedious. The work of surveying the bay for the National Harbour, which was commenced by Messrs. Coode, Son, and Matthews about a month ago, is continuing, and will be completed so that plans and estimates may be ready by March.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Edinburgh Architectural Association.—A meeting of this association was held on Dec. 18, Dr. Rowand Anderson in the chair. Mr. G. S. Aitken read a paper by Mr. Thomas Arnold, who was unavoidably absent, on the mausoleum of Halicarnassus—the tomb erected by Queen Artemisia in honour of Mausolus. Mr. Arnold in the course of his paper explained that he had observed in Sir Charles Newton's plans three piers adjoining the excavation foundation, and that on examining these he had found a relation between them and the intercolumniation. From this he had started to restore the whole building. Pliny's dimensions he had taken as the basis of the restoration; but the height which Pliny gave was generally given as 140ft. Mr. Arnold's contention was that not more than 100ft. ought to be allowed. In this way the podium or base was contracted to 25ft. in height instead of 65ft., which was the dimension in the former restoration. This difference of dimension constituted the principal feature in the restoration of Mr. Arnold, who, by a number of diagrams, showed how the dimensions which he had arrived at could be included within several geometrical figures. Some remarks were made on the subject of the paper by Mr. D. W. Vallance, assistant curator of the Museum of Science and Art, Edinburgh.

New stables and kennels for the Avon Vale Hunt, at Semington, Wilts, a cricket pavilion for the Wilts County Cricket Club, at Trowbridge, and a milk factory for the North Wilts Dairy Company have recently been completed from plans prepared by, and under the superintendence of, Mr. W. H. Stanley, architect, Trowbridge, Mr. J. Wilshire, of Semington, being the builder for the first-named work, and Mr. George Moore, builder, of Trowbridge, for the other two.

The council of the miniature republic of Andorra have given their consent to the construction by the French Government of a branch of one of the great national high-roads, which will go directly through the territory of the little Republic, and afford easy communication between its capital and the road from Toulouse and Bourg Madame. In the course of next spring the surveyors will begin their work, as both Governments have come to an understanding with regard to the plan. The cost of constructing the road will be about £80,000; but, though the land over which it will pass will nearly all belong to Andorra, the French will pay for the actual road-making.

COUNTY LUNATIC ASYLUMS.—XXXVI.

By George H. Bibby, F.R.I.B.A.

DISTRICT ASYLUMS AT HOME AND ABROAD.

THE London County Asylum at Banstead accommodated, in the year 1877, about 1,250 patients, two-thirds of whom were females; but these numbers had been increased, at the close of the year 1894, to a total of 2,000 patients. Considerable additions have recently been made to this asylum, for the sick on the women's side, and for acute cases in the division for males; but these are intended, I believe, for the purpose of reducing congestion in the wards, and are not intended to afford means for increasing the number of the insane patients. Previous to the opening of the new annexes, proper sleeping accommodation does not appear to have been given to all the patients. Many of them were obliged to sleep on the floor, and the day-room space was insufficient. The accommodation has been lately increased by about 100 beds; but the Commissioners in Lunacy have declined to allow an increase of patients, upon the ground that a greater area per patient is necessary than has been arranged for in the past.

From the block-plan shown in Fig. 56, it will be observed that the wards for the male patients have chiefly a southern aspect, while those for the female patients (who are here greatly in excess) face the north, and that the buildings generally, in respect of outlook, are not so favourably arranged as is the case with the plans of asylums already given; but the institution is a large and very important one, and under the charge of about thirty officers, assisted by 127 male and 158 female attendants, &c. About fifty carpenters, bricklayers, plumbers, painters, plasterers, slaters, masons, fitters, gardeners, and labourers are employed about the premises, and have a special mess-room. This asylum is provided with a new building, for cleansing by steam the horse-hair of mattresses.

The Commissioners in Lunacy have expressed the opinion, with regard to the day-rooms of this asylum, that they are *too large* for the proper control of the class of patients who now occupy them. Many asylums would be far better planned if, with small wards and a more liberal supply of single rooms than often can be arranged for, by reason of financial considerations.

The references to Fig. 56 are: A, contagious hospital; B B, greenhouses; C, waiting-room; D, mortuary; E, engineer's house; F, chaplain's house; G, gate-lodge; H, attendants' houses.

In this asylum, a patient described as "architect" was an inmate during the past year, he being the only person of that profession out of a total number of 18,541 pauper lunatics chargeable to the County of London; but there may be some in the various private asylums.

The Banstead Asylum, in its general arrangement, is somewhat barrack like; but the wards and corridors are so decorated with pictures, and in other ways, that they are more comfortable than might be reasonably expected in an institution of this description.

At the Banstead Asylum, amongst others, the temperance policy was adopted some time since, and upon this architects may assume that for many new asylums such adjuncts as brewhouses need not in future be provided for on the general plans. I may state here that the disused brewery at the Hanwell Asylum has been converted into a dormitory, and that as a result there has been a net gain of 30 beds secured to this asylum. Dr. Alexander, the medical superintendent at Hanwell, has reported with regard to the existing temperance system in his asylum:—"I may say that this change has so far (1890) been followed by the happiest results, as evidenced by the *notable increase of contentment* and the *decrease of squabbles and bickerings* among the patients. The benefits have been most marked in the case of epileptics, *whose infirmities of temper are much less*, and whose liability to fits has been lessened."

One of the difficulties of the architect who has a large asylum plan to arrange, is that there are so many distinct departments, and that each one often appears to claim a site on the asylum estate for which another seems to have an equal suitability. The question of adding a brewing establishment to an asylum with a population of over 2,000 persons, involves also, probably, the erection of at least two cottages for the brewer and the brewer's labourers upon a site which might be better utilised. The Commissioners in Lunacy, however, have expressed themselves adversely with regard to the disuse of beer in asylums.

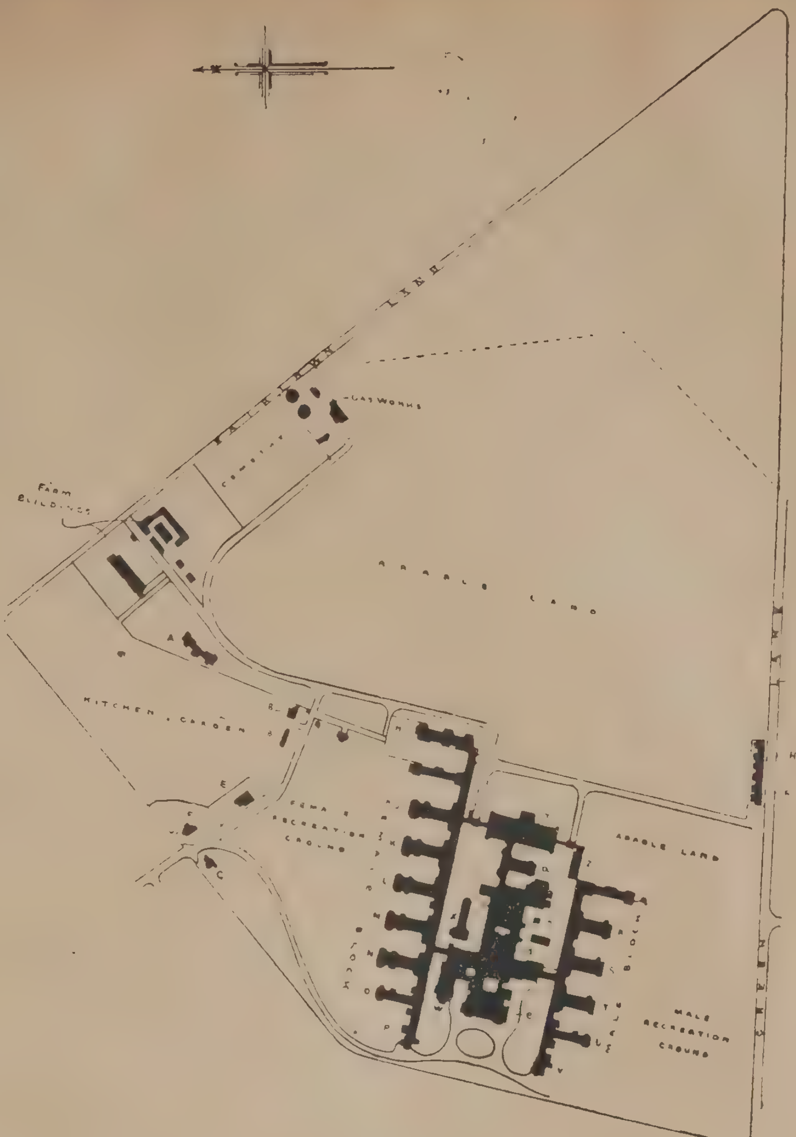


Fig. 56.

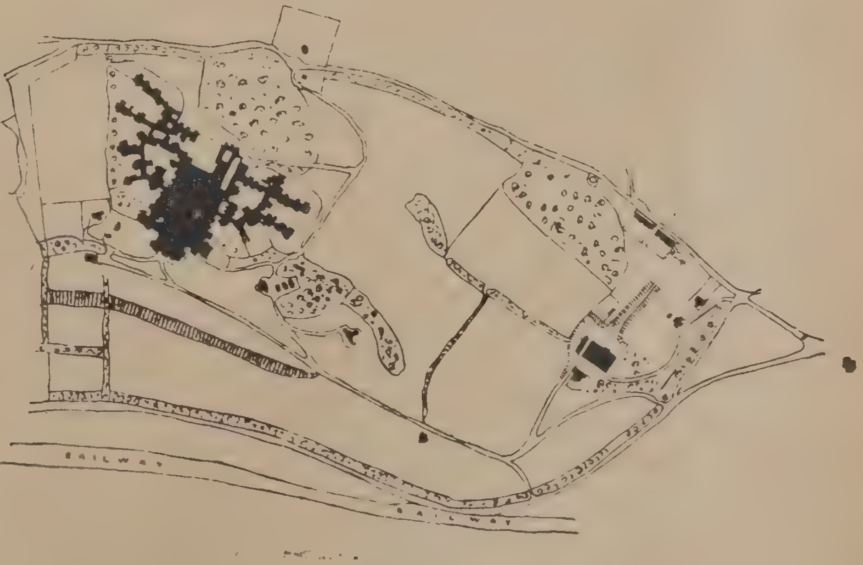


Fig. 57.

For some new asylums, therefore, architects will probably be required to provide brewing establishments, for many medical superintendents are of opinion that the wholesomeness of beer for those who are engaged in laborious physical work is most beneficial, and that water, thoroughly suitable for drinking, is frequently not obtainable. One authority is of opinion that, apart from the possible hardness of water in certain localities, "the mere ingestion of a pint or so of cold water is a serious tax on the energies of the aged, especially in winter, when the water is at a temperature not much above the freezing-point. In the first place, the shock of the cold application to the interior of the body is depressing; and in the second, to raise, by some 70°, the temperature of a pound or so of fluid of so very high a specific heat as water, is a serious demand upon the heat-forming capacity of old people." The difficulty is to find a beverage for pauper patients that is cheap, easily made, palatable, and not liable to the objections brought against cold water and beer, the last named being probably unsuited for epileptics, either in or out of asylums.

The London County Asylum at Cane Hill, which contained in the year 1884 about 1,000 patients, had, at the close of last year, accommodation for 2,018 patients. In Fig. 57 is given a block-plan showing the general arrangement and estate. Several additions have been made recently, including a nurses' block, containing bedrooms for 33 nurses, and on the top floor a large workroom for patients; additional farm buildings, attendants' cottages, shelters in airing courts, a cricket-field, pavilion, and other constructive matters. A large number of patients in this asylum appear to be induced to engage in useful employment of some description, the number of workers being 72 per cent. of the males and 65 per cent. of the females. Possibly these figures would not be so high were not the arrangements of the building favourably planned in the first instance, and a very excellent system of management maintained by the medical officers, of whom there are six, including the superintendent of the asylum.

Cane Hill Asylum is erected near to Coulsdon Common, upon a desirable site adjacent to the Cane Hill, which is used for cricket, &c., by the patients and staff. The wards of the asylum are bright, pleasant, and clean, and have the reputation of being kept in excellent order, beyond what is usual in many institutions of the kind. The asylum is supplied with water of an excellent quality from its own grounds. The sewage is disposed of by gravitation, and the fields of the asylum are thereby irrigated and manured.

All the estates attached to the London County Asylums are very irregularly divided, and in the original laying out of the fields, the parallelism of opposite sides has either not been practicable, or has not been observed. The fields and inclosures, when practicable, should be, as nearly as possible, square, if the best results are to be obtained: this being the form most suited to economy of tillage; but it is not very often possible to preserve the square or rectangular form, on account of the irregular outline of estates and farms, the intersection of highways, and the natural breaks of many kinds on the surface, such as brooks, watercourses, and inequalities of surface. All, therefore, that can be done in practice, is to approach, as nearly as circumstances admit, to the suitable form, and where irregularities are unavoidable, to cause them to be as little hindrance to an economical tillage of the ground as the case may allow; narrow strips of land, sharp corners, and intersected ridges, however caused, are always interruptions to regular tillage, and should be as much as possible avoided in the laying out of asylum fields, and where inclosures, small, irregular, or injudiciously laid out, exist, the fences should be removed, so as to bring them to the best size and form circumstances may allow. So far as is possible, the asylum fields should each inclose ground of the same nature and quality: otherwise it might be necessary to subject various parts of the same field to different kinds of culture. For instance, if a tract of stiff clay were included in the same field with a tract of gravel or sand, a different rotation of crops might be required for each division, which inconvenient arrangement would be inconsistent with the purposes of the fences.

A small asylum farm would require smaller fields than a large one; but the general rule should be that the fields should be no smaller or larger than the case requires, for by unnecessarily multiplying inclosures the ground would be uneconomically occupied with hedges and ditches, and the cost of cultivation increased. Possibly much of the irregularity in the shapes of fields has arisen by reason of the work of fencing being left to tenants who have only done the work to meet the requirements of their passing convenience.

The greater part of this country has for centuries been divided by innumerable hedges, ditches, and walls (but only since the middle of the last century has Scotland made progress in the same direction). Fences serve the purpose of protecting the growing crops, of separating the animals of the farm, and, when accompanied by ditches, of draining the fields; they serve, too, for breaking the force of the winds, and afford shelter: a country possessed of well-inclosed fields has a great superiority in the means of carrying on the works of the farms over one that is destitute of them; the capital invested in this country in such works must be enormous, although (from much useless multiplication and bad construction of them) a great part of this capital is probably misapplied. From my own observation I have found that the farm fences in the eastern and central States of America are vastly inferior to those of this country, being frequently of very feeble construction, and the finest parts of Europe are said to be very deficient as regards inclosures of land. England is supposed to have derived the knowledge of the art of inclosing from the Romans, who, although they did not probably carry sub-division of their grounds to an extreme extent, were yet familiar with methods of forming fences which would no doubt compare favourably with those adopted in many parts of the Continent at the present time.

In Derbyshire especially, the fences are generally made with loose stones forming walls of from 2ft. 6in. to about 4ft. in height; but in the matter of the picturesque, there can be no comparison between an estate divided by stone walls and those separated by hedges and ditches, and there is, in this respect, so great an inducement, apart from considerations of cost, to adopt the growing fence, that there need be little fear that the beauty of the country will ever suffer by reason of the general substitution of the wall for the hedgerow, although there are undoubtedly localities where the wall must continue to be used.

I am not aware of any asylum estates where artificial lakes or ponds exist; but at the Toledo Asylum, in the State of Ohio, which stands upon an estate of 175 acres, there are three artificial lakes within a short distance of the asylum. These lakes occupy an area of about six acres, and are in some places about 5ft. in depth, are used for skating, fishing, and rowing, and also for auxiliary water supply and sewage flushing. The area of the water surface being so considerable, it would appear a matter of difficulty to avoid disaster to suicidal patients.

(*To be continued.*)

A MIXTURE OF ROMAN AND GOTHIC.

A CORRESPONDENT writes from South Shields:—I think many of us would feel rather taken aback if asked to design a "beautiful" church in a mixture of the Gothic, Roman, and Renaissance styles. That such a building has been most successfully accomplished, not by an architect, but by a builder, is proved by the following paragraph from a local paper, and ought to make us feel very small and envious. It reminds us of the good old days when the builders were also the architects. The following is from the *South Shields Daily News*:—

"There has lately been opened in South Shields a new Free Baptist chapel. The architectural style of the structure is a *mixture of Roman and Gothic, with windows of the Renaissance period.* The main building is 62ft. by 40ft., supported on the north side by lofty stone-faced buttresses, on the south by prettily stone-gabled lecture and class-rooms, and on the west side by a picturesque stone-faced Gothic vestibule surmounted by a floral design. The church is beautifully lighted on three sides by nine large windows and two mullioned windows, while the front west window is of finely-worked stone tracery, embracing six circular lights which surround a pretty window of cinquefoil design, and the whole adorned with pyramidal and floral ornaments. There are three entrances, viz., *Gothic vestibule and Roman doors*, and ordinary side-passage approach, while the front of the structure is protected with palisadings having brick pillars with capitals of ornamental stone. The interior of the church is in keeping with the pleasing aspect of the exterior. The platform is admirable. The framework is of pitch-pine, with two projecting bays, armed seats, the front artistically decorated with sixteen symbolically-carved panels backed with crimson cloth. The seat for the speaker is a canopied armchair of pitch-pine, adorned with cut brackets and carved top, and upholstered with crimson plush, &c. The designs are from the hand of Mr. J. N——, who is also the builder of the church, and he cannot be too highly praised, both for the skill with which the designs have been made and carried out, and for the excellence of the workmanship in connection with every department of the undertaking."

We frequently hear the question asked, Why do not architects invent a new style in this the 19th century, instead of taking their instructions from Classic and Mediæval work? I have come to the conclusion, however, since reading the above, that the hour and the man have arrived.

LONDON COUNTY COUNCIL BILLS.

THE London County Council have deposited for consideration in the next Session of Parliament three measures, one dealing with finance, a second with general powers, and another with tramways. The financial scheme has for its object the consolidation and amendment of the law relating to the provision of money by the Council for expenditure on capital account. The General Powers Bill proposes to empower the County Council to purchase lands for various purposes—namely, in connection with improvement of the eastern approach to Lambeth Bridge, for the erection of a staircase at Wandsworth Bridge, and in connection with widening of High-street, Plumstead. It also deals with the purchase of land at Hackney Marshes, and the purchase of other lands for various purposes at Streatham and Shepherd's Bush. It empowers the County Council to enter upon property for survey and valuation, to stops up ways temporarily, to make subsidiary works, to alter the position of water, gas, and other pipes, and to alter sewers and drains. Amongst the other provisions is one which declares that the Bill shall not authorise the taking of 20 houses of persons of the labouring class in any parish. It gives power to lend to vestries, &c., for sanitary purposes, and makes provision as to the playing of music at Highbury-fields. The Tramways Bill provides for the construction and maintenance of tramways from the termination of the tramways of the London Tramways Company at the south-eastern end of Vauxhall Bridge-road to cross over Vauxhall Bridge, as about to be reconstructed and to terminate by junctions with existing tramways at or near Vauxhall Cross. Power is also taken to move carriages by animal or electric power. There is also a Bill dealing with the East London water supply, of which the following are the operative clauses: —Clause 2 enacts that "Notwithstanding anything in any other Act, the East London Waterworks Company shall, from and after January 1, 1897, be bound to provide and keep the supply of water constantly laid on at such a pressure as will make the water reach to the top story of the highest houses within the said limits of supply as far as they are included within the administrative County of London." And clause 3 provides that "If at any time after the said date the said company make default in complying with the provisions of this Act, they shall for every such default be liable to a penalty not exceeding £200, and to a further penalty not exceeding £100 for every month during which such default shall continue. Every such penalty shall be recoverable, paid, and applied in the same manner as provided by section 44 of the Metropolis Water Act, 1871, with respect to penalties under that Act."

DURABILITY OF IRON.

IN a discussion on the above subject in a recent number of the *Proceedings* of the Engineering Club of Philadelphia, many useful points are considered. Thus, the form of an iron column has something to do with the durability of the protective covering. One authority, Mr. W. C. Furber, says that for the best coverings known an open-section column has many advantages. The closed section permits the accumulation of water and dirt, which cannot be removed after erection. Among coverings we have paints and bituminous compounds and Portland cement; the latter, if properly applied, is said to have many advantages over the others, and one engineer observes there is no good reason why it should not be used to cover other parts of the metalwork besides those below ground. The removal of mill-scale from iron plates is one of the points insisted upon in the construction of vessels for the navy. The action of mill-scale is very corrosive, especially when the iron is exposed to water. The valuable investigations and experiments of Mr. M. P. Wood, published in his paper on "Rustless Coating for Iron and Steel" in 1894, bear on this subject. The same writer refers to the following as the best coverings—viz., cement, bituminous coatings, and paints. Painting over mill-scale, grease, and dirt is condemned; the surface to be painted should be clean and bright, and bolts and rivets be painted before rusting. The painting of the Forth Bridge is criticised and condemned on these grounds. Mr. Wood also mentions the value of asphalte coverings, and the evil effects of iron oxide paint on various structures. Another authority, Mr. C. D. Rinald, pointed out that rusting cannot take place if the carbonic acid is absent; the combination of oxygen with iron is the immediate cause of rust, but this is only possible when an acid is present. Thus a protective covering ought to prevent carbonic acid or other acid from penetrating to the iron, which then cannot combine with the oxygen. Mr. Rinald thinks that a protective paint ought not to contain any oxide at all—he would use only pigments that are not affected by acids or alkalis, and these principles are carried out, he says, in the manufacture of "Bessemer" paint. Linseed-oil he thought objectionable, unless prepared by a special treatment, as in its natural state it is porous, and is affected by weak acids and alkalis. We have no space to give all the observations made on this subject. While some of those who took part in the discussion doubt whether any paint will be discovered that will be a permanent protection to iron, others think that the result can only be obtained by experimental and practical tests. As to red-lead, one speaker said it was a good paint under certain circumstances; but where it is exposed to locomotive fumes or to any chemical fumes it will not protect. The discussion is interesting, as showing the divergent views of chemists and engineers. The theories of the former have not been generally accepted by practical men; the rival productions of manufacturers of protective coatings have not obtained the full confidence of engineers, and there is a natural desire to return to those simple protective agencies like red-lead and the heating of iron to a temperature of 400° in an oven and then dipping it into a bath of raw linseed-oil. Till we have practical experience of the durability of iron or steel under various treatments, no very satisfactory result can be obtained.

THE "NYPHOS" CLOSET.

MESSRS. J. AND M. CRAIG, of Kilmarnock, are just introducing a new siphonic wash-down closet and cistern, which offers many desirable advantages. It affords a simple and reliable method of connecting or disconnecting sanitary ware to any other kind of pipes or connections; it has a full-way, high-pressure, silent ball-tap, it is a really siphonic wash-down closet, with a full water-basin, and no valves or other movable parts, and the joints are all open to inspection. Moreover, the outlet of the closet being of comparatively small diameter, an efficient system of small-bore soil and air-pipes is thus introduced, which saves cost, and avoids the ugly adjuncts which disfigure many exteriors. It is especially worth notice that should siphonage take place when slops are emptied into the basin, the supply cistern immediately acts automatically, and the basin is at once thoroughly flushed out and left full of clean water, thus avoiding the unpleasant evidence of Mary Jane's sluttishness which so often remains in the best appointed lavatories. We have a very high opinion of this new closet, and are sure it will find wide adoption.

BOOKS RECEIVED.

The Quest has a most interesting account, by Mr. William Morris, of his beautiful old house at Kelmscott, with illustrations. There is also part of the legend of Tobit, with some curious and quaint sketches. *The Quest* has quite a unique character of its own, and is refreshingly different in type and get-up from anything printed nowadays. ——*An Architectural Account of the Churches of Shropshire*, by D. H. S. Cranage, M.A.: Part II., The Hundred of Munslow (Wellington: Hobson and Co.).—We noticed Mr. Cranage's first instalment of his important work on the churches of Shropshire, which is mainly devoted to the interesting and typical churches of Claverley, Shifnal, and Tong. The details of the splendid monuments of the latter church are fully described and illustrated. This second volume is particularly interesting, as it describes many of the beautiful edifices in the Hundred of Munslow. A large portion of this part is devoted to a description of the fine church of St. Lawrence, at Ludlow. Plates XIII. to XXV. include photo-illustrations of the interior and exterior of Bromfield Church, a unique plan of nave and north aisle—the latter of 16th-century date, also the nave. Several illustrations of Ludlow church (St. Lawrence) appear, and plan views of interior, the chancel, and two exterior views. The plan shows nave, two aisles, transepts, chapels, and chancel, and a hexagonal porch on the south side, with central tower over crossing, and is mainly Perpendicular in the interior and exterior, though Early English and Decorated are also found. Views are also given of Munslow, Rushbury, and Staunton Lacey churches. Several other process-blocks and wood engravings appear of details and tombs. The photographic illustrations are excellent, and Mr. Cranage's work will be an important addition to the ecclesiologist's library. ——*Proceedings of the Engineers' Club of Philadelphia.*—The November number has two articles of some interest: one is on the "Submerged Pipe Line for the Pennsylvania Sanitary Sewage Co. at Reading, Pa.," by William H. Deschant. The author describes the method adopted of submerging the pipes in the river crossing. A 30in. cast-iron pipe was used. The first operation was the excavation of a channel or bed across the river for the reception of the pipe, so that its invert would be about 2ft. below the river bottom; and this excavation was made by a dredging-machine. The whole line of pipe to be lowered was suspended from a trestle work, the pipes being jointed, and held in the exact relative positions they were to occupy on the bottom of river. A long screw-rod was attached to each pipe, and all these rods were lowered uniformly by placing a man at each screw, and by keeping time in the lowering. Lead joints were made; rings of asbestos packing were clamped round the joints to hold the lead while the joints were being filled. The author illustrates the mode adopted of suspending the pipe-line in position and the sinking. By a singular mistake in calculating the pipe cylinder of air of 30in. diameter and 12ft. long, and the displacement, the pipe-line floated on the water, and it was necessary to add water ballast before it could be sunk. To avoid any strain in the joints of the pipe from irregularities along the bottom, the pipe-line was suspended about 6in. from the bed of river, and gravel and cinder filling was placed at each joint, so as to provide a uniform bearing before the screw-rods were released. The paper and discussion thereon are interesting. The "Topical Discussion on the Durability of Iron" is also an interesting report, which we refer to elsewhere.

OBITUARY.

The death occurred on Friday, the 20th inst., at the comparatively early age of 55, of Mr. George Ambrose Wallis, J.P., one of the most prominent residents in Eastbourne. Mr. Wallis was estate agent to the Duke of Devonshire, and was the first mayor of the borough, a position to which he was re-elected the following year. He had been a member of the Institution of Civil Engineers since 1865, and was also a member of the Society of Arts. To his skill and taste much of the beauty, and not a little of the prosperity, of Eastbourne are due. He carried out the construction of the Parade, from the Wish Tower to Holywell, and improved the water supply and drainage of the town. In politics he was formerly a Liberal, and unsuccessfully contested the Eastbourne division of Sussex in 1885 against Admiral Field. Mr. Wallis, however, subsequently threw in his lot with the Liberal Unionists.

* * *

A memorial stained-glass window was unveiled on Sunday week in the parish church, Laurencekirk, N.B. The subject chosen represents Our Lord in the Garden of Gethsemane being visited by the Comforting Angel. The design and execution were intrusted to Messrs. Ballantine and Gardner, Edinburgh.

On behalf of the Local Government Board, Mr. Rienzi Walton held an inquiry last week at the Town Hall, Birkdale, into the application of the Birkdale Urban District Council to borrow £1,074 for the extension of gas-mains and lamps, and for the introduction of sewer-ventilating lamps; and £149 for a mortuary. The surveyor, Mr. J. H. Fairburn, produced the plans. Touching the proposed mortuary, the inspector asked many questions on learning that the site suggested was midway between the Weld-road and the Oxford-road slopes—that is, on the foreshore, in full view of the main front of the Palace Hotel and the part of the sands most frequented by nursemaids and young children in the summer. The inspector asked if the lord of the manor had been informed of the proposed site, and the reply was in the negative.

COMPETITIONS.

Philadelphia.—Sixty-seven designs sent in in competition for the proposed new museum to be erected by the City of Philadelphia in the original Fairmount Park, on the east side of the Schuylkill, were submitted to a jury, consisting of Messrs. D. H. Burnham (as chairman), Mr. Stanford White and Professor Ware, of New York, and Messrs. J. M. Wilson and Johnson, of Philadelphia, who were asked to report the best eight to the Commissioners. They spent two days in making this selection, and a fortnight in studying photographs of these eight designs with a view to a final report. This they have presented to the Commission, recommending that the four prizes of 6,000dol., 3,000dol., 2,000dol., and 1,000dol. should be given to the designs marked "Keystone," "Acropolis," "Black Seal," and "Nike." The other four selected were marked "Proportion," "Maltese Cross," "Quantum Valeat," and "Φ." The Commission have voted the premiums in accordance with their recommendation. On opening the envelopes it appeared that "Keystone" was the work of Messrs. James Brite and Henry Bacon, of New York; "Acropolis," of Messrs. Lord, Hewlett, and Hull, of New York; "Black Seal," of M. de Montclos, of Paris; and "Nike," of Messrs. Howard and Cauldwell, of New York. M. de Montclos's design consisted of an open semicircular corridor, or arcade, from which radiated the twelve picture galleries called for by the programme, six on each side of a central hall, beyond which was a vast circular hall covered with a dome. The other three designs all had for their principal feature three lofty halls *en suite*, lighted from the roof, and inclosed first by a corridor and then by galleries, in two stories, for sculpture below and for paintings above. In "Nike" and "Keystone" the central compartment was covered with a dome. In the schemes of "Acropolis" and "Nike" three courts were shown at the side of these, two open above, the central one covered, and in that of "Acropolis," covered with a dome. "Nike" and "Acropolis" showed more or less extensive galleries or corridors branching out into the park. "Keystone," which was the largest of all, measuring about 300ft. by 600ft., was also the simplest, showing no accessories whatever.

CHIPS.

A full-size portrait of Captain Reed, of Belhunt, the first commanding officer of the Falmouth Rifle Volunteers, has been hung in the town-hall of that borough. The artist is Mr. Sydney Hodges.

The enormous extent of the forests, and also of the lumber industries of the north-west of Canada, is indicated by the fact that this year Washington will make shipments of lumber aggregating 400,000,000ft., Oregon 150,000,000ft., and British Columbia 40,000,000ft.

The Wesleyan chapel at Kilburn, near Thirsk, is being rebuilt and reseated from plans by Mr. T. Stokes, of Thirsk. The works have been let to the following contractors: J. C. Cornforth, of Coxwold, brick, stone, and plasterers' work; R. Leadley and Sons, of Helperby, carpenter and joiners' work; J. Baynes, Ripon, slating; and H. Savage, Coxwold, painting.

Mr. W. H. Stanley, A.M.I.C.E., of Trowbridge, has received instructions to prepare plans, &c., for the sewage disposal of that town, and is also engaged in preparing a scheme of water supply for the town of Westbury, Wilts, for the Westbury and Whorwellsdown Rural District Council.

The watching and lighting committee of Glasgow Town Council have recommended that the circus ground in Ingram-street should be acquired from the City Improvement Trust for a new fire-station, on condition that the erection of buildings should not take place for several years.

The Court of Common Council have decided to make arrangements for a supplementary exhibition in the Art Gallery at Guildhall next summer. The Court have also resolved that the early City records should be printed *in extenso* and published with full indices and such translations and notes as may be necessary. It has been referred to the library committee to report what sum would probably be required to produce one or two volumes each year.

Mr. Edwin J. Brett, who died on Dec. 16, originated a certain class of boys' sensational literature, but will be better recollected by our readers as an expert in and one of the foremost collectors of ancient armour: a portion of his collection was sold at Christie's in the spring for £30,000. Mr. Brett, who published last year an illustrated work on "The Origin and Development of Arms and Armour," was 68 years of age.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to The Strand Newspaper Company, Limited.

TERMS OF SUBSCRIPTION.

One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India, £1 6s. 0d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front-page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No Front-page or Paragraph Advertisement inserted for less than 5s.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page Advertisements and alterations in serial advertisements must reach the office by Tuesday morning to secure insertion.

Situations.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., LI., LIII., LIV., LVIII., LIX., LX., LXI., LXII., LXIII., LXIV., and LXV. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Received.—S. R. and Co.—E. Rogers.—Architect.—F. G. S.—R. L. C. Co.—B. T. (Taunton).

Correspondence.

PROPOSED NATIONAL AND PROVINCIAL UNION OF BRITISH ARCHITECTS.

To the Editor of the Building News.

> Now join your hands, and with your hands your hearts,
> That no dissention hinder government. . . .
> What might thou do, that honour would thee do,
> Were all thy children kind and natural?
>
> —Shakespeare.

Sir,—It has been stated that there is a large amount of selfishness amongst architects; yet I am inclined to think that a great deal of what to outward sight appears to be such, might, with more truth and propriety, be styled morbid indifference of a superficial character only; being nothing more or less than a thin conventional veneer, often covering a hidden wealth of true British heart of oak. Once let us break through this foreign element, and trust and confidence will be established where diffidence and distrust before reigned supreme. Only the assurance produced by the consequent power and influence of a truly National Union could effect this transformation.

This veneer no doubt we have unconsciously contracted and put on during the drossy age; it has been begotten, in many, by a dull sense of disappointment and despair, developing into a chronic state of indifference as to our rights or our wrongs as a professional body. It has been suggested that the Institute might possibly bring about a nominal alliance with itself, by a federation of the associations—it matters little which, because, for the purposes of a general union, even if practicable, it would be totally useless, and, without doubt, our future state would even be worse—which is saying a great deal—than the present.

Yes, the Institute might do all this, nominally, but would this alter the complexion and constitution of the associations themselves? For every purpose of a union they would remain as now—powerless, nerveless, and totally void of that vigorous life and concentrated energy, so essential and requisite for the effective working and successful management of a national union. It would but constitute a mended thing, and, at the best, anything that is mended is but patched. The greatest calamity that can come to use now would be to have foisted upon us a sham union, a union of shreds and tatters, a partial, contracted, pinched, secondhand occasional union, a thing living on sufferance, and having to beg for the crumbs that may fall from an upper table. Even if it were desirable that the Institute should endeavour to fashion a union directly or indirectly, its very constitution effectually debars it from forming any such comprehensive body which should embrace the whole of the *bonâ fide* practitioners, not being members of the Institute. No, its limited discretionary power is fatal to any such dreams. Should such a thing be attempted I am certain that it would end calamitously: the Institute would suffer, and no useful purpose would be attained. A union, to be a union worthy of the name, must undoubtedly rise, stand, or fall alone. To call anything less than this a union, is a misnomer. It is not a thing to be tacked on to an existing society, as a shopkeeper would tack a ticket on to an article for sale or exhibition. No, it must be the thing itself, complete in itself; a new creation, and our equipment, with our purpose, ought both alike be new. There is no reason, however, that the union, once established, should not exist in the strictest harmony and closest possible relations with the Institute, &c.

Perhaps, figuratively speaking, the true and, in real fact, the only position which a union of architects can occupy, in order effectually to repel the inroads which are continually being made upon the legitimate rights of the profession, would be to act as a cordon of outposts. We must found and firmly establish a strong impregnable outer line of defence, a force acting as one, in strict unity, and, again, in close communication with those within the citadel. These outposts will clearly have a work entirely their own, being peculiar to and consequent upon their exposed position, and which could not be undertaken or accomplished by those on the walls or within the city—the associations—and much less so by those who man or furnish the inner keys—the Institute. Now, figuratively, I take it that the inner fortress, or keep, may very well be likened to the Institute, and the city and walls answering for the different associations. Briefly, then, the paramount duty of the union is to *watch*, to be for ever on the alert; to carefully examine and test the genuineness of all credentials, the validity of every passport of all who would seek to cross the lines. Secondly, to give the alarm, and repel every attack from without whenever occasion arises. It is quite apparent that these duties of outer defence cannot be undertaken by those within the city. I therefore maintain that the union should be a separate and permanent self-contained organisation, with its own independent officers to command. I know there are those who are very jealous of the dignity and privileges of the Institute, and no one honours or respects them more than I do for their patriotic and honourable bearing; but in the formation of a distinct union of architects, nothing is being attacked or sought for which in any way encroaches upon, or by right belongs to, the Institute, or could, under any circumstances, be incorporated, so long as it is constituted as at present. Had I not been positively assured in my own mind that the formation of an independent union, far from doing the slightest injury to the Institute, would rather in every way tend to greatly benefit, and secure its best interests and welfare, I certainly should never have proposed it. I firmly believe it will be the means of increasing its numerical strength in a way nothing else can, and raise its somewhat nominal power into something real and substantial; and I predict the day is not far distant when its members will with one consent have reason to thank God we have got a union. To some it may require an effort of a peculiar nature, to step aside, as it were, out of the beaten track and make a little sacrifice of time and inclination; but surely the cause is fully worthy of such an effort. But alas! as you, Sir, have told us, architects "lack gall to make oppression bitter," and nevertheless "The loss, the gain, the rendering on't is all properly ours," so "Let silken dalliance in the wardrobe lie."

Finally, as I have already stated, the formation of a union as above will greatly tend to increase the membership of the Institute and kindred associations, whereas a federation of the associations affiliated to the Institute, would have exactly the contrary effect, and prove most disastrous, as more would be content to be simply members of a provincial society and nominally attached to the Institute, than be fully-admitted members of the R.I.B.A.

No doubt many of your readers have not seen this correspondence. Those who have will, I trust, call the attention of others to this vital question. Allow me to thank all those who, in response to my last letter, have forwarded me their names, and to invite those who have not as yet, to do so without delay. And with grateful acknowledgments to you, Sir—I am, &c.,

Durham, Dec. 21. George Ord.

Intercommunication.

REPLIES.

[11467.]—**Fumigated Oak.**—If an "Old Crow" will refer to his Building News for Sept. 16, 1881, he will find the same query (No. 6639) replied to by myself. As he may not have the copy in question at hand, I reproduce the reply in question. Here it is:—"Fumigating Oak.—Oak is fumigated by liquid ammonia, strength 880, which may be bought at any wholesale chemist's at 5s. a gallon. The wood must be placed in a dark and air-tight room or compartment, and plates or dishes of ammonia stood upon the ground. This done, shut entrance and secure cracks with pasted strips of paper. Remember the ammonia does not *touch* the oak; the gas acts in a wonderful manner upon the tannic acid in the material, and browns it so deeply that a shaving or two may be taken off without removing the colour. The grain is not raised in the least, and the depth of shade will entirely depend upon quantity of ammonia used, and the time the wood is exposed. Try an odd bit first, and then use your own judgment."—Harry Hems.

CHIPS.

The cattle market at Colchester is about to be reconstructed and inclosed by iron fencing, from plans prepared by Mr. H. Goodyear, the borough engineer and surveyor.

Messrs. Shanks and Co., sanitary engineers, Barrhead, N.B., have just secured a contract from the Melbourne Board of Works to supply 8,000 three-gallon cisterns. The contract amounts to £70,000.

An área of 12,924 square miles was under the control of the Bengal Forest Department during the year, and of this 45 per cent. consisted of fully reserved forest land, the remainder being composed of protected and unclassed State forests.

The *West Briton Advertiser* illustrates its sheet almanac for 1896 by a perspective of the Free Library at Camborne, one of the many institutions of the class erected, or in course of erection in Cornwall, at the expense of Mr. J. Passmore Edwards. The library at Camborne has been built from plans by Mr. Silvanus Trevail, M.S.A., ex-Mayor of Truro, and was opened in May last.

At Cardiff, on Friday, Sir John Gorst opened the new offices of the school board in Howard-gardens, and afterwards laid the foundation-stone of a new college for pupil teachers.

Trinity Presbyterian Church, Bootle, near Liverpool, was reopened on Sunday after works of internal decoration, carried out by Mr. George Parr, of Stanley-road, Bootle.

A fire-brigade demonstration took place at Newcastle-under-Lyme on Friday in honour of the opening of the new fire-station provided for the Newcastle brigade by the corporation. The station is the old School of Art in King-street, the premises having been renovated and adapted to their new purpose. The cost of the conversion has been about £350.

A new organ, built by Messrs. Nicholson and Lord, of Walsall, was dedicated on Friday at St. John's Church, Horninglow. It has cost about £700.

The Boston Harbour Commissioners have resolved to expend £5,000 in dredging the river to a level bottom, from the dock downwards, 2ft. below the dock sill, so as to allow vessels of larger draught to enter the dock without being lightened in the Deeps.

On behalf of the Local Government Board, Mr. Rienzi Walton held an inquiry on Thursday in last week at Hesketh Bank into the application of the Ormskirk Rural District Council to borrow £8,550 for works of water-supply for Tarleton and Hesketh-with-Becconsall. Mr. J. A. Broady, the engineer, said the scheme was to extend the Preston Corporation supply already about to be carried to Hoole. The original extension scheme was costing £9,800 for 17 miles, and this supplementary extension would cost £8,500 for 21 miles. Mr. J. J. Myres, C.E., Preston, endorsed the scheme.

Legal.

RESTRAINTS ON ALTERATIONS.

SOME landlords seem to think they can do as they like in regard to premises they own, although these are let to tenants under continuous leases or agreements. There is, indeed, a very common idea that a landlord may exercise all sorts of arbitrary powers which no one else would think of assuming, such, for instance, as raising the rent upon a tenant without first determining the tenancy. But even tenants have legal rights, and this was well shown in a recent and rather curious case relating to Oxford Mansions, Oxford-street (*Times*, 14th Dec.), and noted in our issue for last week, Dec. 20th. The plaintiff was a Mrs. Hudson, tenant of a second-floor flat in these mansions, which had been built and used hitherto as residential flats, and her action was for an injunction to restrain the defendant, the landlord, from going on with certain alterations of the premises undertaken by him with a view to providing accommodation for a new club. The block of buildings are in much the usual form, being quadrangular, with a court in the centre, and having one common entrance and staircase for the use of all the tenants. The plaintiff held under an agreement for one year from March last, determinable by the tenant at one month's notice after this first year, and by the landlord on the same notice after three years. Until recently the whole premises had been used as flats; now the landlord was about changing them into a club with bedrooms upstairs.

Mr. Justice North considered that the plaintiff's agreement showed that the building had been for years used and occupied as residential flats; and it was intended that they should be so continued. If the defendant persevered with these projected alterations, the whole character of the place would be changed, and the plaintiff, instead of having her flat isolated in the usual way, as she had agreed for, would have her rooms in the middle of a fashionable club. In an earlier case, the Court of Appeal had laid down as a practical principle that a lessor could be restrained from letting houses in a block of buildings in such a way as to be inconsistent with the restrictions imposed upon the lessees generally. Applying this to the present case, the judge granted an injunction to prevent these premises from being used in any other way than as residential flats, so the landlord must first arrange with his tenants before he proceeds.

Fred. Wetherfield, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

Mr. E. Onslow Ford, R.A., has been commissioned to execute the memorial statue to Professor Huxley, which is to be erected in the Natural History Museum, South Kensington. It will be the third statue placed in the great hall of that institution, the two already there being those of Darwin and Sir Richard Owen. The memorial fund has now reached a total of £1,550.

In the case of Frederick Jackson, of Hampshire Lodge, Church Hill-road, Walthamstow, builder, the discharge from bankruptcy has been suspended for three years, ending Nov. 14, 1898. In that of Arthur Lindfield, of Kelmscott-road, Wandsworth, S.W., builder, the discharge has been suspended for four years, ending Nov. 25, 1899.

The footbridge erected by the London County Council to connect Gospel Oak and that district with Parliament Hill-fields, Highgate, was opened on Saturday afternoon. The Hampstead Junction Railway divides the district from the recreation grounds, and for a mile—that is, between Gospel Oak and Hampstead Heath railway stations—no means were provided for the public to cross the line. The footbridge crosses the railway at a point where a former footpath passed through the fields. The bridge is of steel, with piers of blue Staffordshire brick, and is 20ft. wide. It has cost £2,400. The land for the approach on the Gospel Oak side near Roderick-road was purchased and the road made by the St. Pancras vestry, at a cost of about £1,300.

Herr Dörpfeld, president of the German Archæological Institute at Athens, has resumed the work of excavation at the south-west of the Acropolis, and has discovered two statuettes of Hecate and Demeter in brass. The German Government has furnished the Institute with sufficient funds to prosecute the researches thoroughly.

LEGAL INTELLIGENCE.

The Failure of Grimsby Builders.—A special sitting of the Grimsby Bankruptcy Court has been held for the public examination of Messrs. Guy and Gooseman, builders, Willowgate, Grimsby. The liabilities were £4,982 11s. 9d., and the assets £1,750 2s. 6d., showing a deficiency of £3,232 9s. 3d. The debtors were each examined as to the partnership, contracts, debts, &c., and particularly with reference to a deed of assignment respecting some property in Blundell-street, Cleethorpes, and a brickyard. The examination was adjourned.

A Sheffield Street Improvement Arbitration.—An important arbitration was opened at Sheffield on Wednesday week, in which Mr. John Walsh claims £66,000 from the corporation in respect of his interest in premises on the south side of High-street, and the disturbance of business arising from the acquisition of the property by the corporation. The umpire is Mr. Daniel Watney, of London, president of the Surveyors' Institute, with Mr. Frederick Fowler, as arbitrator for the claimant, and Mr. Thomas Fenwick as arbitrator for the corporation. Mr. Walsh commenced business in 1875 with a capital of £1,200. His turnover for the first year was £5,500, last year it was £129,000, and his profits had increased in proportion. Two-thirds of his business was carried on at the premises the corporation require, and he claims for freehold and leasehold interests, compensation for disturbance, and so forth.

Leeds.—An arbitration is being held at the Leeds Town Hall for the purpose of assessing the purchase money and compensation to be paid by the corporation to the trustees of the late John Cunningham, the owners of premises in North-street, extending from Melbourne-street to St. Thomas-row, which are required for the widening of North-street. The inquiry was held before Mr. Richard Horsfall, of Halifax, sitting as the umpire appointed by the arbitrators—Mr. C. F. Wilkinson, architect and surveyor, for the claimants, and Mr. J. M. Fawcett, land agent and surveyor, for the corporation. The net building area is 342½ square yards. Mr. Robert Wood, contractor and surveyor, valued the property at £5,802 10s.; Mr. James B. Waite, estate agent, Leeds, as £5,012 14s.; and Mr. Charles Fowler gave his valuation as £5,544. Mr. John Hepper, auctioneer and valuer, gave evidence on behalf of the claimants, and valued the property at £4,943 8s. For the corporation, Mr. Thomas Ambler, architect, valued it at £3,639 1s. 6d., Mr. W. D. Hollis, auctioneer, at £3,494 12s., and Mr. Charles Myers, builder, at £3,629 3s. 6d.

Re Alexander M'Clymont.—A sitting for public examination was held on Friday. The Bankrupt was described of Cathcart-road, South Kensington, builder, but he states that he has had no regular occupation since 1878, when he and a partner, who were trading as builders, failed, with liabilities amounting to about £150,000. He now returned his liabilities at £4,558, of which £3,257 is unsecured, and assets £28 14s. He had engaged in betting transactions, and thought they had resulted in a small profit, perhaps of about £50.—The examination was adjourned for a month.

Alleged Forgery and Perjury by Highway Surveyors.—A case of considerable interest was brought under the notice of the West Riding Bench at Wakefield on Friday, and after having been formally opened, was adjourned until Friday, January 10. The defendants were Elijah Farrar, recently of Lofthouse, but now of Leeds, and Charles Holden, colliery check-weighman, of Bragg-lane End, and they had been summoned on charges of having committed perjury and forgery. The two defendants, from Easter, 1894, to Easter, 1895, were the surveyors of the highways of Wrenthorpe, and in due course they presented their accounts to Mr. Rich, the district auditor. The auditor, however, detected that the defendants, or one of them, had obtained duplicate vouchers in three cases, and these they attempted to make use of a second time. The auditor surcharged the defendants with the amounts in question, and these sums were paid by the defendants, who now appeared surprised to find that criminal proceedings were taken against them. One of the duplicate vouchers was for £33 6s. 10d., paid to Messrs. Tennant and Nightingale, of Thornton-in-Craven, for road material. Another was for £3 16s. 10d. paid to Mr. Thomas Armitage, brick manufacturer, Lofthouse Gate, for material supplied and team labour. It was alleged that vouchers were tampered with and figures altered. The defendants were admitted to bail.

Architect and Alleged Man-of-Straw Building Owner.—At Bow-street Police-court on Friday Kent Pinchbeck, an architect, living at St. John's, Woking, and having offices in York-buildings, Adelphi, and Alexander Martin, architect's assistant, of St. George's-road, Leyton, were charged on remand with fraud. At the previous hearing it was alleged that Pinchbeck obtained a piece of land at Northwood, Middlesex, and induced builders to erect villas upon it, saying that Mr. Miles Atkinson, of Blackheath, whom he represented to be a very wealthy man, would be responsible for the money. The builders were paid certain sums, but were unable to obtain the balance, which in the case of Messrs. Wilkinson and Co. amounted to £445. It was further alleged that Pinchbeck sold the ground-rents for £1,530, and that the prisoner's wife (to whom the buildings had been transferred) mortgaged her interest in them for upwards of £2,000. The builders could obtain no information as to Mr. Miles Atkinson, the supposed capitalist, except that he lived at Blackheath. At the hearing on Friday Mr. Crawshaw cross-examined Mr. George Wilkinson, one of the prosecuting builders, who said he understood that Martin was Pinchbeck's manager. A shorthand writer produced a transcript of his notes of the trial "Kellett *v.* Pinchbeck," in the High Court, before Mr. Justice Mathew, attention being called to the fact that Pinchbeck stated at the trial that Miles Atkinson lived at No. 5, Wemyss-road, Blackheath. Miss Stapelton stated that she had lived at 5, Wemyss-road, Blackheath, for eleven years, and did not know anyone named Miles Atkinson. Jabez Holloway, clerk to Messrs. Welman and Sons, solicitors, Southampton-street, Bloomsbury, produced conveyances of land in which the name of the prisoner Pinchbeck appeared as vendor. Godfrey H. Boyd, solicitor, produced leases relating to these same plots. Pinchbeck's letter-book, produced, contained the following letter, addressed to the Singer Company by the defendant, referring to Miles Atkinson:—"Gentlemen,—I am in receipt of your inquiry as to Miles Atkinson. I have known him from a very tender youth, and I consider him honest, sober, trustworthy, willing to oblige, and one who will do his best for his employer's interests. P.S.—You might have had the courtesy to put your communication in a plain envelope. Gentlemen do not receive business letters at their clubs." In the index of Pinchbeck's ledger were the names of many clients, but that of Miles Atkinson did not appear there. In a pocketbook handed to him by the office attendant, he had found, however, the following entry in Pinchbeck's handwriting:—"Miles Atkinson, 49, Packington-street, Essex-road, Islington." No one of that name was known there. Prisoners were again remanded.

Compensation Case at Streatham.—Sir P. H. Edlin, Q.C., was occupied on two days in last week in hearing a compensation case arising out of the widening of Streatham High-road, rendered necessary by the construction of the new cable tramway. It was proposed to pull down the front garden wall of a house called Brynbella, occupied by a Mrs. Goldsmith, and move it back 4ft. or 5ft. On the strip of land thus appropriated, which was 125ft. long, were growing six tall elm trees, which screened the house from the road, and which were said to form one of the chief attractions of the house, and these, it was thought, would have to be removed. The present claim for compensation was made by Messrs Hill and Smith, Mrs. Goldsmith's lessors, who themselves held the house on a lease from the freeholders, which had 48 years yet to run. Several expert witnesses were called on their behalf, who said the value of their interest in the premises would be depreciated by about £800. The witnesses on the other side were of opinion that the new garden wall could be so built that the trees could be included in it, and that it would be necessary to remove only one of them. They estimated the compensation to which the claimants were entitled at £20. The jury assessed the compensation at £453. Sir P. H. Edlin remarked that it was to be hoped that the verdict would enable the parties to two other cases arising out of the same matter, one of whom was Mrs. Goldsmith, to come to an agreement.

Estate Agents' Commission.—Clutton v. Clarke.—Mr. Justice Wills recently heard an action brought by Messrs. Clutton and Sons, surveyors and estate agents, Whitehall-place, to recover under a contract the sum of 800 guineas for work done in making a valuation of certain leasehold property of a special character, or, in the alternative, to recover on a *quantum meruit.* In 1892, the defendant, Mr. Thomas Clarke, the owner of the Chancery-lane Safe Deposit, was anxious to form a company to take over that property. He instructed the plaintiffs to make a valuation of the property, and he agreed to pay them 100 guineas for a preliminary report in any event, 500 guineas for the report if it was made use of for the purposes of promoting a company, in the event of the company being formed, and three-fourths of the capital was subscribed for, and 800 guineas if the whole of the capital of the company was taken up. A considerable time elapsed before the valuation was actually made, because Mr. Clarke was carrying out alterations and improvements in the basement. In March, 1894, instructions were given to prepare the valuation, and in it the plaintiffs stated that the rents of the block of buildings amounted to £22,200 per annum, as against £15,230 at Christmas, 1887, when at the request of the defendant they had made a valuation of the buildings then occupying the site, and for which valuation they were duly paid. In the present valuation the plaintiffs estimated that the buildings, excluding the Safe Deposit, would yield a gross rental of £26,000, that the safes and strong rooms would produce about £30,000 a year, and that the value of the leasehold interest as between vendor and purchaser was £387,000. Eventually an offer of £280,000 for the whole concern was accepted, and the property was sold to the syndicate. The plaintiffs sought to enforce their claim for 800 guineas, alleging that the contingency upon which that payment was to become due to them had happened. Mr. Clarke denied this, and said that the 100 guineas he had paid into Court was all that they were entitled to under the contract. For the plaintiffs it was contended that the full sum of 800 guineas was due, and that it was less than the fee ordinarily charged for work of this kind, so that the defendant could not plead he had made a bad bargain. Mr. Ralph Clutton, one of the plaintiffs, was called, and said that his firm had made the valuation in question. He considered it to be a fair valuation, considering the figures supplied him by the defendant. The Surveyors' Institution had a scale of charges for such work. His fees under that scale would have amounted to upwards of 997 guineas. Mr. Samuel Garrett, of the firm of Parker, Garrett, and Parker, gave evidence to the effect that the property was sold to the syndicate for £280,000, and that the defendant agreed to supply that company with a copy of Messrs. Clutton and Sons' valuation, and to produce the original when required. Mr. Mills, solicitor, practising at Stroud, stated that he was one of the directors of the company which acquired the defendant's property. The property was purchased for £280,000, the substantial part of which was raised on mortgage. The nominal capital of the company was £100,000, but only £70,000 had been subscribed. Sir E. Clarke, for the defendants, submitted that three-fourths of the capital had not been raised, and consequently that the plaintiffs were entitled to only 100 guineas, which sum had been paid into court by his client. Mr. Justice Wills, after hearing arguments on the construction of the contract, held that the plaintiffs were entitled to receive only 100 guineas. The question was decided by the express terms of the contract. Three-fourths of the capital of the company had not been subscribed, and therefore only that sum was due to the plaintiffs. The question of *quantum meruit* did not come in, therefore, at all. As the defendant had paid 100 guineas into court in satisfaction of the claim, he would be entitled to judgment.

Alleged Breach of Covenant. — Smith v. Meeks.—The site of the old Baptist College at Stepney was, about forty years ago, let on building leases for the erection of dwelling-houses. One of the buildings in King John-street had for thirty years been utilised as a beerhouse, and the trustees of the college, which is now situate at Regent's Park, sought, by an action which was before the Queen's Bench Division last week, to recover possession of the house on the ground of a breach of covenant. For the defence it was argued that the premises were constructed under the supervision and with the approbation of the plaintiff's architect and surveyor, and that the plaintiffs were bound by their agent's acts. Plaintiffs rejoined that they had no knowledge that the house was being used for the sale of beer until a short time prior to the commencement of the action, and that their architect and surveyor had no authority to waive any covenant of the lease. Mr. Justice Wright said he was satisfied that the agents of the trustees had assented to the premises being originally built as a shop and not as a dwelling house, and he gave judgment for the defendant, with costs, but execution was stayed pending an appeal.

* * *

Lord Rowton's Model Lodging-House for Men in the King's Cross-road, London, which has recently been completed at a cost of nearly £40,000, will be opened during the first week of January. The building affords sleeping accommodation for 800 men.

The Mercers' Company, as administrators of Dean Colet's bequest, have just purchased for £10,500, a freehold site at West Kensington, for the erection of a girls' school, which is to be founded in accordance with the scheme settled a few years ago. The property comprises nearly three acres of ground, and includes the Grange, Brook-green, an adjacent house and grounds known as "The Convent of our Lady of Zion," and other smaller premises.

On Saturday a new drill-hall, which has just been erected in Market-road, Carluke, N.B., by D Company 9th Lanark R.V., was opened. The building occupies a site nearly opposite Market-place Public School, and has all the appearance of a military fort, which is made further realistic by the presence of a cannon occupying a position on the ground almost in front of the main door. Besides a drill-hall there is a gymnasium, sergeant-instructor's house, armoury, and reading-room. Mr. David Andrew is the architect.

WATER SUPPLY AND SANITARY MATTERS.

Bath.—The question of the river purification and sewage disposal was again discussed at the last meeting of the city council, the bill of Mr. Radford, C.E., of £1,228 for preparation of plans, which was referred back to the committee for further consideration as to the terms of the agreement with Mr. Radford, being again recommended for payment. The bill was at length passed. The council were generally of opinion that there was no alternative but to pay the bill, though a member remarked that it came to him, as it did to others, as a great surprise to hear that an expense had been incurred in the matter of something like £1,700.

Experiments in Sewage Purification.—At a recent meeting of the Sanitary Institute, held at the Parkes Museum, Margaret-street, W., Sir Benjamin Baker in the chair, Sir Douglas Galton read a paper on the "Lessons to be Learned from the Experimental Investigations by the State Board of Health of Massachusetts upon the Purification of Sewage." After dealing with the varions systems of sewage filtration, he described the systems devised for the aëration of the filters, dealing more particularly with experiments made by Colonel Waring at Newport, New York. He summed up the conclusions to which the various experiments lead as follows:—(1) The suspended matters of sewers (sludge) can be mechanically withheld by straining slowly through suitable material. (2) The filth accumulated by this straining material can be destroyed, and the straining medium restored to a clean condition by mere aëration. (3) The successive alternate operations of fouling and cleansing can be carried on indefinitely without renewal of the straining material. (4) The purification obtained by this straining process practically equals that accomplished by chemical precipitation, and is sufficient to admit of discharge into any considerable body of water not used as a source of domestic supply or for manufacturing purposes requiring great purity. (5) Such filters can be maintained in constant and efficient operation by suitable aëration. (6) The erection of a plant capable of purifying large volumes of sewage upon a relatively small area calls for no costly construction. Repairs and renewals are merely nominal. The attendance required is but slight. There is no outlay for chemicals, &c. The only expense of mechanical operation is the driving of the blower or air-compressor. (7) The process admits of wide variation in the selection of filtering material, and nearly every community can find in its local resources something suitable for the purpose.

Southend-on-Sea.—The inquiry instituted by the Local Government Board into the proposed new regulations for the Southend Water Company was resumed last week before Col. Coke, A.M.Inst.C.E., J.P., D.L., one of the Inspectors, at the Institute, Clarence-road, Southend. At the close of the proceedings a compromise was agreed to on behalf of the corporation and the water company. The flush from a cistern was increased from two gallons to two gallons and a half, and the siphon flush was allowed, provided that it should not discharge more than two and a half gallons at each flush. With regard to stop-cocks and draw-cocks, it was agreed to approve of "not less than three patterns, not more than one of which three should be the subject of a patent." The amended regulations having been signed by counsel for the company and for the corporation, the inquiry was concluded.

CHIPS.

Two stained-glass windows have been placed in the parish church of Portobello, N.B. The one represents the scene of Moses' descent from the Mount with the Tables of the Law; the other depicts Paul preaching at Athens.

Mr. Hubert Herkomer, R.A., has been elected vice-president of the Royal Society of Painters in Water-Colours, and Mr. S. J. Hodson has been elected secretary, vice Mr. Ridge, who takes the post of curator.

The Southport Spring Exhibition of Pictures will open on the 2nd of March. The receiving days are January 16 to 21, both inclusive.

The plans of Messrs. Paley and Austin, of Lancashire, for the proposed higher grade school for Keswick, have been approved by the governors of the Crosthwaite high school.

Herr Sommer, the chief engineer of the Municipal Electrical Works at Frankfort, has been killed by a discharge of the electric fluid of the strength of about three thousand volts.

The Free Land League, the presidency of which was accepted by Mr. F. A. Channing, M.P., when Sir Arthur Arnold became chairman of the London County Council, is taking a new departure, and will henceforth be known as the Land Law Reform Association. Negotiations have been completed for the amalgamation of the Leaseholds Enfranchisement Association with it.

Our Office Table.

Two sites of historical interest in Westminster Hall will in future be easily found by sightseers, the First Commissioner of Works having had commemorative tablets erected as guides. One of the tablets in question is affixed to the east side wall, near the south-east angle of the Hall, and the other is let into the floor in the centre of the building, not far from the doorway in the eastern wall which leads to the House of Commons. The former indicates the site of an ancient doorway, which, from 1547 to 1680 was the principal access to the House of Commons, which then sat in the Chapel of St. Stephen, and, to quote from the inscription: "King Charles I. passed through this archway when, on January 4, 1641-42, he attempted to arrest in the House of Commons the five Members of Parliament." The second tablet bears an inscription stating that "it marks, with as much accuracy as can be attained, the place where Thomas Wentworth, Earl of Strafford, stood in this Hall during during the Impeachment for High Treason brought against him upon the accusation of the House of Commons before the House of Lords: 22nd March—29th April, A.D. 1640-1." For the site of this tablet direct evidence is not obtainable. The tablets, which were placed in position on Friday, have been located under the direction of Mr. J. T. Jones, the clerk of the works for the Houses of Parliament.

It is announced that for the present term of the Liverpool School of Architecture and Applied Arts, the number of students has doubled that of last term, the principal increase being in the decorative painting, architectural, and wood-carving classes. There are now 139 individual students in the school, making a total of 181 class entries. These are divided as follows:—Architectural, 37; sculpture and modelling, 46; decorative painting, 70; wood-carving, 21; wrought-iron work, 7. The students include architects, carvers in wood and stone, plasterers, furniture designers, joiners and carpenters, stained-glass draughtsmen, lithographers, smiths, &c.

The quarterly meeting of the council of the Auctioneers' Institute was held at the offices, 57 and 58, Chancery-lane, on Friday, the president, Mr. Frank Everill (Worcester) occupying the chair. Mr. John Hopper (Hopper and Sons), of Leeds, and Mr. Arthur Thompson (Thompson, Rippon, and Co.), of Exeter, were unanimously elected members of the council. A letter was read from a member of the institute offering a prize of £5 5s. for the best paper to be read upon some subject of interest to the profession, the competitors to be students of the institute, or pupils or clerks of Fellows. Two members of the council offered to give second and third prizes of £3 3s. and £2 2s. respectively. The offers were accepted with thanks. The election committee reported that the 34 applications for membership received since the last meeting had been separately considered. On the committee's recommendation 25 applicants were elected.

An additional outfall-sewer 9ft. diameter has been decided to be constructed between Old Ford and Barking; also the necessary bridges to carry another similar sewer, at an estimated cost of £450,000; an intercepting sewer from Paddington to Old Ford, at a cost of £245,000. These proposed sewers are for the relief of the main system, necessary owing to the increased population of these districts, which has exceeded the prospective population provided by Sir Joseph Bazalgette. The new sewers are required also to take the sewage of districts like Hornsey and Tottenham, and it is contemplated that West Ham, with its large population, will be brought into the main system. These additions to the sewerage system of the north of the Thames are being rendered absolutely necessary by the growth of this part of London, and the overcharging of the existing sewers.

A joint conference between the executive committee of the Association for the Promotion of Art and Music in the City of Glasgow, and the Corporation Galleries and Parks Committee has been held in the Municipal Buildings, at Glasgow, to consider the future of the New Art Galleries which are being erected in Kelvingrove Park. The proposal to erect these Galleries was carried in the town council in January, 1891, and the foundation of the buildings was completed several nths ago. Sir James King, on behalf of the ternational Exhibition Association, stated that surplus of the association amounted to £46,000, d that the association had undertaken to raise other £46,000 to carry out its objects—viz., the ection of the Galleries, a Museum, and, if found acticable, a School of Painting and Design. to the present the income of the association m all sources amounted to £127,901, and ucting a sum of £27,711 which had been ended on the foundation of the Galleries, re was left a balance of £108,190. Under the ginal agreement the town council resolved to ant a site on the association raising a sum of 6,000 in addition to the surplus. The associa- n, having fulfilled more than its part of the reement, was anxious that operations should be sumed at the Galleries. They were, Sir James id, in possession of tenders for erection and com- etion at £171,110 if equipped in the best style th without and within, and if completed in a ainer manner at £127,184, but not having a fficiency, had arranged this conference. There ere two alternatives left the corporation now: at they should decide whether they would accept e higher or the lower of the estimates quoted, d then decide whether they would advance the lance required to the Association to complete e building, or themselves take over the whole dertaking at the present stage, and complete it the name of the corporation. The members the Galleries Committee present promised to ve the statement made by Sir James on behalf the association their careful consideration.

FROM time to time various projects for the rmation of a pleasure resort at New Brighton, the site of the late Captain Molyneux's state, Rock Point, have been put forward, and scheme is now assuming a definite shape. The state is situated about 500 yards to the south of ew Brighton Pier, and is bounded on the east ide by the river Mersey. The promenade, which to be extended from the Magazines, Egremont, New Brighton, will give access to the grounds, nd the principal entrance will be from the new romenade, while an upper entrance will be pro- ided in Rowson-street. A syndicate, with a apital of over a quarter of a million, has been ormed for the purpose of acquiring the estate nd converting it into an extensive garden and leasure-ground. The principal feature is to be n Eiffel tower, such as has been erected at lackpool.

MR. W. R. GALBRAITH, the consulting engi- eer to the London and South-Western Railway ompany, presided on Friday at the award of ertificates won during the winter session of 1895 y students at the Crystal Palace School of Prac- ical Engineering. The number of students who have attended the lectures was 30; of these 27 were eligible for examination, and 18 passed. The examiners awarded a bronze medal to Mr. C. W. Wales, who had obtained during his course the necessary nine certificates, none of which was below third in the order of merit. Mr. Galbraith said many of the students before him were about to leave the school to enter upon the practical duties of their profession. They would enter the battle of life, he hoped, without misgiving, but still recognising that success would not be attained without effort. Forty-nine years ago, when he was young, railway engineering presented the best opening for a young man. Subsequently there came a period of gloom; but now the country was so covered with railways, that it was difficult to see where more could be made. Yet there were proposed a trunk line from South Wales to London, lines in the remote Highlands of Scotlands, and light railways for the relief of agricultural depression. Unfortunately, the number of students seeking to enter the profession was ever increasing. In 1847 the membership of the Institute of Civil Engineers was 600; in the present year it was 5,945, apart from the students' class of 787. He said this, not to discourage, but to stimulate them, for this would be assuredly an age of a survival of the fittest. Mr. J. W. Wilson, principal of the school, also addressed the students.

UNDER the auspices of the district council for Edinburgh and the East of Scotland of the National Registration of Plumbers, and in conjunction with the classes for plumbers in the Heriot-Watt College, Edinburgh, a lecture, illustrated by the exhibition of a new oil-blast lamp, was given on Dec. 19th by Mr. James Macdonald, R.P., on "Blowpipe Work." Principal F. Grant Ogilvie occupied the chair. Mr. Macdonald explained that the object he had in view in devising and constructing that lamp was to get a handy reliable tool which could be used for the various kinds of soldering and jointing in plumber-work, so as to overcome the difficulties entailed by the use of the chauffer, solder-pot, and irons, &c., all of which necessitated the use of coal. By means of that lamp he was now able to dispense with coal, chauffer, solder-pot, and irons. At this stage an exhibition of the practical use of the lamp was given by a number of workmen under the supervision of the lecturer. The lamps were lit and applied to the soldering of pipes, the whole work being done quickly. Proceeding, the lecturer said that plumber work had been entirely revolutionised within the last few years. Old methods and old forms of appliances were continually changing, and he was not aware that they had yet attained at perfection. His lamp was a little contribution on his part to simplify and cheapen the execution of plumber-work. He claimed that the lamp was a distinct labour-saving appliance, and the various processes of soldering could be executed with that appliance more economically than by some of the existing methods.

THE immense City Hall, which has been in course of erection for one-and-twenty years at Philadelphia, is at length practically completed. The building, the largest in the United States, covers four and a-half acres, without including the internal open courtyard, which is 200ft. square. It is erected of white marble, and is surrounded by a grand avenue, 135ft. wide on the eastern, western, and southern fronts, and 205ft. wide on the northern front. The dimensions are 470ft. from east to west, 486ft. 6in. from north to south. The structure contains 750 rooms, and is asserted to be absolutely fireproof and indestructible. Its cost has been over £5,000,000 sterling. On the north front of the building rises the lofty square tower, having at its summit four clock-faces, and above this an octagonal domical stage of ironwork supporting a platform and promenade, which are in turn surmounted by a statue of William Penn, heroic in proportions, and 36ft. 6in. in height. From the sidewalk to the crown of Penn's broad-brimmed hat the height is 547ft. 3½in. The work on the City Hall at Philadelphia was begun from plans by the late John McArthur, jun., whose design was selected in competition in 1869, and was carried out by his successor as city architect, Mr. John Ord. The iron tower which crowns the stonework is a remarkable piece of engineering, and makes the new City Hall of Philadelphia the highest building in the world with the exception of the Eiffel Tower (986ft.) and the Washington Monument (550ft.) An interesting feature of the ironwork of the tower is that it has been plated with aluminium, so that it will be protected from rust. We illustrated the Philadelphia City Hall by a perspective from the north-east, and plans of the princpal floors, in our issue of June 6, 1890.

GERICKE, the well-known German authority on forestry, states that the greatest ages to which trees in Germany are positively known to have lived are from 500 to 570 years. The pine, both in Bohemia and Norway and Sweden, has been known to endure to the latter age. Next comes the silver fir, which in the Bohemian forests has stood and thrived for upwards of 400 years. In Bavaria the larch has reached the age of 275 years. Of foliage trees, the oak appears to have survived the longest. The best example is the evergreen oak at Aschoffenburg, which reached the age of 410 years. Other oaks in Germany have lived to be from 315 to 320 years old. At Aschoffenburg the red beech has lived to the age of 245 years, and at other points to the age of 225 years. Of other trees, the highest known are ash, 170 years; birch, 160 to 200 years; aspen, 220 years; mountain maple, 225 years; elm, 130 years; and red alder, 145 years.

THE twenty-seventh annual and successive gathering of old broken-down citizens of Exeter, their wives, or widows, took place at the Luckie Horseshoe Studios in that city on Christmas Day. Seventy invited old people sat down to dinner, and did good justice to the joints, geese, plum-puddings, &c., that were successively placed before them. The Rev. S. W. E. Bird, M.A., rector of the parish (St. Sidwell), and honorary chaplain of the Luckie Horseshoe, as in years heretofore, acted as chief butler. Mr. Harry Hems himself, churchwarden of St. Sidwell's, occupied the chair, and Mr. Greville C. Hems the vice-chair. During the afternoon the chairman was supported by the Lord Bishop of Exeter (the Rev. E. H. Bickersteth, D.D.) and party from the Palace; the Right Worshipful the Mayor of Exeter (Alderman Pople), the Mayoress; the town clerk (Mr. G. R. Shorto), the under-sheriff (Mr. Councillor Gidley), and other representative people. Yesterday (Thursday) the girls of St. Martha's Orphanage (St. Sidwell's), and other children, to a like number—seventy—met at the Studios, and enjoyed tea; afterwards the youngsters had games, magic-lantern, dancing, &c.

IT is proposed to give a trial to the overhead electric system of tramway traction on the Nechells tramway route in Birmingham. There will be but a single line of wire. The present street lamp-pillars will be used for supports, and everything is to be done to reduce the objections which in some quarters have been urged against the system on the ground of unsightliness.

IN connection with the Glasgow Corporation series of Art lectures, Dr. Joseph Anderson, of the Antiquarian Museum, Edinburgh, gave a lecture on "Celtic Ornament," in the Corporation Galleries, Sauchiehall-street, Glasgow, on Saturday night. Dr. Anderson began with Celtic art in the Pagan time, and gave illustrations of its curvilinear system, after which he showed its development from the Pagan to the Christian period by the change from the geometrical to the symmetrical. The restricted scope of Pagan art, he said, was succeeded in Christian times by an almost unrestricted art, as Christianity brought in a number of new objects and aims. No people ever elaborated upon ornamentation as the Celts did. They could count on stone or other monuments, manuscripts, and other things three hundred varieties of pattern elaborated from the spiral and interlaced work. No nation had ever used fretwork as the Celts did. The merit of the Celtic ornamentation was that in other manuscripts where ornament was inserted it was done to illustrate the subject, while the Celt had only his letters to deal with, and never attempted to illustrate the subject. He could not do it. His art had limitations. The Celt put an individuality into everything he did. After giving religious illustrations, in the form of manuscripts, croziers, and bells, secular specimens of work were next shown in the form of sword scabbards, flintlock handles, and brooches—Irish and Scottish. Sculpture work was also illustrated. In copying Celtic jewelry, modern jewellers, he said, failed because they did not work out the Celtic principle: they only imitated the form. The Celtic style of ornament that he had shown them was a style that had lasted for 2,000 years. It began two centuries before the Romans came to these islands. It lived through all the changes of the Pagan time, through all the changes of the Christian time, and through all the changes of the Reformation. It lived till the other day. The Four Georges killed it out. Yet here was an organic production that grew in our own islands 2,000 years ago; that had lived all that time; that was only killed out by the extinction of the national feeling of the people. How could they revive it? They could not; but there were elements in it which they could make use of. They were their racial inheritance; and if there was anyone present who had a genius for decoration, if he chose, the whole field was open to him.

A METHOD of rendering water potable is said to have been devised by M. Allain, of Marseilles, who uses iodine in the proportion of one part in 100,000 to destroy bacilli, and then, after an interval of about twenty minutes, the free iodine is neutralised with sodium hyposulphite, and the water is filtered through animal charcoal or in the ordinary way. If the water is not very impure, this filtering is not necessary. It is stated that the water treated with iodine in this manner is colourless, odourless, and tasteless.

* * *

New buildings are about to be erected at Truro for the high school for girls, on a site on the Falmouth-road. Mr. E. R. Robson, F.S.A., of Westminster, is the architect, and the cost is estimated at £4,000.

At a special meeting of the Douglas Town Commissioners on Wednesday week, it was decided to increase the width of the marine promenade, now in course of construction along the crescent between the Queen's Promenade to the Iron Pier, from 70ft. to 80ft.

CHIPS.

The sudden death is announced of Mr. T. S. Weeks, C.E., waterworks engineer to the corporation of Torquay, at the age of 57 years.

The Ealing and South Harrow Railway Company, which was last year incorporated for the purpose of constructing a railway between Ealing and South Harrow, have deposited a Bill seeking powers to extend their authorised railway from Harrow-on-the-Hill to Uxbridge and Beaconsfield, the total length of the proposed extension being a little over 16 miles.

The executive committee of the Dean Payne Smith Memorial Committee have resolved that the memorial in the cathedral shall take the form of a pulpit in the nave for use on the occasion of special services there.

The Great Hall of the Church House at Westminster will be opened on February 11 by the Duke of York. Sir Arthur W. Blomfield, A.R.A., and Son, are the architects.

The reports as to the turnover in the real estate market throughout the West Riding for the year now closing are highly satisfactory, and no indication whatever appears of anything adverse to its well-being in the coming year. Throughout the urban districts of the West Riding a larger amount of property has been dealt with by auction and by private contract than in 1894, and the percentage of sales effected has been considerably increased.

The city council of Glasgow received on Friday a report from a committee stating that tenders had been opened for the erection of new tenements in Stobcross, Cheapside, and Piccadilly-streets, Anderston; but in consequence of a difference of over £1,000 between the estimated cost (£5,571) and the cumulo amount of the lowest tenders (£6,639), the committee delayed consideration of the tenders, and remitted to the city engineer to consider whether any modifications could be made upon the specifications in order to bring the actual cost of the buildings as near as possible to the estimated cost.

The Rev. Lord Victor Seymour was the preacher on Sunday at the opening of the church of St. Augustine. Archway-road, Highgate. The first portion of the building was consecrated in 1888, and the total cost up to the present has been over £10,000, of which £1,500 has still to be raised.

A new Conservative club is about to be erected at Darlaston, at a cost of £800. The plans have been prepared by Mr. Henry E. Farmer, architect, of Bank Chambers, Wednesbury and Darlaston.

A new pulpit of carved oak, and Perpendicular in style, has been placed in the parish church of St. Cleer, near Liskeard. Messrs. Harry Hems and Sons, of Exeter, executed the work.

At the suggestion of the Duchess of Abercorn, a committee has been formed in the city of Londonderry for the purpose of erecting almshouses as a memorial of the late Mrs. Alexander ("C. F. A."), the well-known hymn-writer, and late wife of the present Bishop of Derry.

Various improvements are being carried out at the Philharmonic Hall at Southampton, including the erection of a new portico. Mr. W. Burrough Hill is the architect, and Mr. Sydney Nicholls, the builder.

The city council of Aberdeen have instructed their burgh surveyor, Mr. Dyack, to prepare plans for a fire-brigade station and police workshops to be erected in King-street.

At the Liverpool Chancery Court, on Friday, Vice-Chancellor Hall gave judgment in regard to an action brought by Mr. Willis, a property owner, to prevent the Whiston District Authority pulling down a fence that he had erected to inclose a strip of land belonging to him. The local authority claimed that the land in question had been dedicated to the public, and the Vice-Chancellor, arriving at the same opinion, dismissed the plaintiff's action with costs.

A museum of antiquarian, natural history, and technical objects has been opened this week at St. Alban's. A strong committee and three honorary secretaries have been appointed, and the nucleus of a collection is on view in two rooms on the first floor of premises in the Market-place.

For the ensuing session of Parliament 199 private Bills have been deposited, as against 170 last year.

Messrs. E. H. Shorland and Brother, of Manchester, have just supplied some of their patent Manchester grates to the new Cotton Exchange, Liverpool.

A public meeting is to be held at Salisbury on January 28th to consider what steps can be taken to secure the safety of the tower and spire of the cathedral. On a report by Sir Arthur W. Blomfield, A.R.A., a sum of £4,000 has been subscribed out of £5,000 then considered necessary to strengthen the spire, but on further examination Sir Arthur believes that at least £10,000 must be expended on the urgent works.

The city council of Leeds have abandoned the proposal for the extension of the city boundaries by the inclusion of Holbeck and Hunslet.

The parish church of Little Gaddesden, Herts, after having been closed for internal and structural alterations, has been reopened. The reopening service took the form of dedication of the various memorials of the late rector, the Rev. C. G. Lane, including sanctuary floor, chancel lamps, two memorial windows at the south and west corner of the church, designed and executed by Mr. C. E. Kempe, of London. The work in connection with the new heating apparatus for the church was carried out by men of the Asbridge Estate Office, under the direction of Mr. J. Wright, the clerk of the works.

Mr. W. Lloyd Jones, architect, of Bangor, has been elected on the school board of that city.

At Eccleshill, on Friday, Colonel Luard, of the Local Government Board, held an inquiry with regard to the district council's application for sanction to borrow £2,000 for private street improvements. There was no opposition.

Three marble tablets, erected in Hawarden Church by parishioners in memory of the ten years' ministry in the parish as curate of the Rev. Harry Drew, were unveiled on Christmas Eve. The tablets are a record of the names of the rectors of Hawarden and the date of induction to the living, compiled by the late Mr. W. H. Gladstone, and revised by the Rev Dr. J. Charles Cox, F.S A, from the records of Lichfield Cathedral and those in the British Museum.

The town-hall at Ashbourn, Derbyshire, which was built 34 years ago, has just been reconstructed and improved. Mr. Sugden, of Leek, was the architect for the alterations, which have been carried out by Messrs. R. and H. Gratton.

A three-manual organ, which has just been built in St. Michael's Parish Church, North Merchiston, Edinburgh, by Messrs. Brindley and Foster, Sheffield, was inaugurated on Wednesday week.

The Ormskirk Rural District Council propose to borrow £8,350 for works of water supply for Tarleton and Hesketh-with-Becconsall—two considerable parishes between Southport and Preston.

The National Theatre in Buenos Ayres has been completely destroyed by fire.

Field-Marshal Viscount Wolseley visited Norwich on Thursday in last week for the purpose of formally opening the new Soldiers' and Sailors' Home, which has been established by public subscription in that city. The cost of converting and furnishing the home, which was previously used for manufacturing purposes, has been about £1,700.

The foundation stone of a new Wesleyan chapel was laid last week at Golant, near Fowey. Mr. F. Jury, of St. Austell, is the architect, and Mr. J. Rundell, of Tywardreath, is the contractor. The chapel is to seat 120 people.

A first meeting of the creditors of Mr. James Price, builder, of Ilfracombe, was held on Dec. 19. The Official Receiver (Mr. G. Phillpott) presided. The gross liabilities are put down at £6,905 6s. 10d., of which £1,022 is expected to rank for dividend. A committee was appointed.

A new co-operative store is about to be built at Skelmanthorpe, at a cost of £1,000, from designs by Mr. J. Berry, architect, of Huddersfield, by whom plans are also now being prepared for a Primitive Methodist chapel at Kirkburton.

A new tower and spire have just been added to Clive parish church, Salop, at the sole cost of Mr. J. J. Bibby, as a memorial to his late wife. The style adopted is Decorated, and the works are carried out in stone.

The Department of Science and Art has received through the Foreign office a despatch from the German Ambassador at this Court, calling attention to an International Art Exhibition proposed to be held at Dresden in May—October, 1897, to consist of collections of works from different countries, and to comprise works of painting, sculpture, and architecture, and of the delineating and multiplying arts, which have been produced during the last ten years.

The Baptists of Golcar have decided to build a new Sunday-school on the central-hall plan, to provide accommodation for 600 scholars. Mr. Berry, of Huddersfield, is the architect.

FAMBRINI & DANIELS,
Manufacturers of IMPERISHABLE CONCRETE MASONRY for
CORNICES, STRING-COURSES, MODELLED PANELS, AND EVERY STONE-WORK REQUISITE.
LANDINGS and **Plain** or **Moulded** and **Mitred STEPS**, durable throughout.
WORKS AND OFFICES: LINCOLN.

HAM HILL STONE.
The attention of Architects is specially invited to the Durabili and beautiful Colour of this material.
Quarries Well Opened; Quick Despatch Guaranteed; Stonewor Delivered and Fixed Complete. Samples and Estimates Free.
Address:—
THE HAM HILL STONE COMPANY,
NORTON, STOKE-UNDER-HAM, SOMERSET.
London Agent:—
Mr. E. A. WILLIAMS, 16, Craven-street, Strand, W.C.

DOULTING STONE.
CHARLES TRASK & SONS,
(THE DOULTING STONE COMPANY),
DOULTING, SHEPTON MALLET.
London Agent:
E. A. WILLIAMS, 16, Craven Street, Strand, W.C.

JOHN GRUNDY,
HEATING APPARATUS MANUFACTURER.
ESTIMATES FREE. SUCCESS GUARANTEED.
Foundry: TYLDESLEY, MANCHESTER.
Showrooms and Workrooms:
TYLDESLEY BUILDINGS, TORRENS STREET, ISLINGTON, N.
West End Showrooms: 57, WIGMORE STREET, LONDON, W.
Chief Office:
30 Duncan Terrace, City Road, London, N.

WM. OLIVER & SONS,
MAHOGANY, WAINSCOT, WALNUT, TEAK, VENEER, and FANCYWOOD MERCHANTS,
120, BUNHILL ROW, LONDON, E.C.
The most extensive Stock of every kind of Wood in Planks and Boards, dry and fit for immediate use.

TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender; it adds to the value of the information.

Bethnal Green.—For fixing sliding partitions at the Wolverley-street School, Bethnal Green, for the London School Board:—

Munday, G., and Sons	£376	0	0
Gibbs, D, and Co.	369	0	0
Staines and Son	297	0	0
Martin, W.	290	0	0
White, T., and Son, Fairfield-road, Bow (accepted)	266	0	0

Battersea, S.W.—For improving the efficiency of the existing low-pressure hot-water apparatus at the Latchmere School, Battersea Park-road, for the London School Board:—

May, J. and F....	£161	0	0
Davis, G.	159	0	0
Ellis, J. C. and J. S., Limited ...	152	10	0
Wontner-Smith, Gray and Co. ...	151	10	0
Purcell and Nobbs	143	0	0
Clarke, J. F., and Sons	140	0	0
Fraser, J., and Son	116	0	0
Duffield and Co., Slough (accepted)	112	0	0

Bristol.—For the formation of road and sewers, Barton Hill, Bristol, for Mr. D. Johnstone. Mr. W. Cloutman, Corn-street, Bristol, surveyor. Quantities supplied:—

Wilkins	£419	0	0
Durnford	385	0	0
Mangotsfield Stone Company ...	360	0	0
Bryant and Price	326	0	0
Slade	309	10	0
Krauss	309	0	0
Martin	285	0	9
Beaven	285	0	0
Thatcher	279	9	0
Lovell	249	13	5
Thomas and Webb	232	0	0
Jones (accepted)	228	0	0

Surveyor's estimate, £250.

Brixton, S.W.—For the provision of a manual training centre in connection with the Lyham-road school, Brixton, for the London School Board:—

Downs, W.	£1,496	0	0
Holliday and Greenwood	1,466	0	0
Whitehead, L., and Co.	1,430	0	0
Akers, W., and Co.	1,429	0	0
Bowyer, J. and C.	1,336	0	0
Garrett, J., and Son	1,328	11	0
Peacock Bros.	1,280	11	0
Triggs, E, Clapham (accepted) ...	1,272	12	6

[(*a*) Cost of tar-pavement and drainage to additional land, £101; (*b*) boundary walls, £163; (*c*) manual training centre, £803 12s. 6d.; (*d*) works on site, £160; (*e*) extra depth of foundations, £45; total, £1,272 12s. 6d.]

Clerkenwell.—For structural alterations to the school in Bowling Green-lane, Clerkenwell (which provides accommodation for 813 children, was erected in the year 1875, and was enlarged in 1881), for the London School Board:—

Cox, C.	£1,986	0	0
Dearing, C., and Son	1,878	0	0
Staines and Son	1,877	0	0
Roberts, L. H., and R.	1,827	0	0
Yerbury, R. A., and Sons	1,800	0	0
Munday, G., and Sons, Trinity-square, E.C. (accepted)	1,630	0	0

Clerkenwell.—For structural alterations in connection with the infants' department of the York-road School, King's-cross, for the London School Board:—

Dearing, C., and Son...	£239	0	0
McCormick and Sons...	226	0	0
Ballard, W. T.	222	5	0
Cruwys, T.	210	0	0
Stevens Bros.	203	10	0
Britton, F., Highbury	202	0	0

UNIVERSITY OF ILLINOIS-URBANA
3 0112 117956893